



**Swansea University**  
**Prifysgol Abertawe**

**Self-Esteem and Social Media Dependency: A Comparative  
Analysis of Welsh- and English-Medium Pupils' Perceptions**

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**MPhil, BA (Hons)**

Submitted to Swansea University in fulfilment of the requirements for  
the Degree of Doctor of Philosophy

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# Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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Date.....7<sup>th</sup> June 2023.....

## STATEMENT 1

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## STATEMENT 2

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## Abstract

Despite not being officially recognized as an addiction, studies suggest social media dependency [SMD] retains similar traits as substance-based addictions and that adolescents are a group particularly at risk. Studies have shown significant positive correlations between SMD and depression, loneliness, and social anxiety. SMD has also shown a significant negative association with self-esteem. Research has yet to explore these relationships within a minority versus majority language comparative context, which is the objective of the thesis. The thesis used cross-sectional and longitudinal analyses (three equally-spaced timepoints over nine-months) incorporating quantitative and qualitative designs. There were 1,709 participants (Welsh/Bilingual-medium schools = 844; English-medium schools = 865) aged 12- to 15-years with a mean age of 13.61 years (standard deviation  $\pm$ .933). All schools were State-maintained and located within Wales. At timepoint one, five Welsh/Bilingual- and four English-medium schools took part. Two Welsh/Bilingual-medium schools dropped out after timepoint one.

SMD analysis (Chapter Four) showed a difference between school types but no difference between Welsh/Bilingual-medium attending first language Welsh- [FLWs] and English-speakers [FLEs]. The suggested reason for the difference between the school types was a marginalization of Welsh/Bilingual-medium FLWs' and FLEs' first languages within the social media and school environments, respectively. A difference in self-esteem (Chapter Five), depression, loneliness, and social anxiety (Chapter Six) scores was shown for FLWs and FLEs, also, with FLEs showing the poorer scores. The suggested reason was FLWs benefiting in terms of social identification processes and close affiliation to the Welsh language, culture, and community. Structural equation modeling [SEM] (Chapter Seven) indicated that first language mattered whenever SMD predicted self-esteem, depression, loneliness, and social anxiety. Longitudinal analyses (Chapter Eight) showed no difference in FLWs' and FLEs' SMD representation at low, medium and high levels over time, but a greater number of FLEs were represented at low self-esteem levels over time. Qualitative analysis (Chapter Nine) suggested FLWs identified a greater array of technical barriers to using Welsh on social media. In conclusion, the suggestion is an individual's first language matters regarding self-esteem, depression, loneliness, and social anxiety, but not SMD. However, whenever SMD acts as a predictor variable, an individual's first language appears to play a pivotal role.

## Dissemination of Research

The research has been published within an array of peer-reviewed journals, newspapers, and other on-line media outlets. The research has also been the subject of television interviews.

### Journal Publications

Self-esteem and social media dependency: a structural equation modelling approach to comparing Welsh and non-Welsh speakers. *Trends in Psychology*, 14<sup>th</sup> April 2022.

<https://doi.org/10.1007/s43076-022-00177-4>

Perceptions of linguistic parity on social media: a qualitative comparison between primary Cymraeg and English-medium secondary school pupils. *International Journal of Bilingual Education and Bilingualism*, 14<sup>th</sup> May 2022.

<https://doi.org/10.1080/13670050.2022.2072171>

### Press Publications

Social media a threat to Welsh language, study suggests. *BBC*, 31<sup>st</sup> December 2022.

[Social media a threat to Welsh language, study suggests - BBC News](#)

Cyfrngau cymdeithasol 'yn bygwth dyfodol yr iaith'. *BBC*, 31<sup>st</sup> December 2022.

[Cyfrngau cymdeithasol 'yn bygwth dyfodol yr iaith' - BBC Cymru Fyw](#)

Social media is threatening the future of the Welsh language, a new university study has claimed. *Wales Online*, 23<sup>rd</sup> December 2022. [Social media is threatening the future of the](#)

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Social media threat to future of Welsh language. *South Wales Evening Post*, 23<sup>rd</sup>

December 2022. [PressReader.com - Digital Newspaper & Magazine Subscriptions](#)

Online habits 'A threat to language'. *Western Mail*, 23<sup>rd</sup> December 2022.

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Social media may threaten the Welsh language, study reveals. *Tribune Times*, 31<sup>st</sup> December 2022. [Social media may threaten the Welsh language, study reveals - Tribune Times](#)

New research shows the Welsh language and its speakers might be disadvantaged by social media. *Nation.Cymru*, 19<sup>th</sup> December 2022. [New research shows the Welsh language and its speakers might be disadvantaged by social media \(nation.cymru\)](#)

Swansea University reveals new research shows the Welsh language and its speakers might be disadvantaged by social media. *News from Wales*, 26<sup>th</sup> December 2022. [Swansea University reveals new research shows the Welsh language and its speakers might be disadvantaged by social media - News from Wales](#)

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Social media may threaten the Welsh language, study reveals. *Express and Star*, 31<sup>st</sup> December 2022. [Social media may threaten the Welsh language, study reveals | Express & Star \(expressandstar.com\)](#)

Social media may threaten the Welsh language, study reveals. *Belfast Telegraph*, 31<sup>st</sup> December 2022. [Social media may threaten the Welsh language, study reveals - BelfastTelegraph.co.uk](#)

Social media is a threat to the Welsh language, study suggests. *Canada Today*, 31<sup>st</sup> December 2022. [Social media a threat to the Welsh language, study suggests - Canada Today](#)

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Social media could threaten the Welsh language, study finds. *UK Daily News*, 31<sup>st</sup> December 2022. [Social media could threaten the Welsh language, study finds - South Hampshire News \(ukdaily.news\)](#)

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Social media may threaten the Welsh language, study reveals. *Perspective Magazine*, 31<sup>st</sup> December 2022. [Social media may threaten the Welsh language, study reveals - Perspective Magazine](#)

Social media may threaten the Welsh language, study reveals. *The Independent*, 31<sup>st</sup> December 2022. [Social media may threaten the Welsh language, study reveals | The Independent](#)

Social Media may threaten the Welsh language, study reveals. *Shropshire Star*, 31<sup>st</sup> December 2022. [Social media may threaten the Welsh language, study reveals | Shropshire Star](#)

Welsh language is being threatened by social media. *The Telegraph*, 1<sup>st</sup> January 2023. [Welsh language is being threatened by social media \(telegraph.co.uk\)](#)

### **Television Interviews**

Interviewed by *That's TV* reporter Elizabeth Houghton regarding the possible impact of social media upon the Welsh language. Ten-minute interview recorded over Zoom on 20<sup>th</sup> December 2022.

Interviewed by *NTD UK News* reporter Jane Werrell regarding the possible impact of social media upon the Welsh language. Ten-minute interview recorded using Riverside.FM Studio on 20<sup>th</sup> January 2023.

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## DEFINITIONS OF ABBREVIATIONS

AIC	Akaike Information Criterion
BCC	Browne-Cudek Criterion
BDI	Beck Depression Inventory
BFAS	Bergen Facebook Addiction Scale
BSMAS	Bergen Social Media Addiction Scale
CBT	Cognitive Behavioural Theory
CES-D	Center for Epidemiologic Studies Depression Scale (Adults)
CES-DC	Center for Epidemiologic Studies Depression Scale (Children)
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CLS	Children's Loneliness Scale
CMC	Computer Mediated Communication
DIF	Differential Item Functioning
DSM	Diagnostic and Statistical Manual of Mental Disorders
ECVI	Expected Cross-Validation Index
EFA	Exploratory Factor Analysis
EV	Ethnolinguistic Vitality
FLE	First Language English Speakers
FLW	First Language Welsh Speakers
fMRI	Functional Magnetic Resonance Imaging
GFI	Goodness of Fit
ICD	International Classification of Diseases
IFI	Incremental Fit Index
KMO	Kaiser-Meyer-Olkin
LSAS-CA-SR	Liebowitz Social Anxiety Scale for Children and Adolescents Self-Report
NFI	Normed Fit Index
NNFI	Non-Normed Fit Index
ONS	Office for National Statistics
PCA	Principal Components Analysis



PHQ-9	Patient Health Questionnaire Depression Scale
PSHE	Personal Social Health and Economic Education
RMSEA	Root Mean Square Error of Approximation
ROC	Receiver Operating Characteristic
RSES	Rosenberg Self-Esteem Scale
SAD	Social Anxiety Disorder
SD	Standard Deviation
SDS	Zung Self-Rating Depression Scale
S-E	Self-Esteem
SIT	Social Identity Theory
SMD	Social Media Dependency
SMU	Social Media Usage
SNS	Social Networking Sites
SRMR	Standardized Root Mean Square Residual
SSDT	Social Skills Deficit Theory
UCLA LS	University of California, Los Angeles, Loneliness Scale
VIF	Variance Inflation Factor
VSO	Veterans Service Organizations

# 1. CHAPTER ONE: Introduction

This chapter presents an overview of the thesis. The primary drive for the thesis is an overriding concern for the welfare of children and adolescents with respect to social media ‘dependency’.

Social media is omnipresent; it has become embedded within many people’s lives – including children and adolescents. Demand Sage (2023) has pulled together an array of social media statistics demonstrating social media’s stranglehold over the global population: there are an estimated 4.9 billion social media users as of 2023 and by 2027 the figure is likely to rise to 5.85 billion; and Facebook and YouTube have the greatest number of users at 2.91 and 2.56 billion, respectively. In terms of the countries showing the greatest number of social media users as of 2023, China has the most (1,021.96 million), India is placed in second position with 755.47 million users, and third place is the United States with 302.25 million users (Demand Sage, 2023). The UK is placed twelfth with an estimated 61.67 million users. Statista (2022a) suggests the UK figure would likely rise to 64.75 million. Statista (2022e) indicates that social media is used by the majority of the UK’s children; for instance, survey data found that 91% of 15- to 16-year-olds used social media, and 87% had their own social media profile. This corroborates previous data showing that approximately 95% of individuals were using social media by age 15 (Ofcom, 2021). Suggesting social media exposure starts from an early age, Statista (2022e) indicated that almost one-quarter of children aged 3- to 4-years also had their own social media profiles. The social media picture is clear: social media usage impacts the majority of children and adolescents’ lives.

A substantial body of research suggests self-esteem (Rosenberg, Schooler, & Schoenbach, 1989; Donnellan *et al.*, 2005; Wild *et al.*, 2004) and social media *per se* affects contemporary adolescents’ lives (Banyai *et al.*, 2017; Mahamid & Berte, 2019; Al-Menayes, 2015; Merelle *et al.*, 2017). One of the more insidious aspects of social media usage is a dependency upon social media, which appears to impact younger people more than older people (e.g., Andreassen, Torsheim, Brunborg, & Pallesen, 2012).

Acknowledging the pivotal roles played by self-esteem and social media dependency<sup>1</sup> [SMD] with respect to the thesis, there is a growing pool of studies suggesting a negative association between self-esteem and SMD (e.g., De Cock *et al.*, 2014; Hawi & Samaha, 2016; Sam *et al.*, 2022; Kocak, Ilme, & Younis, 2021; Khan, Khan, & Moin, 2021). Chapter Two explores the association between the variables used in the thesis (i.e., social media dependency, self-esteem, depression, loneliness, and social anxiety) in greater detail, with various explanations having been formulated; for instance, people are attracted to social media as a means of enhancing their levels of self-esteem via an acquisition of “likes” (Andreassen, Pallesen, & Griffiths, 2017).

Viewed from a comparative perspective, the unique contribution of the thesis is that it directly compares first language Welsh-speakers [FLWs] versus first language English-speakers [FLEs]. (Please note that the category “English-speakers” also accommodates first language speakers of ‘Other’ languages, also.) The abbreviations FLW and FLE are used consistently throughout the thesis. The thesis also compares Welsh/Bilingual- versus English-medium schools. This raises an important question regarding what exactly is meant by the term “first language”? The literature is fairly consistent regarding what is understood by the term “first language” (Cairney *et al.*, 2007; Matras, Robertson, & Jones, 2016; Strand & Lindorff, 2020; Strand & Lindsay, 2012): the first language learned and exposed to during early development within the home or in the community. The definition is the one adopted by the thesis. A more prescriptive definition for an individual’s “first language” was provided by Western Australia’s School Curriculum and Standards Authority (Asia Education Foundation, 2013): (1) may be more than 5 years in total of formal education (from pre-primary) in schools where the language is the language of instruction, including education in community and ethnic schools; (2) may be more than 5 years in total of residency and time spent in a country where the language is a medium of communication; and (3) use of the language for sustained communication outside the classroom with a person or persons who have a background in the language is permitted. Having defined “first language”, a second question would be what does it mean to have a first language? Although this aspect is covered in greater detail within Chapter Two, social identity theory (Tajfel & Turner, 1979) suggests language and the group of fellow speakers comprise an individual’s sense of ‘Self’ (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014;

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<sup>1</sup> ‘Dependency’ is another word for ‘addiction’, and is the term used throughout the thesis.

Livingstone, Spears, Manstead, & Bruder, 2009; Giles, Bourhis, & Taylor, 1977; Trepte & Loy, 2017), and in this regard, language and an association with fellow speakers of the same language forms a key part of an individual's identity and sense of who he or she is (i.e., the 'Self').

Within Wales, FLWs form the minority with only a little over one-quarter of the Welsh population retaining an ability to speak Welsh (Welsh Government, 2021a). Whilst objective assessments suggest the Welsh language enjoys a certain level of ethnolinguistic vitality (e.g., Giles, Bourhis, & Taylor, 1977; Harwood, Giles, & Bourhis, 1994; Coupland, Bishop, Evans, & Garrett, 2006; Bourhis & Landry, 2012), the level of vitality within the social media context is less certain in that not all FLWs use their first language on social media (e.g., Honeycutt & Cunliffe, 2010). In terms of SMD and self-esteem, as Chapter Two will show, minority language speakers are conceivably at a disadvantage if they perceive fewer opportunities to use their first language on social media compared to majority languages such as English.

A brief note is required regarding what is meant by the term 'social media' within the context of the thesis. In essence, 'social media' is taken to be an umbrella term encompassing all social media applications taken as a whole (for instance, Facebook, Twitter, etc.). It is, however, acknowledged that the surveyed participants would likely use an array of social networks with each retaining slightly different characteristics; for instance, whereas Instagram is primarily image-based, Facebook tends to accommodate a greater volume of text in addition to images and video. Additionally, regarding FLWs, it is likely they might communicate using Welsh with one friend (or group of friends) but use English with another (Johnson, 2013).

The thesis primarily compares FLWs and FLEs whereby participants have reported their first language as either Welsh or English. However, it is important to note that nearly all FLWs would be bilingual Welsh-English (e.g., Jones, 2015b; Roberts *et al.*, 2009; Mennen *et al.*, 2020). Further, given the cosmopolitan composition of Wales' population (e.g., Diverse Cymru, 2022; Lymperopoulou, 2019; UK Parliament, 2022; Welsh Government, 2022d), it would not be unreasonable to accept the possibility of some FLWs retaining an ability in two or more languages (Higham, 2020). A suggestion that the post-Brexit situation might reduce the inflow of foreign nationals migrating to the UK and Wales remains an unknown quantity (ONS, 2021). Despite acknowledging the

technical and statistical uncertainties pertaining to migration forecasts, Portes (2022) stated: "... rather than signal a reversal of the post-1997 overall increase in migration, [Brexit] marked a reversal in the post-2004 shift from non-EU to EU migration, and a return to more historical migration patterns. Even the prospect of Brexit made the UK less attractive to EU migrants, which in turn prompted employers to look outside the EU, and government to loosen controls. Both the pandemic and the introduction of the post-Brexit migration system have accelerated and accentuated those trends." In addition to speaking two or more languages, conceivably an individual might experience two (or more) cultures; for instance, a person raised within, say, a Chinese (Eastern culture) family would also experience British (Western society) culture within perhaps the school and community. This raises an important aspect regarding the influence of different cultural backgrounds upon, for instance, an individual's level of self-esteem. Chen, Ng, and Pomerantz's (2021) analysis, for instance, suggested Chinese participants recorded lower levels of self-esteem compared to the American participants, which is a finding recorded elsewhere (Lyu, Du, & Rios, 2019). Providing a possible explanation for a difference in self-esteem between Western and non-Western cultures, Lyu, Du, and Rios' (2019: 2) review stated, "Research has shown that self-esteem varies across cultures, such that individuals in Asian countries tend to report lower levels of self-esteem compared to individuals in North America and Western Europe... These differences in self-esteem might be influenced by differences in individualism (which is more prevalent in Western cultures) and collectivism (which is more prevalent in non-Western cultures)" whereby 'individualism' describes autonomous people who consider themselves unique, whereas 'collectivism' describes people who consider themselves similar to others and espouse a sense of harmony and dependency (Lyu, Du, & Rios, 2019). Although the hypotheses, results, and subsequent discussion sections have been tailored to accommodate participants' self-reported first language only, it is worth taking a moment to appreciate how future self-esteem analyses, for example, might be shaped according to whether participants experience a mono-, dual- or even tri-cultural experience since the referenced analyses above suggest how self-esteem might vary from one culture to another, with an individual experiencing two or more contrasting cultures conceivably experiencing a complex inter-play of self-esteem-influencing experiences. An interesting future research dimension would be to undertake cross-cultural analysis with respect to SMD, also, which – to the best knowledge of the author – has yet to be undertaken.

## 1.1. Aims and Objectives

The aim of the thesis is to explore the association between SMD and self-esteem - incorporating the variables depression, loneliness, and social anxiety. The five variables are explored within a comparative linguistic context. With specific reference to the Welsh secondary education system, attaining an understanding of how the five variables affect students' lives is of central importance; for instance, level of self-esteem has been implicated in academic engagement (Zhao *et al.*, 2021). In this regard, linguistic comparative analyses supply a unique Welsh-oriented and, indeed, linguistic-oriented insight. This is potentially important since the results arising from the thesis might have a bearing upon other countries wherein minority and majority language speakers are co-educated. In addition to bivariate techniques, statistical analyses employ univariate analysis in the form of structural equation modelling. Structural equation modelling, for instance, show whether two variables (for example, SMD and self-esteem) are associated with one another and whether differences exist between FLWs and FLEs. Factoring in the concepts ethnolinguistic vitality (Giles, Bourhis, & Taylor, 1977) and social identity theory (Tajfel & Turner, 1979), the study provides a unique opportunity to compare minority and majority linguistic participants' responses.

Linguistic analyses essentially comprise two levels. The first level compares Welsh/Bilingual-medium school participants' responses versus English-medium school participants' responses. The second level assumes a more granular linguistic analytical perspective wherein the responses provided by participants saying their first language was Welsh (i.e., FLWs) are compared with the responses provided by participants saying their first language was English (i.e., FLEs). A high-level overview of each empirical chapter is detailed at the end of this chapter. The supportive rationale for this approach is that comparative analyses facilitates comparison at both the whole-school and linguistic levels.

Operating within an exclusively Welsh-based adolescent secondary school context, the research offers numerous original contributions, which are outlined below.

This is the first study anywhere to: assess SMD within a linguistic comparative context; assess the association between self-esteem and SMD within a linguistic comparative context; assess the dependent (i.e., SMD and self-esteem) and independent (i.e., depression, loneliness, and social anxiety) variables using path analysis within a linguistic comparative context, wherein SMD and self-esteem assume the predictor and outcome variables, respectively; assess self-esteem and SMD within the longitudinal context, wherein self-esteem and SMD are recorded at three equally spaced time intervals; and assess the longitudinal cross-lagged association between self-esteem and SMD within a linguistic comparative context over three timepoints.

## **1.2. Research Questions**

The mixed method research, accommodating 1,709 participants aged 12-15 years attending a total of nine Welsh/Bilingual- and English-medium State-maintained secondary schools geographically distributed throughout Wales, uses quantitative and qualitative analyses. The research design includes cross-sectional and longitudinal analyses, with the latter conducted over three equally spaced timepoints over nine-months. The deployed method is detailed within Chapter Three. Although the overall context of the thesis (see below) and literature review go into greater detail, in brief, it is predicted FLWs' use of English on social media triggers a decrease in self-esteem and elevation in SMD; also, FLWs' elevated SMD compared to FLEs' SMD might be driven by other factors such as a desire to connect with other FLWs, the basic human need to attain a higher level of self-esteem, and as a reaction against a perception of Welsh and its speakers being marginalized. Social identification processes suggest FLWs' closer affiliation to the Welsh language and culture would elevate self-esteem levels. The studies examined the following key questions: (1) Are there differences in SMD, self-esteem, depression, loneliness, and social anxiety at the linguistic- and school-based levels? (2) Is there a difference between FLWs and FLEs when SMD, self-esteem, depression, loneliness, and social anxiety are assessed within a structural equation model? (3) Is there a longitudinal difference between FLWs and FLEs with respect to SMD and self-esteem? (4) Is there a difference in perception between FLWs and FLEs regarding the opportunities of using Welsh on social media?

### **1.3. Social Media: Effects upon Mental Health and Negative Consequences – General Overview**

Empirical analyses suggest an association between social media usage and an array of mental health disorders such as depression (e.g., Shensa *et al.*, 2016; Barry *et al.*, 2017), loneliness (e.g., Kross *et al.*, 2013; Ye & Lin, 2015), social anxiety (e.g., Pierce, 2009; Lee & Stapinski, 2012), mood and anxiety disorders (O'Reilly *et al.*, 2018), amongst others. One of the more disturbing aspects of social media usage pertains to dependency (e.g., Griffiths, Kuss, & Demetrovics, 2014), and this has been recognized by the Royal College of Psychiatrists (Dubicka & Theodosiou, 2020). The thesis looks to further our understanding of the relationship between SMD and an array of mental health conditions (i.e., depression, loneliness, and social anxiety) within the context of ethnolinguistic comparative analyses.

### **1.4. Variable Definitions**

The research employed five variables (SMD, self-esteem, depression, loneliness, and social anxiety). The variables are defined below. For the purposes of clarification, the first definition refers to social networking sites.

#### **1.4.1. Social Networking Sites**

Social networks *per se* comprise a group of people, whereas a *digital* social network connects that group of people via an arrangement of cables and machines (Haythornwaite & Wellman, 1997). A more refined definition of social network sites is provided by Boyd and Ellison (2007: 211): “We define social network sites as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system.” Boyd and Ellison’s three-part definition has received support (Ellison, Steinfield, & Lampe, 2007; Harrison & Thomas, 2009; Kuss & Griffiths, 2011). At a *specific* level, social media may also be considered at the platform level, e.g., Instagram and Snapchat. Cunliffe (2019: 452) defined social media as: “a variety of software platforms which typically support personal user profiles, the creation of content by users, and the sharing of content through



a network of social connections.” The social network definition adopted by the thesis constitutes a hybrid of the above formulations (Boyd & Ellison, 2007; Cunliffe, 2007), i.e., social network sites allow users to create profiles and share content with other users over a digital network using a combination of text, photos, and videos.

It should be acknowledged that an array of terms is employed in the literature to cover the concept; for instance, the most frequently used term is “Social Network Sites” (e.g., Garrido, Moya, & Morancho, 2021; Ögel-Balaban, 2022; Barabadi, Shams, & Wise, 2022), and is the one adopted by the thesis. In addition to being considered an umbrella term, “Social Network Sites” accommodates specific social media applications such as Facebook and Twitter, also (Abdulaziz & Aljuhani, 2021), with references to specific applications sometimes covered by the umbrella terms “Social Network Platform” (Chaka & Govender, 2020; Zhang *et al.*, 2022; Oriedi *et al.*, 2022) and “Social Media Platform” (Reuber & Fischer, 2022; Grant, 2022; Alhassun & Rassam, 2022). Where specific applications are referenced in the thesis, these are mentioned using the relevant pronoun such as Instagram. Although the terms are used less frequently in the literature, alternative terms have included “Social Media Sites” (Wang, 2022; Ulvi *et al.*, 2022), “Social Network Systems” (Chang, Cheng, Chiang, & Hu, 2021), and, also, “Social Networks” (Chalkiadakis *et al.*, 2022), which might be considered somewhat misleading as there is no reference to technology.

#### **1.4.2. Social Media Dependency**

Whilst behavioural addictions have been included within the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, with gambling and Internet gaming disorder defined respectively (American Psychiatric Association, 2013), SMD has yet to be formally recognized as an addiction. Additionally, despite referencing ‘Pathological Gambling’ within the ‘F63. Habit and Impulse Disorders’ classification sub-section of the *International Classification of Diseases (ICD-10)* (World Health Organization, 2020), there is no reference to Internet addiction disorders in general, and, specifically, SMD. Although not formally recognized as an addiction, conceivably the concept Internet addictions (including SMD) might ‘fit’ within the sub-section entitled ‘F63.8. Other Habit and Impulse Disorders,’ which specifies the criteria as “other kinds of persistently repeated maladaptive behaviour that are not secondary to a recognized psychiatric

syndrome, and in which it appears that there is repeated failure to resist impulses to carry out the behaviour” (World Health Organization, 2020: 162). The ICD-11, which came into effect 1<sup>st</sup> January 2022 (World Health Organization, 2022), includes a sub-section on ‘Disorders due to substance use and addictive behaviours’ (Reed *et al.*, 2019). Despite ICD-11’s failure to reference Internet addictions and, more specifically SMD, *prima facie* the concept of Internet addictions would appear to satisfy the criteria “disorders due to addictive behaviours that develop as a result of specific repetitive rewarding and reinforcing behaviours” (Reed *et al.*, 2019: 14). Interestingly and perhaps significantly, ICD-11 includes gaming disorder, which might be perceived as recognition and acceptance of the first technologically-oriented addiction.

Within the digital on-line landscape, individuals take part in a variety of activities, some of which might prove addictive, e.g., excessive use of social networking sites (Griffiths, Kuss, & Demetrovics, 2014). Effectively drawing a distinction between the Internet *per se* and activities undertaken via the Internet, Young (1999a) articulated the existence of five broad categories of Internet addiction (computer game addiction, Internet surfing addiction, an addiction to on-line gambling and shopping, an addiction to on-line pornography, and on-line relationship addiction). Griffiths, Kuss, and Demetrovics (2014) suggest that SMD falls within the latter category, i.e., on-line relationship addiction. Griffiths (2013) suggests that SMD derives from a combination of biological, psychological, and social factors, and from an etiological perspective, SMD, substance-related and behavioural addictions share a common underlying etiological framework. Griffiths (2000) and Griffiths, Kuss, and Demetrovics (2014) operationally defined addictive behaviour (including social networking) as behaviour featuring six core components: salience; mood modification; tolerance; withdrawal symptoms; conflict; and relapse. The definition of SMD adopted by the thesis is the six-part formulation stated by Griffiths, Kuss, and Demetrovics (2014), above. Please note, though, that whilst SMD has been implicated with an array of negative outcomes such as depression and loneliness (Orth, Robins, & Roberts, 2008; Tzonichaki & Kleftras, 2002), excessive social media usage, which is not necessarily the same as SMD, attracts its own issues, e.g., disturbed sleep, lower academic performance, reduction in bonding social capital, increased loneliness, and cyber-ostracism (Evers *et al.*, 2020; Ryan, Allen, Gray, & McInerney, 2017).

The literature references various terms to cover social media ‘addiction’. One of the more extensively used terms in the reviewed literature – and the one adopted by the thesis – is “Social Media Dependency” (Karmokar *et al.*, 2021; Amin & Khan, 2020; Wu, 2022; Gupta & Syed, 2022). The literature has also used additional terms such as “Social Media Addiction” (Aydin *et al.*, 2021; Arslan, Yildirim, & Zangeneh, 2022; Stănculescu & Griffiths, 2022), “Problematic Social Media Use” (Sheldon, Antony, & Sykes, 2020; Huang, 2020; Ahmed *et al.*, 2022), and “Social Network Addiction” (Cannito *et al.*, 2022; Delgado-Rodríguez, Linares, & Moreno-Padilla, 2022; Atwan, Salha, & Mahamid, 2022). Referencing specific social media platforms, various suffixes have been used such as “Instagram Dependency” (Al Falah, 2022; Corbu, Oprea, & Frunzaru, 2022), “Instagram Addiction” (Foroughi *et al.*, 2021; Simon *et al.*, 2022), “Snapchat addiction” (Sheldon, Antony, & Sykes, 2020; Meshi, Turel, & Henley, 2020), “Facebook Addiction” (Brailovskaia & Margraf, 2022; Ripon *et al.*, 2022), “Facebook problematic use” (Smith & Short, 2022), amongst others.

### **1.4.3. Self-Esteem**

Recognizing that self-esteem is an intrinsic human motivation (Rosenberg, Schooler, & Schoenbach, 1989; Maslow, 1943), it is hardly surprising that researchers to-date have failed to express a single, unifying operational definition (Tzonichaki & Kleftras, 2002). By way of compensation, however, there are broad characteristics that have been formulated and observed, which elicit greater clarity. Perhaps one of the most widely accepted formulations was devised by Rosenberg (1965: 31): “When we speak of high self-esteem, then, we shall simply mean that the individual respects himself, considers himself worthy; he does not necessarily consider himself better than others, but he definitely does not consider himself worse; he does not feel that he is the ultimate in perfection but, on the contrary, recognized his limitations and expects to grow and improve. Low self-esteem... implies self-rejection, self-dissatisfaction, self-contempt. The individual lacks respect for the self he observes.” With reference to adolescents, low levels of self-esteem have been associated with increased risk of poor mental and physical health as adults and had poorer economic prospects compared to adolescents demonstrating higher levels of self-esteem (Trzesniewski *et al.*, 2006).

#### 1.4.4. Depression

‘Depression’ may be considered an umbrella term encapsulating an array of states of feeling, symptoms, and disorders (Kleinman, 1991; Thapar, Collishaw, Pine, & Thapar, 2012). Indeed, “Depressive disorders include disruptive mood dysregulation disorder, major depressive disorder (including major depressive episode), persistent depressive disorder (dysthymia), premenstrual dysphoric disorder, substance/medication-induced depressive disorder, depressive disorder due to another medical condition, other specified depressive disorder, and unspecified depressive disorder” (American Psychiatric Association, 2016: 1). The *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* applies eight criteria for a diagnosis of depression (American Psychiatric Association, 2013; Truschel, 2020; Tolentino & Schmidt, 2018), which are experienced on a daily or almost daily basis. To receive a diagnosis of a major depressive disorder, which is the classic condition within the group of depressive disorders (American Psychiatric Association, 2016), the individual must experience five or more of the eight symptoms during a two-week period and at least one of the depressive symptoms must be either depressed mood, or anhedonia (i.e., inability to experience pleasure) or loss of interest. The eight criteria are: depressed mood; increased anhedonia and loss of interest; significant weight loss/gain, or increase/decrease in appetite; increased slowness of thought and reduced physical movement, which is noticed by others and not merely experienced as an individual sensation; reduced energy and fatigue; feeling worthless (i.e., reduced feelings of self-worth) or excessive/inappropriate guilt; reduced ability to think or concentrate, or increased indecisiveness; and reoccurring thoughts of death and suicidal ideation with/without a specific plan, or a suicide attempt/specific suicide plan. To find a diagnosis of depression, the clinician must be certain the symptoms did not arise out of substance abuse or any other medical condition, and that the symptoms cause the patient significant distress/impairment in his/her day-to-day functioning (Truschel, 2020).

Demonstrating specific relevance to the present research, depression has been negatively associated with self-esteem (e.g., Orth, Robins, & Roberts, 2008) and positively associated with SMD (e.g., Wood, Center, & Parenteau, 2016).

#### **1.4.5. Loneliness**

Loneliness forms a complex set of feelings regarding the absence of close relations and unmet social needs (Ernst & Cacioppo, 1999). A more refined low-level definition was formulated by Peplau and Perlman (1982) when they considered loneliness the affective response to a perceived discrepancy between an individual's actual and desired social interactions. Emphasizing the affective and cognitive aspects, Heinrich and Gullone (2006) said that loneliness is an emotionally unpleasant sensation arising from an individual's perception that there exists a deficiency in his social relations. Asher and Paquette (2003) alighted upon the subjective aspect of loneliness when they articulated a clear dichotomy: it is possible for an individual to have many friends and still experience loneliness; conversely, an individual may be poorly received by his peer group and not feel lonely. Loneliness for most people, though, is a temporary state without long-enduring consequences; for others, however, it manifests as a chronic emotional response (Gallardo, Martin-Albo, & Barrasa, 2018; Qualter *et al.*, 2015).

Demonstrating relevance to the present analysis, loneliness has been negatively associated with self-esteem (e.g., Cicek, 2021) and positively associated with SMD (e.g., Baltaci, 2019).

#### **1.4.6. Social Anxiety**

Social phobia was introduced as a psychiatric disorder within DSM-III (Heiser, Turner, Beidel, & Roberson-Nay, 2009). From DSM-III to DSM-5, the *Diagnostic and Statistical Manual of Mental Disorders* has amended the definition of social anxiety (Heimberg & Butler, 2018). Within the current version, the term 'Social Anxiety Disorder' formally replaced the expression 'social phobia', which appeared to diminish the importance of social anxiety *per se*. DSM-5 broadened social anxiety's definition to portray an individual fearful of negative evaluation, which encompasses humiliation, embarrassment, and the potential to be rejected by others or to cause offence to others (Heimberg *et al.*, 2014). Unlike DSM-IV, which placed the onus upon the patient to recognize that he or she might have an excessive or unreasonable fear, DSM-5 emphasizes the salience of the clinician's judgment. The supportive rationale for the switch in emphasis is predicated upon the probability that the socially anxious patient's subjective appraisal would likely underestimate the positive aspects of his or her

behavioural performance whilst overestimating the possibility of experiencing a negative response in social situations (Heimberg *et al.*, 2014). Conceptually related to Goffman's (1959) impression management theory, Schlenker and Leary (1982) suggested social anxiety occurs whenever an individual is motivated to make an impression upon an audience but doubts his or her ability to do so, thereby encouraging a belief that he or she will be negatively evaluated. The feeling of being negatively assessed, Schlenker and Leary (1982) reasoned, would likely give rise to social anxiety. Stein and Stein (2008) suggest that socially anxious people show shyness when meeting new people and appear somewhat withdrawn; they may also blush and avoid eye contact. From a physiological perspective, Stein and Stein (2008) said that a socially anxious person would likely experience fear, heart racing, perspiration, trembling, and diminished concentration. Social anxiety has been correlated with a number of negative behavioural outcomes such as excessive alcohol consumption and an extended duration of substance abuse compared to non-socially anxious people (Lingford-Hughes, Potokar, J., & Nutt, D., 2002; Stewart, Morris, Mellings, & Komar, 2006; Bakken, Landheim, & Vaglum, 2005).

Demonstrating relevance to the present analysis, social anxiety has been negatively associated with self-esteem (e.g., Lin & Fan, 2021) and positively correlated with SMD (e.g., van Rooij, Ferguson, van de Mheen, & Schoenmakers, 2017).

## **1.5. Contextual Overview of the Thesis and Knowledge Gap Identification**

This sub-section is not intended to be an exhaustive review of the literature regarding SMD, self-esteem, depression, loneliness, social anxiety, and their interactions with one another, which is covered within Chapter Two. Prior to identifying the knowledge gaps within the literature, the first part of this sub-section presents a high-level contextual overview. Thereafter, attention focuses upon the salient gaps within the literature that this study looks to address. Information relating to the search engines used and search term combinations explored is provided within the appendix.

### **1.5.1. Contextual Overview of the Thesis**

The vitality of the Welsh language at the present time might be considered relatively healthy in that it enjoys support at the highest level within the Welsh Government (Welsh Government, 2021b). The Welsh language is also represented within the mass media,

journalism, the ‘arts’, all sectors of education, the NHS, and theology (BBC Cymru, 2021; S4C, 2021; Golwg 360, 2021; Y Dinesydd, 2021; Y Cymro, 2021; Arts Council of Wales, 2021; National Eisteddfod, 2021; Urdd, 2021; Welsh Government, 2021c; Prifysgol Abertawe, 2020; Prifysgol Caerdydd, 2020; Iechyd yng Nghymru, 2020; Yr Eglwys yng Nghymru, 2021). From a geographic perspective, Welsh-speakers tend to be concentrated in the northern and western areas of Wales (ONS, 2011). The vitality of the Welsh language should be considered within the digital context, also.

The extent to which languages are represented within the social media environment is, to a certain degree, determined by the dominance of a given language relative to other languages, which might lead to speakers of a minority language using the majority language – a process referred to as language shift (Fishman, 1964), which Sofi and Amin (2021: 3984) defined as “the gradual disappearing of a language that is used in a community as the dominant language in communication, education, government, and socialization”. Studies have suggested that not all FLWs use Welsh on social media (Cunliffe, Morris, & Prys, 2013a; McAllister, Blunt, & Prys, 2013), which would appear to reflect Fishman’s (1964) language shift. However, it is important to note that almost all FLWs are bilingual in that they also communicate using English (Jones, 2015b; Cooledge & Murphy, 2017; Roberts *et al.*, 2003; Jones-Evans, Thompson, & Kwong, 2011; Roberts *et al.*, 2009; Mennen *et al.*, 2020); also, acknowledging the increasingly cosmopolitan composition of Wales’ population, it would not be unreasonable to accept the possibility of tri- and even multilingual FLWs (Higham, 2020). However, a key point is that a person identifying him or herself as a FLW might incorporate the Welsh language within his or her sense of ‘Self’ (Tajfel & Turner, 1979; Trepte & Loy, 2017; Hendry, Mayer, & Kloep, 2007; Jones, 2002) with the Welsh language considered an important part of an individual’s Welsh identity (Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Importantly, it is shown that societal recognition of an individual’s minority language increases self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022), and this has been demonstrated within the social media context, also (Odulaja, 2021). Although Chapter Two goes into greater detail, it is possible a FLW perceiving fewer opportunities to use Welsh on social media might consider his or her first language not fully recognized by society, thereby reducing level of self-esteem (e.g., Baker, 2003). Logically, a FLW perceiving fewer opportunities to use Welsh on social media would likely use social media *less* and not *more*. However, there are a number of reasons why

FLWs might engage in greater social media usage such as to achieve linguistic parity with the majority language, to increase level of self-esteem, etc. (Odulaja, 2021; Maslow, 1943; Lane, Do, & Molina-Rogers, 2022; Gonzales *et al.*, 2021; Yusupova, 2022).

Summing up, the contextual backdrop to the thesis is situated within FLWs' opportunities to use Welsh on social media and whether they would be more susceptible to SMD.

From a self-esteem perspective, the contextual background would suggest FLWs' close affiliation to Welsh language, culture, and community along with social identification processes promotes self-esteem (e.g., Tajfel & Turner, 1979; Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014), which might not be the case for all FLEs – especially if their Welsh language ability is lower than FLWs'. This aspect would conceivably realize an impact in terms of FLWs' and FLEs' depression, loneliness, and social anxiety scores, also.

### **1.5.2. Knowledge Gap Identification**

Having established the overall context of the study, the rest of this sub-section focuses upon the gaps in the literature that this study seeks to fill. Please note that the appendix contains the full list of search terms used during the literature review process. All searches involving SMD commenced January 2003, which is the approximate timeframe that coincided with the proliferation of mass social media network applications (Boyd & Ellison, 2007; Harrison & Thomas, 2009). All searches involving self-esteem (excluding SMD) commenced in January 1990. The end date for all searches was December 2022. The search process used the search engines Google Scholar, PsychINFO, ASSIA, and Web of Science.

A considerable volume of research has been generated regarding the associations between self-esteem and depression (e.g., Orth, Robins, & Roberts, 2008; Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009), loneliness (e.g., Shaver & Brennan, 1991; McWhirter, Besett-Alesch, Horibata, & Gat, 2002), and social anxiety (e.g., Tanner, Stopa, & De Houwer, 2006; Glashouwer *et al.*, 2013). However, to-date, no studies have attempted to compare minority and majority language speakers' responses where self-esteem is correlated with each of depression, loneliness, and social anxiety. An extensive review of the literature also failed to find studies comparing minority and majority



language speakers' depression, loneliness, and social anxiety scores. However, deploying a global measure of self-esteem, Young's (2013) Welsh-based survey concluded that participants attending Welsh-medium secondary schools reported higher self-esteem scores compared to participants attending English-medium schools. Whilst no other studies have undertaken Young's comparative analysis, extant research suggests a positive correlation between early heritage language education and the personal and collective self-esteem of minority language subjects (Wright & Taylor, 1995). Thus, viewed from the minority versus majority language speakers' perspective, there are notable gaps in the literature this thesis aims to fill regarding self-esteem's association with depression, loneliness, and social anxiety; also, depression, loneliness, and social anxiety taken in isolation.

A review of the literature suggests positive associations between SMD and depression (e.g., de Cock *et al.*, 2014; Wood, Center, & Parenteau, 2016), loneliness (e.g., de Cock *et al.*, 2014; Blachnio, Przepiorka, Boruch, & Balakier, 2016), and social anxiety (e.g., Wegmann, Stodt, & Brand, 2015; van Rooij, Ferguson, van de Mheen, & Schoenmakers, 2017). Taken in isolation, a review of the literature failed to find any studies directly comparing minority versus majority language speakers' SMD scores and, also, associations between SMD and each of depression, loneliness, and social anxiety. Thus, the thesis provides an opportunity to directly compare minority and majority language speakers' SMD scores and, also, SMD's association with depression, loneliness, and social anxiety.

Adopting a slightly more complex relationship, the thesis explores associations between SMD, self-esteem, depression, loneliness, and social anxiety using structural equation model analysis wherein SMD assumes the *predictor* variable role and self-esteem the *outcome* variable role. No studies to-date have examined this statistical model within a linguistic comparative context. Accordingly, the thesis is presented with an opportunity to fill this knowledge gap.

A review of the literature suggests a comparative linguistic-oriented knowledge gap regarding the longitudinal association between SMD and self-esteem. Although Valkenburg, Koutamanis, and Vossen (2017) might be credited with the first longitudinal analysis comparing the relationship between self-esteem and social media *usage*, their structural equation model did not accommodate social media *dependency*, nor differences

in participants' reported first language; also, their study used the *domain* specific measure of *social* self-esteem as opposed to a *global* measure. The thesis aims to address the knowledge gap by providing the first minority versus majority language speaker SMD ↔ self-esteem longitudinal comparative analysis.

Summarizing, whilst certain variable combinations have been subjected to empirical analysis (for instance, comparing the association between self-esteem and depression), it is clear there exist notable gaps in the literature with respect to a comparison between minority and majority language speakers. The thesis aims to address these gaps.

### **1.6. The Importance of this Research and its Socio-Economic Contribution**

Allied with the research questions shown above, the present investigation provides an original and significant contribution to society and the economy. At face value, to assume the linguistic part of the research retains a purely Welsh-centric influence would be committing a disservice to minority heritage languages within the broadest geographical sense. Acknowledging that most FLWs are bilingual Welsh-English speakers, the value of the thesis' findings might provide guidance to other countries wherein first language speakers of minority languages co-exist with dominant majority languages. Espied through a macro lens, the research directly addresses adolescents and social media service providers alike. Prosaically expressed, the adolescent community constitutes the *societal* domain, whilst the social media service providers equate to the *economic* domain. In terms of the possible economic impact, should SMD-afflicted users seek legislative recourse, social media providers might suffer an economic consequence through breach of duty of care-related fines.

### **1.7. Structure of the Thesis**

Beyond the present chapter, the thesis is partitioned into nine chapters. Chapter Two (Literature Review) addresses the evolution and meaning of SMD and self-esteem. Welsh identity, culture, and heritage language are explained from the vitality and social identity perspectives. The current literature regarding SMD, self-esteem, depression, loneliness, and social anxiety is discussed, also, along with their relationships with one another. Finally, the rationale and structure of the hypotheses is presented. Individual hypotheses are presented within the relevant empirical chapters. Chapter Three (Methodology)

accommodates the ethical statement, inclusion/exclusion criteria, participating schools, participants, materials, and procedure. Chapter Four (SMD: Cross-Sectional Analysis) compares FLWs versus FLEs, and also Welsh/Bilingual- versus English-medium schools. Chapter Five (Self-Esteem: Cross-Sectional Analysis) pursues a similar line of enquiry as Chapter Four. Chapter Six (Independent Variable Comparisons) explores depression, loneliness, and social anxiety whereby FLWs' and FLEs' responses are compared with one another. Welsh/Bilingual- versus English-medium participants' responses are compared with one another, also. Chapter Seven (Structural Equation Model) incorporates SMD, self-esteem, depression, loneliness, and social anxiety within a structural equation model whereby SMD and self-esteem assume the *predictor* and *outcome* roles, respectively, with depression, loneliness, and social anxiety assuming the independent variable roles. Using data obtained from the Welsh/Bilingual-medium schools, FLWs' and FLEs' responses are compared with one another. Additionally, analyses facilitated the testing of the scales' factor structures using exploratory factor analysis followed by confirmatory factor analysis. Chapter Eight (Longitudinal) compares FLWs' and FLEs' SMD and self-esteem scores over a nine-month timeframe. Chapter Nine (Qualitative Analysis) explores FLW and FLE participants' beliefs regarding Welsh language usage opportunities on social media. A thematic analytical deductive method was applied. The final part of the thesis (Chapter Ten (General Discussion)) summarizes the main findings within each of the empirical chapters. Thereafter, the chapter discusses the various implications associated with the key findings. Latterly, strengths and limitations are outlined prior to the delivery of a closing statement.

## 2. CHAPTER TWO: Literature Review

The variables SMD and self-esteem are the core threads running through the entirety of the thesis. To elicit greater understanding, the first part of the present chapter delineates the evolutionary and conceptual aspects regarding both variables. Thereafter, the variables used in the thesis (i.e., SMD, self-esteem, depression, loneliness, and social anxiety) are reviewed from an inter-relationship perspective; for example, the association between SMD and self-esteem. The focus then switches towards the Welsh language, and in this respect, Welsh is reviewed in terms of its vitality and the social identity mechanics regarding Welsh-speakers. Each of the five variables are then reviewed within a Welsh language framework, which drives the direction of the hypotheses. The final part of this chapter focuses upon the hypotheses. Please note that the *individual* hypotheses are presented at the outset of each empirical chapter (i.e., Chapters Four to Nine inclusive).

### 2.1. Social Media Dependency: Evolution and Meaning

This sub-section commences with a review of the concept ‘digital natives’, which provides a contemporary understanding of adolescents’ relationship with digital technology. Thereafter, the review considers Internet ‘addiction’, which is a necessary and related forerunner to SMD.

#### 2.1.1. Digital Natives

Before we examine Internet ‘addiction’ and SMD, given that the thesis’ population comprises the adolescent age-group, it is important to review adolescents’ contemporary relationship with the digital world in a broader context. In this regard, this sub-section provides a review of adolescents’ relationship with the ‘digital world’, on-line gaming, smartphones, and social media. Given the vast volume of literature covering adolescents’ association with digital technology and its many forms, the present sub-section is not an attempt to cover each and every nuance. Thus, a pragmatic approach dictates that only some of the more salient themes are identified.

Recognizing that social interaction is a basic human need, Towner *et al.* (2022) indicated that adolescents’ desire for social interaction with their peers is particularly strong and, in this regard, technological advances over the last decade have changed the

amount and types of social interaction experienced by adolescents. Accordingly, the omnipresent nature of contemporary technology ensures that adolescents are able to connect with others anytime, anywhere (Kuriakose & Marian, 2019; Magis-Weinberg, Suleiman, & Dahl, 2021). Indeed, adolescents' increased usage of *digital media* and the Internet is due in part to the greater diversity and types of digital devices currently available, which are used extensively by adolescents (Ángel *et al.*, 2022). With children exposed to screen-based devices from their earliest developmental stages (Puzio, Makowska, & Rymarczyk, 2022), perhaps one of the greater challenges is managing children's screen time, which is conceivably harder post-COVID-19 pandemic that encouraged remote connectivity (Rocka *et al.*, 2022).

With children able to effortlessly traverse back-and-forth between the on- and off-line worlds (Kuriakose & Marian, 2019), significant questions arise regarding the potential impact of digital media usage upon adolescents' general health and well-being (Magis-Weinberg, Suleiman, & Dahl, 2021). Whilst Magis-Weinberg, Suleiman, and Dahl (2021) assumed a balanced approach regarding the positives and negatives of digital media usage upon adolescents, they did, nonetheless, recognize how adolescents' particularly sensitive developmental trajectory marked them out as being especially vulnerable to the negative consequences of digital media usage. Amplifying their concern for adolescents' welfare, the latter authors observed how the time of adolescence comprises formative social and emotional learning experiences that are able to shape an individual's identity development in both healthy and unhealthy ways. Recognizing how the digital world enables adolescents to construct their identity and social worlds within the complex environment incorporating peer relations, comparison with other users, and acceptance, Magis-Weinberg, Suleiman, and Dahl (2021), noted how the anonymity of the digital world facilitates dangerous and illicit consequences such as body image comparison issues, cyberbullying, and personal reputation on-line. Kuriakose and Marian (2019) noted how an over-dependence upon digital media led to a degeneration of users' social skills by altering the ways in which individuals deal with one another, with some users adopting an array of immoral and anti-social values. In an attempt to preserve users' morals from on-line harm, the latter authors suggested that schools might play a role in students' "judicious" use of digital media. Curtailing adolescents' exposure to digital media, though, was not advocated by Magis-Weinberg, Suleiman, and Dahl (2021) who noted that limiting adolescents' access to digital media in order to prevent harm would

negatively impact positive exploration that is needed for adolescents' learning and development. Thus, the latter authors called for a more balanced approach. Puzio, Makowska, and Rymarczyk (2022), however, observed how experts recommended digital media usage by those aged under 5-years should be both limited and subject to parental supervision, whereas older children ought to receive guidance and assistance where required.

Drawing together others' analyses, Puzio, Makowska, and Rymarczyk's (2022) meta-analysis identified an array of negative correlates with screen time; for instance, observing a positive correlation between total screen time and sleep disturbance, the recommendation would be to avoid using a screen in the hour before sleep. One theory explaining the positive association, the authors suggest, indicates the light emitted from digital devices suppresses melatonin secretion. The authors' meta-analysis unearthed positive correlations between screen time and each of body weight gain (due to an over-consumption of foods with high-calories and a low level of nutrients), musculoskeletal pain (for instance, an association between neck pain and using handheld devices), vision-related disturbance (for instance, playing games for 30 minutes per day was linked with headaches, eye tics, transient diplopia, and dizziness), delayed language development and poor executive functioning (especially in infants and toddlers), poor emotional regulation, anxiety, depression, and aggressive behaviour (the argument put forward is that exposure to violent games increases aggressive behaviours at the expense of helping behaviours).

Situated within the specific COVID-19 pandemic context, Cheung, Yip, and Cheung (2022) observed a positive association between the length of time users engaged with digital media and their health-related quality of life. Although gender differences were identified, the authors suggest the negative health outcomes associated with prolonged screen usage (for instance, sleep disturbance, blurred vision, and elevated depression) may impact users' normal physical, cognitive, and mental development.

Despite painting a rather bleak picture regarding digital media usage, positive aspects have been reported. Puzio, Makowska, and Rymarczyk (2022) noted how users' cognitive functioning might be improved through exposure to educational content. Lyyra *et al.* (2022) noted that maintaining contact with *off*-line friends using *on*-line channels might prove beneficial for users' well-being.

The *video game* industry appears recession-proof as it continues to grow rapidly; for instance, in 1999, the industry generated \$7.4 billion, compared to \$178 billion for the year 2021 (The Recovery Village, 2022). These figures are hardly surprising given the plethora of new ways (TVs, cell phones, desktop computers, notebooks, etc.) users are able to access on-line games (The Recovery Village, 2022). Substantiating the burgeoning economic profile of the games industry, Statista (2022b) demonstrated an upward trend in the number of users across all age groups playing on-line games; for instance, for the 12 to 15-year UK-based age group, the percentage playing on-line games increased from 54% in 2015 to 82% in 2021. A similar trend was found for the 3-4, 5-7, and 8-11 age groups for the same time period. Statista (2022b) indicated the UK was one of the largest markets in Europe, with the number of people playing games in the UK projected to hit 51.88 million in 2025 (compared to 44.3 million in 2021). Echoing the percentage rise for users playing games in the UK, Statista (2022c) observed a year-on-year mobile gaming penetration increase in the UK market (rising from 6% in 2009 to 37% in 2021).

Gaming *addiction* has been included in the 11<sup>th</sup> version of the *International Classification of Disease (ICD-11)* and is defined as gaming behaviour of sufficient severity to initiate functional impairment (Tso *et al.*, 2022). Irie *et al.* (2022) indicated that *Internet Gaming Disorder* (another term for gaming addiction) is considered a behavioural addiction within the 5<sup>th</sup> edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. Tso *et al.* (2022) indicated that gaming addiction is a global issue affecting children and adolescents alike. Unsurprisingly, the literature is awash with articles suggesting a myriad of negative outcomes with not just gaming addiction, but gaming *per se*. The more salient negative aspects are covered below.

Suggesting an anti-social consequence regarding problematic on-line gaming, Patel, D'mello, and Shwetha (2022) indicated affected users become withdrawn and isolate themselves from others. The authors also suggested that addicted gamers tend to avoid issues relating to school, friends, and family and use gaming as an avoidance tactic, i.e., a form of escapism. The social withdrawal aspect was echoed by Yang *et al.* (2022) who indicated that addicted gamers tend to have fewer interpersonal interactions with friends in the *off-line* setting; however, they may have a greater number of interpersonal interactions with friends in the *on-line* setting. Summarizing the potential social

consequence, gaming addiction may prove damaging to addicted users' relationships (Surya & Sivakumar, 2022).

In addition to potentially damaging addicted users' inter-personal relationships, addicted gaming and gaming *per se* have been associated with an array of other unwelcome outcomes such as anxiety, depression, negative coping styles, health-related problems, impulsive behaviour, reporting abnormal health behaviour relative to non-addicts, obesity, repetitive strain injuries, blurred vision, cyberbullying (as perpetrator and victim), etc. (Tso *et al.*, 2022; Pan, Zhou, & Shek, 2022; Das *et al.*, 2022; Surya & Sivakumar, 2022; Hidayat, Permatasari, & Mani, 2022). Hidayat, Permatasari, and Mani (2022) suggested a causal relationship between witnessing violent acts within the gaming environment and aggressive actions undertaken in real life. Explaining the association, the latter authors referenced the *General Aggression Model*, which predicts that exposure to violent and aggressive acts in the on-line gaming environment affects the gamer's arousal, aggressive cognitions, and sensations of aggression, which potentially informs the gamer's subsequent aggressive behavioural response. Referencing cyberbullying, the latter authors suggest the bully bullies out of a desire to elevate his/her status and experience sensations of feeling funny, famous, and influential toward the person being bullied. Research has suggested, also, that simulated on-line gambling games (virtual slot machines) - where gamers play for points rather than money - might encourage users to take part in gambling where money is the reward and not points (Hing *et al.*, 2022), which hints at a motivational explanation for the behaviour. Detailed below are some explanations why people engage in on-line games.

Numerous theories have suggested why people play on-line games, which might result in addiction. Kumari and Dhiksha (2022) identified an array of motivational and psychological reasons driving users' engagement with on-line games. The authors suggested motivational factors driving excessive gaming included the gamer's desire to: attain a specific achievement; attain greater power; achieve a greater rate of progression within the game; accumulate wealth within the scope of the game; and attain symbols and higher status. Focusing upon psychological motives, excessive gaming might be driven by: an uncontrolled drive to achieve; a need to stave off boredom; anxiety; self-esteem; and dysphoria. Kumari and Dhiksha (2022) suggested, also, that a game's built-in reward structure contributed toward a user's excessive game playing. The suggestion is that the



incentive of receiving a reward increases the level of dopamine in the gamer's brain, which activates the reward system. Once the gamer has been rewarded, the gamer may become addicted in the long-term. Concurring with the latter authors' dopamine association suggestion, Surya and Sivakumar (2022) also indicated that excessive gaming triggered a dopamine release, which negatively impedes the gamer's ability to regulate his or her impulse control. Referencing impulse control, Irie *et al.* (2022) indicated this was a particular issue for adolescents because the neurological basis for adolescents' behavioural control is immature (i.e., it has not fully developed), which renders them susceptible to addictive behaviours. Surya and Sivakumar (2022) indicated gaming addiction affected the frontal cortex in a similar way to cocaine. Extending Surya and Sivakumar's (2022) substance addiction reference, Kumari and Dhiksha (2022) indicated that people experiencing gaming addiction endured similar symptoms to substance-based addicts. Summarizing some of the reasons why on-line games become addictive, the Recovery Village (2022) stated that games are designed to entice players to play them and that games need to be sufficiently challenging to retain the gamer's attention and participation. The Recovery Village (2022) also indicated that some of the games have no final goal or definite end point, which means gamers continue playing for an indefinite time period potentially leading to addiction.

In recent times, one of the more problematic aspects of on-line gaming is the concept 'in-game purchases' whereby gamers participating on free-to-play platforms are encouraged to purchase various add-ons such as virtual goods and new characters (Irie *et al.*, 2022). The authors used the term 'loot box' to describe this concept. As the authors note, the problem with 'loot boxes' is that they exploit adolescents' immature behavioural inhibition, which might result in the adolescent engaging in risky behaviours. Irie *et al.* (2022) observed that adolescents making unplanned in-game purchases reported a greater degree of problems relative to adolescents whose purchases were pre-planned.

The above passages have painted a rather bleak picture of adolescents' association with on-line games. There are, however, discernible benefits of on-line game participation; for instance, moderate levels of gaming have been associated with reduced levels of fatigue and stress, enhanced self-confidence, and improved visual attention skills (Kumari & Dhiksha, 2022). Surya and Sivakumar (2022) identified a variety of other potential benefits; for instance, the leadership traits encouraged in certain games can be

transferred into the real-world. The latter authors also debunked the stereotype view of the sheltered gamer since the concept of multi-player on-line experiences facilitates greater social interaction between fellow gamers. Surya and Sivakumar (2022) note, also, that gaming might enhance decision-making skills since gamers routinely adapt to the receipt of new information. The gaming industry has, the latter authors observe, launched video game careers; for instance, the 16-year-old champion of the first Fortnite World Cup received \$3 million. The video game industry also provides an array of career opportunities such as coders, marketing professionals, and event management (Surya & Sivakumar, 2022).

Although the concept gaming addiction has received a level of recognition (see DSM-5 and ICD-11, above), the treatment of gaming addiction remains a key issue as medications might be ineffective and many patients refuse to take medication or have a poor compliance with behavioural intervention programmes (Tso *et al.*, 2022). Suggesting an alternative, Tso *et al.*'s (2022) analysis suggested that child and adolescent gaming addiction might be averted by developing better digital competence, which would empower them to engage with digital devices in a safe and appropriate manner. Appraising current intervention strategies, Kumari and Dhiksha (2022) indicated that most intervention initiatives focus on cognitive behavioural therapy. The key problem in establishing a definitive intervention strategy, Kumari and Dhiksha (2022) observe, is that the efficacy of present-day initiatives are impeded by a lack of control groups, small sample sizes, and non-random treatment conditions.

With their ease of use and mobility, it is hardly surprising that *smartphones* are the most frequently used mobile device (Don't Disappoint Me, 2022) since their larger screens, increased functionality, enhanced performance, and Internet connectivity allows users to use them for a wide variety of functions such as playing on-line games, watching videos, music, etc. (Cheung, Lai, & Yip, 2022; Kwon, Kim, & Lee, 2022). Reflecting their popularity, as of March 2021, approximately 92% of the UK's mobile users owned a smartphone (U Switch, 2022). Indeed, by 2025, the predicted UK population will hit 68.3 million and that 95% (equating to approximately 65 million people) will be using a smartphone (U Switch, 2022). Amplifying this last statistic, data suggests the UK has the greatest number for smartphone market penetration at 82.2% (UK Web Host Review, 2022). The statistics are no less staggering regarding the adolescent population, who are

extensive users of smartphones (de Freitas *et al.*, 2022a); for instance, 83% of adolescents aged 12 to 15-years own a smartphone (Don't Disappoint Me, 2022). Illustrating the popularity of smartphones, Don't Disappoint Me's (2022) statistics suggest that 16 to 24-year-olds devote approximately 4 hours per day to using their smartphones, which is roughly 60 days a year, with UK students checking their smartphone every 8.6 minutes.

The suggestion is that smartphone usage and extensive usage has exposed adolescents to various risks and unwelcome associations (e.g., de Freitas *et al.*, 2022b; Tufail & Farooqui, 2022). Demonstrating a positive association between time spent using smartphones and poorer outcomes in terms of physical and mental health (Cheung, Lai, & Yip, 2022), empirical analyses have shown associations between extensive smartphone usage with a lack of self-control regarding smartphone usage, depression, anxiety, stress, dietary risk factors, loneliness, poorer academic outcome, and lower levels of self-esteem (de Freitas *et al.*, 2022b; Tufail & Farooqui, 2022; Ryu, Jang, & Oh, 2022; Patel, D'mello, & Shwetha, 2022; Edwards, Taylor, & Vaughan, 2022; Khan, Khalid, & Iqbal, 2019).

Smartphone usage promotes a comparison between oneself with others, and in this regard one of the more worrying outcomes relates to body image (Kwon, Kim, & Lee, 2022). Recognizing how adolescence is a particularly sensitive period for an individual's psychological and behavioural development, Kwon, Kim, and Lee (2022) indicated that continuous exposure to images advocating thinness would likely create a negative self-perception regarding one's physical appearance; for instance, the impressionable and vulnerable adolescent confronted by others' 'perfect' bodies might conclude that he or she is overweight. The authors conclude that even moderate exposure to others' idealized bodies might produce an unhealthy consequence.

Quantity and quality of sleep is essential for maintaining the homeostasis of an individual's nervous system and immune function with inadequate sleep associated with memory loss, poorer cognitive functioning, fatigue, and a decrease in academic performance (Kim & Lee, 2022). Situated within the context of the COVID-19 pandemic, de Freitas *et al.* (2022b) stated that addictive smartphone users experienced decrements in their sleep patterns. Demonstrating an association between using smartphones for more than 8 hours per day with a lower level of sleep quality, Kim and Lee (2022) concluded

that lower levels of smartphone usage and addiction were associated with a greater probability of experiencing better quality sleep.

Various reasons have been put forward explaining why users use smartphones. De Freitas *et al.* (2022a), for instance, suggested usage of a smartphone satisfies a psychological need for social interaction whereby the user believes his or her off-line environment has failed to satiate a desire for social interaction. For Cheung, Lai, and Yip (2022), smartphones and, in a more general sense computers, are regarded by adolescents as a necessity. The latter authors indicated that smartphone usage enhanced an adolescent's level of autonomy. Additionally, the availability of low-priced Internet packages and instant messaging are important considerations for adolescents' adoption of smartphones (Khan, Khalid, & Iqbal, 2019). In their review, the latter authors also suggested that adolescents might be drawn toward smartphones in a bid to avoid feelings of loneliness. Al Barashdi *et al.*'s (2016) qualitative study unearthed an array of reasons explaining university students' addiction to smartphones: using smartphones for entertainment and to escape the pressures of academic study; using smartphones to facilitate self-expression; using specific apps for educational purposes; a desire to experience new apps and devices before others; and to maintain and develop social relationships. Referencing adolescents' physical, psychological, and societal changes, Song and Kim (2022) suggested that adolescents experiencing unstable emotions and a lack of self-control might try to resolve their concerns and issues by using smartphones.

Suggesting a potential method for the prevention and treatment of smartphone excessive usage and addiction, Oh and Park (2022) noted how adolescents used smartphones for specific and definable purposes. Accordingly, attaining a better understanding of the motivational factors driving adolescents' smartphone usage, the authors reasoned, would help parents and schools devise and implement suitable intervention strategies.

Although *social media* and SMD are extensively covered below, it is worth noting a few of the benefits and disadvantages of social media usage here. Some of the negative aspects associated with social media usage include exposure to harmful and dangerous videos, the constant feeling of always having to be available, a lack of social cues, feeling compelled to provide an immediate response, a sensation of stress arising from connection overload, a need to be accepted by others, disturbed concentration, encourage

adolescents to adopt unfavourable attitudes and behaviours, and decreased sleep quality (Vasconcelos & Eisenstein, 2022; Magis-Weinberg, Suleiman, & Dahl, 2021; de Groot & van Ouytsel, 2022; Siebers *et al.*, 2022; Gupta, Jogdand, & Kumar, 2022). One of the darker aspects of social media is the creation of content that deliberately targets the adolescent population by playing upon adolescents' specific developmental behavioural characteristics such as the acceptance of dares, curiosity, impulsivity, and a need to belong to one's peer group (Vasconcelos & Eisenstein, 2022). The latter authors noted that during the COVID-19 lockdown, children and adolescents used TikTok as a means to maintain social interaction. However, with the rise in the number of children and adolescents using TikTok, there was an increase in the number of risky trends with some fatalities occurring. Vasconcelos and Eisenstein (2022) noted that some 'games' used threats to ensure adolescents participated in an array of presented challenges. One of these 'games', the authors noted, encouraged adolescents to attempt and commit suicide. Coldly summing up the concept 'social media', Hollis (2022) stated that social media platforms were not designed with young people's mental welfare in mind.

On the flip side, various benefits have been associated with social media use such as connecting with friends, learning new things, meeting people sharing similar interests, enabling adolescents to fine-tune their social skills, and satisfying social needs, (Gupta, Jogdand, & Kumar, 2022; Magis-Weinberg, Suleiman, & Dahl, 2021). In the next subsection, the concept Internet 'addiction' is developed.

### **2.1.2. Internet 'Addiction'**

The prospect of technological addictive behaviours existing is not new. Tokunaga (2014) noted that during the 1940s discussions were held regarding the possibility of children developing an addiction toward motion pictures and radio. Indeed, as far back as 1976 (the year after the start of the Internet), the American Psychological Association suggested the Internet might result in its users developing addictive behaviour (Chebbi, Koong, Liu, & Rottman, 2000). Despite an initial cold reception about the concept 'Internet addiction', "excessive or inappropriate use of computers and the Internet has been the subject of increasing attention in the professional literature and popular media" (Shaw & Black, 2008: 354).

Despite Young (1996; 1999b) suggesting Internet ‘addiction’ is a process addiction that might be triggered by the same experiences that trigger substance-based addictions (such as specific situations, specific people, negative thoughts, negative feelings), the key question is whether it can be classed as a *proper* addiction with its clinical status questioned (Bisen & Deshpande, 2018)? This is a gray area in that the concept ‘Internet addiction’ has yet to be formally recognized as an addiction; for instance, it has not been included within the DSM-5 classification (Singh *et al.*, 2019). Qualifying this last point, Ryding and Kaye (2018) indicated the term ‘addiction’ is controversial as it remains uncertain whether Internet addiction is deserving of the term ‘addiction’ in its own right, or whether it arises in conjunction with specific on-line activities. Suggesting Internet addiction is an impulse control disorder whereby an individual remains intensely preoccupied with using the Internet and appears unable to control his/her Internet usage (Chattopadhyay *et al.*, 2021; Ryding & Kaye, 2018; Singh *et al.*, 2019), Chattopadhyay *et al.* (2021) indicated the concept exhibits six core attributes (salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse). Acknowledging the ever-changing landscape of the Internet, Ryding and Kaye (2018) observed a practical difficulty in conceptualizing and measuring Internet addiction. This last point raises key questions about what is meant by the term ‘Internet’, its implication regarding the concept ‘Internet addiction’, and how this might relate to SMD? According to Ryding and Kaye (2018), the main issue regarding the concept Internet addiction is that Internet addiction is conceptualized as an addiction to the Internet as a *lone* entity, where the reality is that the Internet is a portal to a *myriad* of activities and services. Concomitantly, the latter authors stated that there exist several forms of Internet addiction such as on-line gaming, social media, and on-line shopping, with the authors indicating that users become addicted to a *specific* service or activity (such as social media) as opposed to the Internet medium itself. Thus, Ryding and Kaye (2018) suggest the concept Internet addiction is too general to accommodate the vast array of Internet-hosted activities. Conceptual aspects aside, with the student-age population identified as the at-risk demographic for Internet addiction (Okechukwu, Nevoeneh, & Owo, 2022), research has suggested an association between Internet addiction and a range of comorbid psychiatric issues including anxiety, depression, and psychological distress (Akpunne & Akinnawo, 2019; Restrepo *et al.*, 2020). Okechukwu, Nevoeneh, and Owo (2022) implicated Internet addiction with a host of other negative outcomes, also, such as the impulsivity associated with Internet addiction leading to distress and impairment for the user, extended periods of social

isolation, and – for students – impeded relationships with family members, mood fluctuations, and impaired academic performance.

Numerous theories have been devised to explain the aetiology of Internet addiction, some of which were summarized by Shaw and Black (2008); for instance, *Cognitive Behavioural Theory* [CBT] and *Social Skills Deficit Theory* [SSDT]. CBT forged a distinction between *specific* and *generalized* pathological use of the Internet. *Specific* problematic Internet use refers to *specific* activities undertaken via the Internet, e.g., Internet gambling, shopping, etc. *Generalized* pathological Internet use refers to activities that may only be undertaken via the Internet, e.g., engaging in chat rooms. The CBT model suggests that maladaptive thoughts stay central to the onset of problematic Internet use. Allowed to endure in the long run, *generalized* problematic Internet usage cognitions and behaviours could escalate, which might negatively affect the user's sense of self-worth. As implied by the term, the SSDT emphasizes the salience of a person's deficient social skills. SSDT is predicated on the assumption that lonely and depressed individuals hold negative opinions regarding their social competence. Internet usage, however, could potentially help resolve some users' SSDT issues; for instance, computer mediated social interaction affords socially deficient users greater flexibility regards self-presentation compared to off-line, face-to-face social interactions (Dib *et al.*, 2021). Computer mediated interaction provides users with a greater opportunity to manage their on-line self-presentation compared to the more limiting face-to-face social interaction. Accordingly, the on-line world allows users to manage the impression others have of them. In the absence of eye-to-eye contact, an individual considering him or herself socially deficient, might prefer on-line social interaction on the basis that it facilitates greater anonymity.

Adopting a contemporary view regarding Internet *usage* and *addiction*, it is important to acknowledge the impact of the COVID-19 pandemic upon people's Internet *usage* and addiction behaviours. Taking Internet usage first, studies have suggested usage rates increased during the pandemic (e.g., Gecaite-Stonciene *et al.*, 2021; Kovačić Petrović, Kozarić-Kovačić, & Palavra, 2022). Although Internet use during the pandemic might reduce feelings of loneliness, long-term isolation has endangered younger people by exposing them to the darker aspect of the Internet such as pornography and violent films (Ngamije, 2021). Internet usage during the pandemic has been associated with other

negatives, too, such as negatively impacting users' health, students decreasing the amount of time devoted to their studies, and reduced interaction (Abir *et al.*, 2021; Rakhmanov *et al.*, 2021). The COVID-19 pandemic has encouraged a growing body of research focusing upon Internet *addiction*, also. Numerous studies have reported an elevation in Internet addiction behaviour during the pandemic (e.g., Kovačić Petrović, Kozarić-Kovačić, & Palavra, 2022; Jahan *et al.*, 2021; Masaeli & Farhadi, 2021). With many people confined to their homes during the pandemic, concern for people's mental welfare (especially the younger generation, who use the Internet extensively) has increased with one of the possible reasons for this concern driven by Internet addiction (Gjoneska *et al.*, 2022; Ganesh & Narvekar, 2021). Perhaps unsurprisingly, therefore, Internet addiction has been positively associated with loneliness during the pandemic (Alheneidi *et al.*, 2021; Deutrom *et al.*, 2022). Regarding adolescents receiving mental health treatment during the pandemic, there is a suggestion Internet addiction deteriorated for this cohort (Gansner *et al.*, 2022). Internet addiction during the pandemic has been associated with numerous mental health aspects such as depressive symptoms, psychological distress, and a fear of COVID-19 (Lee & Shin, 2022; Kovačić Petrović, Kozarić-Kovačić, & Palavra, 2022). Social distancing and large-scale social restrictions, however, were unrelated to Internet addiction (Siste *et al.*, 2021).

### **2.1.3. Social Media Dependency**

Extending the work of Young (1996), who suggested users are not addicted to the Internet *per se* but, rather, are addicted to the applications hosted on the Internet, Griffiths, Kuss, and Demetrovics (2014) said that users engage in a variety of on-line activities, some of which might become pathological in terms of usage, e.g., excessive use of social media networking sites. Indeed, extant research suggests a positive association between the intensity of social media usage and Internet addiction (Marino, Gini, Vieno, & Spada, 2018a; Muller, *et al.*, 2016; Kuss *et al.*, 2013). Kuss and Griffiths (2011: 3539) observed that some “researchers conceptualize SNS [social networking sites] addiction as Internet spectrum addiction disorder... [Indicating] that... SNS addiction can be classified within the larger framework of Internet addictions”, which is an assertion supported by Marino, Gini, Vieno, and Spada (2018a) when they suggested that problematic Facebook use might be considered a subtype of problematic Internet use. As a warning, the latter authors acknowledged that problematic Facebook use and



problematic Internet use were not precisely the same as they each retain distinctive characteristics.

Griffiths, Kuss, and Demetrovics (2014) suggest that SMD might be considered an on-line relationship addiction. Recognizing that addictions *per se* are the product of the interaction between an individual's biological and/or genetic constitution, psychological constitution (for instance, a person's unconscious motivations, personality, attitudes, beliefs, expectations, etc.), social environment, and the actual activity (Griffiths, 1999), researchers (Griffiths, 2005; Kuss & Griffiths, 2011; Griffiths, 2013) have suggested that SMD also derives from a combination of biological, psychological, and social factors. Supporting the biopsychosocial hypothesis, Dailey *et al.* (2020), employing regression analysis, suggested that biological (age), social (gender, usage intensity, need for social media, and social comparison), and psychological elements (stress, empathic consideration, conscientiousness, and depression) accounted for over half the explained variance in SMD. Viewed from an etiological perspective, SMD, substance-related and behavioural addictions share "a common underlying etiological framework" (Griffiths, 2013).

Addictive behaviour (including SMD) may be operationally defined as behaviour featuring six core addictive components (Griffiths, 2000; Griffiths, Kuss, & Demetrovics, 2014): *salience*; mood modification; tolerance; withdrawal symptoms; conflict; and relapse. The Royal College of Psychiatrists affirmed, also, the six core components of addiction (Dubicka & Theodosiou, 2020). Later studies have endorsed the association between SMD and the six components, also (e.g., Andreassen & Torsheim, 2012; Andreassen, 2015; Banyai *et al.*, 2017; Andreassen *et al.*, 2016; Griffiths, Kuss, & Demetrovics, 2014; Kircaburun, Demetrovics, & Tosuntas, 2019; Griffiths & Kuss, 2017; Fabris, Marengo, Longobardi, & Settanni, 2020). Applying structural equation modelling techniques, Dogan *et al.*'s (2019) analysis of 200 postgraduates' responses suggested relapse was the most crucial factor and mood modification the least important. Operating within a SMD context, Griffiths, Kuss, and Demetrovics (2014) elaborated upon each addictive component, with each of the six categories emphasized in italic typeface for ease of reference. *Salience* arises whenever social networking becomes the single most important activity in a person's life, dominating his thoughts (distorted cognition and preoccupation), feelings (urges), and behaviour (compromised social interaction).

Preoccupation implies that the ‘addicted’ user’s thoughts stay focused upon social media engagement, even when off-line. *Mood modification* references a user’s subjective experience following use of social networking, which might be construed as a coping mechanism; for instance, the user might suggest he experienced a ‘high’ or, perhaps, a sensation of ‘escape’ or even ‘numbness’. *Tolerance* suggests the user requires increasing quantities of social networking usage to achieve formerly experienced mood modifying effects. The net consequence of toleration is the user devoting greater time to the activity each day. *Withdrawal symptoms* are the unpleasant psychological (e.g., mood alteration, irritation) and physical (e.g., shaking) effects experienced whenever the user is unable to engage in social networking. *Conflict* primarily arises within three settings: the user experiences interpersonal conflict with those around him; the user might experience a conflict with other aspects of his life such as his social life and hobbies; and the user might experience an internal conflict, which might manifest in feeling a loss of control. *Relapse* occurs whenever the user reverts to an earlier pattern of excessive social networking behaviour. Caution, however, is needed, since excessive engagement in an activity (e.g., social networking) does not automatically equate to SMD (Griffiths, Kuss, & Demetrovics, 2014; Griffiths, 2010). The difference, therefore, between dependency and excessive usage is that dependency necessarily accommodates the six components identified above whereas excessive usage *per se* does not. Despite research suggesting an association between SMD and the core addictive components, it is important to note that SMD has not been included within the most recent *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* (American Psychiatric Association, 2013).

Definitive statistics regarding the prevalence of SMD are difficult to obtain (Andreassen, 2015). de Cock *et al.* (2014), surveying a sample of Belgian adults aged 18 and over, estimated a prevalence rate of 2.9%. In an adolescent survey conducted within the Netherlands, van den Eijnden, Lemmens, and Valkenburg (2016) estimated the prevalence across three studies between 7.3-11.6%. Walburg, Mialhes, and Moncla’s (2016) adolescent French-based study estimated the prevalence of Facebook dependency at 8.9%. Focusing upon a student population based in Singapore, Tang and Koh (2017) obtained a prevalence rate of 29.5%. Mahamid and Berte’s (2019) Palestinian survey suggested 42.3% and 47% of the University student participants showed they experienced mild and severe addictive symptoms, respectively. Supporting Andreassen’s (2015) assertion regarding the difficulty in obtaining definitive estimates, the limited number of

studies referenced illustrates how estimations might vary according to age group sampled, geographic location, culture, and whether the deployed scale reflected a specific or generalized measure. Irrespective of prevalence rate, an array of negative outcomes have been associated with SMD such as impaired health and well-being, sleep disturbance, poorer academic performance, amongst others (Andreassen, 2015; Vernon, Barber, & Modecki, 2015; Merelle *et al.*, 2017; Hou *et al.*, 2019).

The COVID-19 pandemic has also impacted social media users; for instance, Karakose, Yirci, and Papadakis (2022) indicated that COVID-19 related psychological distress directly impacted COVID-19 related burnout, depression, and SMD. Suggesting an elevation of SMD, Cheng and Lau's (2022: 2) review observed that "Since the onset of the COVID-19 pandemic, social media addiction has been found to be prevalent across countries and across social media platforms", and this assertion has received support from Luo, Chen, and Liao (2021) who indicated that approximately 40% of SMD users increased their weekly use of social media during the COVID-19 pandemic.

That there are numerous concerns about the perceived or actual impact of social media upon adolescents is hardly surprising considering the medium's widespread usage. As far back as 2011, engaging with social media was considered one of the more popular adolescent activities (O'Keefe & Clarke-Pearson, 2011), and the passage of time has not altered this finding (Allen *et al.*, 2014; Smart Social, 2020; Ofcom, 2019; Act for Youth, 2020; Sprout Social, 2020; YouGov, 2019; Internet Safety 101, 2020). One of the key factors driving social media's widespread popularity is the 24x7 availability of the Internet and proliferation of mobile devices (Clicky, 2018; Adimabua, 2015; Scott, Biello, & Woods, 2019; Su *et al.*, 2020), which means users are able to access social media anytime and anywhere. Indeed, acknowledging the extent to which contemporary adolescents engage with technology in general, today's youth have been christened the "Net Generation" (Oblinger, Oblinger, & Lippincott, 2005: 1). Statista (2020b) showed that approximately 70% of the UK's 15-year-olds kept a social media account, with the more popular social media sites for adolescents being Facebook, Snapchat, and Instagram. Referencing Snapchat and Instagram, Marengo *et al.* (2022) observed that highly visual social media platforms using images and short videos are becoming increasingly popular with adolescents. Amplifying the association between social media usage and adolescence, Hinduja and Patchin (2008) saw that during early adolescence, individuals are likely to use social media to meet new friends and get to know one

another. Around this time, the salience of family relationships slowly fades while the importance of peer relations grows (Crockett & Losoff, 1984). Accordingly, social media channels enable the adolescent to keep contact with his or her peer group, thereby facilitating the benefits arising from bridging (i.e., benefits arising from his association with weaker ties) and bonding (i.e., benefits arising from closer ties such as family or friends) social capital mechanisms (Antheunis, Schouten, & Kraemer, 2014).

One of the darker aspects regarding contemporary adolescents' use of social media is SMD. Although the concept, evolution, prevalence, and negative consequences of SMD have been covered above, the darker suggestion is that young people are *more* susceptible to SMD relative to older people (Kuss & Griffiths, 2011; Turel & Serenko, 2012; Andreassen *et al.*, 2013; Andreassen, 2015; Andreassen *et al.*, 2016; Andreassen, Pallesen, & Griffiths, 2017; Ho, Lwin, & Lee, 2017; Caci *et al.*, 2017). Reflecting upon potential explanations, Andreassen *et al.* (2016) suggested contemporary adolescents' formative years are immersed in technology, unlike older generations. Relatedly, Ho, Lwin, and Lee (2017) showed adolescents' natural affinity with technology makes them more susceptible to SMD. Additionally, younger people often use social media to connect, communicate, interact with others, and, also, seek feedback regarding their on-line behaviours and personas as a means of forming, keeping, and enhancing their social identity (Allen *et al.*, 2014). Extending the identity formation concept, Lee, Ho, and Lwin (2017a) suggested dependence upon social media for identity creation was the strongest antecedent of deficient self-regulation and social media habit formation. Closer examination of Allen *et al.*'s (2014) social interaction concept suggests a peer group conformity dimension, which has been implicated in Facebook dependency (Marino *et al.*, 2016). In their review, Buda *et al.* (2020) showed that adolescents' propensity to SMD might be attributed to a fear of missing out and nomophobia (i.e., a fear of being without a mobile device).

Situating SMD within the specific context of the thesis, although sub-section **2.4.3** goes into greater detail, numerous reasons have been suggested why FLWs might be susceptible to SMD compared to FLEs; for instance, Odulaja (2021) observed how use of one's native language on social media elevated level of self-esteem, which is suggestive of a basic human need and ties in with Maslow's (1943) needs hierarchy that identified esteem needs as one of the principal needs humans strive to achieve. Combining Odulaja and Maslow, it might be appreciated why speakers of minority languages might be

encouraged to use social media more than speakers of majority languages. Another reason potentially driving FLWs' greater use of social media relates to the geographic distribution of FLWs within Wales, who are mostly located within the western and northern regions (ONS, 2011). A FLW located within a predominantly non-Welsh-speaking region such as Monmouthshire (based upon the percentage of Welsh-speakers) (Welsh Government, 2021e) might be drawn to social media to connect with other FLWs, which would tie in with FLWs' closer affiliation to Welsh culture and community, and associated social identification processes with the Welsh language considered a key aspect to FLW's Welsh identity and, also, personal identity (Tajfel & Turner, 1979; Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014; Statistical Bulletin, 2018; Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006; Welsh Government, 2022).

## **2.2. The 'Self' and Self-Esteem: Evolution and Meaning**

Self-esteem forms only a part of an individual's self-concept, with the latter constituting "the totality of the individual's thoughts and feelings about the self" (Rosenberg & Owens, 2001: 401). To facilitate an understanding of self-esteem and to place it within its proper context, it is first necessary to present a brief resumé of what is meant by the term 'Self'. Thereafter, the review focuses upon self-esteem in terms of its meaning and association with adolescents.

Although William James' late nineteenth century seminal treatise *The Principles of Psychology: Volume One* (James, 1890) is generally considered the inception point of modern-day self-esteem as a scientific psychological concept, pre-twentieth century considerations were somewhat vague with the 'Self' aligned with theologically inclined terminology such as 'soul', 'will', and 'spirit' (Burns, 1986). For James (1890), an individual's 'Self' comprised tangible and non-tangible entities (such as clothes, home, etc.) and when attacked would initiate the same slight of feeling as if the person were attacked. Accordingly, an individual's 'Self' forms the aggregate of his/her tangible and non-tangible experiences, products, and lineage, and the individual's feelings will rise and fall according to the fortunes of these entities.

Briefly directing his attention toward self-esteem, James (1890) proposed the following formula:

$$\text{Self-esteem} = \frac{\text{Success}}{\text{Pretensions}}$$

Paraphrasing James, an individual might reach a higher level of self-esteem by either increasing the quantity of his/her positive aspects or by decreasing the quantity of his/her negative aspects.

Farberman (2019) saw that James' theory remains too individualistic; that is, he viewed people as discrete individuals, and not within the context of the social group. Accordingly, Charles Cooley (1902) broadened James' concept when his analyses viewed the individual within the social setting. For Cooley, an individual's self-awareness may be influenced by what he *believes* others think of him, which is an extension of James' (1890) social self that suggested a person has as many social selves as there are people who recognize him within their minds. This is Cooley's (1902) looking-glass theory, which says that a person's self-concept is determined by what the individual *believes* other people think of him. The weight of importance an individual attaches to the other person makes all the difference in his strength of feeling; if the other person is of great significance in his mind, the strength of feeling will likely increase. Cooley's theory, though, has received criticism. Implicit in the looking-glass theory is the assumption that formulation of a person's sense of 'Self' is predicated upon his belief of what *he* thinks *others* might think of him. In formulating an opinion about one's sense of 'Self', Shrauger and Schoeneman (1979) suggested a person may not be reliant upon others as *exclusive* sources of information regarding his sense of 'Self'. Further, Bem (1967) suggested the information used by others when evaluating a person is essentially the same information used by the person when evaluating himself; ergo, both observer and the person would likely arrive at the same conclusion. Hence, the person's reliance upon others as a source of information is no longer paramount. Within the social media context, Akter *et al.* (2012) showed the impact of the looking-glass effect diminished when communicating on-line. The authors suggested individuals' greater sense of freedom on-line effectively liberated them of others' critical judgments met in the off-line arena.

The key self-consciousness issue for George Herbert Mead (1934) was how a person might extract himself *from* himself so that he becomes an object *to* himself. Mead's solution focused upon the process of an individual's social conduct. True self-consciousness may only be reached when the individual is able to consider both himself and others in an *equally* impersonal, non-affective, objective manner, and, also, reflect the attitudes each group member holds towards himself. A person may only become an object to himself when he hears and responds to *himself* in the way he might hear and respond to *others'* words. In this way, the 'Self' evolves. This is Mead's 'generalized other' concept, which references the sense of 'self' bestowed upon an individual by a person's social group (e.g., a football team). Extending the analogy, the attitude of the football team (i.e., the generalized other) reflects the attitude of the team's players. In order to develop his sense of 'Self' to its fullest extent, as a member of the football team, the individual must not only take the attitudes of his team-mates towards himself, and toward one another within the team, but he must also reflect his team-mates' attitudes about their football team's collective ethos. Thus, the individual's 'Self' is influenced by both the individuals within his social group and, also, the social group *per se*. In this way, via assimilation, the metaphorical 'DNA' of the individual's 'Self' has been partially re-engineered to accommodate and reflect a specific social group (e.g., the individual's football team). Implicit in the 'generalized other' concept is the notion of peer group conformity and trying to 'fit in', and this has been evidenced within the social media context: within the context of a televised political event, Twitter users' microblogs were analysed and it was observed how active users of Twitter changed their choice of vote to mirror the prevailing Twitter sentiment (Maruyama *et al.*, 2014).

Wiley (2011) observed a significant similarity between Cooley and Mead in that their respective works provided a major contribution to the theory of the social 'Self'. Wiley (2011) advanced the discussion when it was suggested the social 'Self' effectively denies possessive individualism (that is, the idea that all humans are individualistic and inherently selfish). Thus, the social 'Self' would imply that an internalization of morals works for nearly everyone and that society works "best when it is driven, not by self-interest, but by a widespread identification with communal values" (Wiley, 2011: 171). Extending the collective moral code principle, the social 'Self' implies, also, repudiation of racism (Wiley, 2011).

Erving Goffman (1959) showed an individual might control the way others treat him by expressing himself in such a way as to give them the kind of impression that will lead them to act in accordance with his plan. In other words, the individual is consciously adjusting his presentation to influence his audience; for instance, he might play one role before his teacher, and another before his friends. Whilst portraying a given role or impression, the individual requests his audience to accept the person being portrayed. To convince his audience regarding the sincerity of the portrayed character, the individual must project the right sequence of signals or cues; however, it is imperative the projected signals adhere to the core values and beliefs reflected by the group. Within the social media domain, users routinely modify their presentation according to target audience; for instance, Kramer and Winter (2008) analysed the content of users' profiles and they showed that self-efficacy in relation to impression management was strongly associated with the users' number of on-line friends, the level of detail users included within their on-line profile, and the style of the personal photo uploaded. In their analysis of 253 females and 183 males (mean age 21.24 years), Reed and Saunders (2020) showed an on-line presentational difference between females and males whereby the primary presentational strategy adopted by females when posting selfies was one of intimidation, whereas males adopted a greater array of strategies when posting selfies. Impression management techniques within the social media domain have been evidenced elsewhere, also (e.g., Roulin & Levashina, 2016; Tashmin, 2016; Rose *et al.*, 2012; Krisnawati, 2020). On-line impression management techniques occur at the organizational level, also (Benthaus *et al.*, 2016; Schniederjans *et al.*, 2013; Yang & Liu, 2017).

In accordance with Goffman's (1959: 245) proposition, the 'Self' arises "diffusely from a scene that is presented". In distinguishing an individual from the duality of his many selves, Goffman (1959) recognized the transient nature of any singular 'Self' presented before an audience: it cannot endure; each presented 'Self' exists for a finite moment. In this way, an individual continually adorns a succession of masks, each of which is cast aside when it can serve no further purpose.

Despite his predecessors' collective efforts, Morris Rosenberg (1979) offered a cautionary warning: the concept 'Self' remains fraught with confusion. Rosenberg, nonetheless, appreciated that one of the more remarkable characteristics of an individual is his ability to be both a subject and object simultaneously. Accordingly, a person might



extract himself from himself and look upon himself as if he were some alien form or, more aptly, an object.

Rosenberg (1979: 8) suggested that self-concept accommodated the entirety of an individual's "thoughts and feelings with reference to himself as an object", and, accordingly, constituted only a part of the individual's total personality. The self-concept, according to Rosenberg, includes three broad categories: the *extant self*, i.e., how an individual views himself; the *desired self*, i.e., how an individual would like to view himself; and the *presenting self*, i.e., how the individual appears in others' eyes, which suggests an obvious over-lap with Cooley's (1902) looking-glass theory.

Adopting a contemporary view, Shireen *et al.* (2022) observed how the study of the 'Self' has commanded the attention of philosophers, psychologists, and neuroscientists alike. Referencing the latter, technological advancement has facilitated neurological analyses of the 'Self'; for instance, using functional magnetic resonance imaging [fMRI], Feinberg and Keenan (2005) demonstrated that when presented with a picture of his own face relative to the picture of another person's face, the picture of his own face activated 1.8 times more volume in the right hemisphere compared to the left side. Further, Feinberg's (2011) neurobiological analysis proposed a neuron-based pathway revealing how experienced sensations such as a pinprick to the end of a finger or a visually perceived stimulus might be represented within a person's consciousness. Neurobiological explanations have been used elsewhere with regard studies of the 'Self'; for instance, self-awareness is considered a pivotal component of an individual's conscious experience and is associated with the paralimbic network (Lou, Changeux, & Rosenstand, 2017); also, by studying patients with dementia, it is possible to increase understanding of how self-awareness is organized within the human brain (Mograb, Huntley, & Critchley, 2021).

Constituting a departure from human-based analyses of the 'Self', it has been argued that many animals are also self-aware, with the complexity of the process differing between species and, also, within species (Lage, Wolmarans, & Mograb, 2022).

Bringing it all together, the progressive works of James and his distinguished colleagues have – via a variety of approaches – suggested the ways in which an individual's 'Self' is influenced through his myriad interactions within his own

perceptions and the world beyond. Through the evolution of the ‘Self’ and an ability to perceive and appraise himself as both *object* and *subject*, it is possible to arrive at an estimation regarding his overall self-worth whereby a net *positive* self-image would likely enhance his global self-esteem, whilst a net *negative* self-image would likely initiate a devaluation in his global self-esteem estimation.

Although Abraham Maslow’s (1943) *Theory of Human Motivation* preceded some of his successors’ works noted above, the hierarchical model describing an array of human needs from the most basic (i.e., physiological needs) to the most advanced (i.e., self-actualization) incorporates, also, self-esteem needs, which primarily encompass confidence, achievement, respect for others and the need to be considered a unique individual. The integrative and sequential model proposed by Maslow (1943) emphasizes the salience and relevance of self-esteem with regard to an individual’s whole sense of ‘Self’. Thus, Maslow’s work provides an appropriate bridge to move from the evolutionary concept and contemporary understanding of the ‘Self’ to self-esteem and, latterly, its relevance with regards the adolescent population.

Definitions of self-esteem tend to vary from one researcher to the next, with the concept typically defined using more than one aspect such as an individual retaining a sense of personal efficiency or sense of personal worth, or the total sum of beliefs an individual holds regarding his or her sense of ‘Self’ (Kose & Dogan, 2019). Generally, though, the concept self-esteem refers to an individual’s positive or negative feelings toward his ‘Self’ (Rosenberg, 1965; Minev *et al.*, 2018). Recognizing how self-esteem retains important implications for an individual’s life experiences, the dynamic nature of self-esteem “can be seen as a barometer of individual successes and failures, as well as acceptance and rejection by others” (Krause *et al.*, 2021: 11). Self-esteem is considered an essential component for understanding an individual’s well-being and success (Monteiro *et al.*, 2022).

In order to better understand the complex relationship between self-esteem and adolescence, it is first necessary to appraise the trajectory of self-esteem from one’s earliest years through adolescence. This is given added pertinence when one acknowledges the important role self-esteem plays in an adolescent’s self-concept and is considered an essential component for an adolescent’s mental health and functioning

(Lyyra *et al.*, 2021). Harter (2006), referencing the notable theories propounded by James and Cooley, which have already been covered, reveals that it is only from middle childhood onwards that one is able to appraise one's sense of 'Self'. Although young children (aged 2 to 3), Harter (2006) observes, start using self-referent pronouns ("I" and "Me") in terms such as "I can run fast", their cognitive-developmental limitations precludes one from formulating a sense of his or her self-worth or self-esteem. However, by the time one has reached 4 to 7 years, the level of self-esteem might be revealed not through one's words but, rather, through one's behaviours; for instance, a high level of self-esteem might be demonstrated via displays of heightened confidence, exploration, curiosity and the like; *vice versa*. Harter (2006) indicates that before the age 8, one is able to evaluate aspects of one's competence (cognitive and physical) or adequacy (appearance, conduct, and social acceptance) at the *domain*-specific levels only; it is not yet possible to forge together the domain-specific estimations to comprise an overall *global* estimation of one's overall worth as an individual. However, from 8 years on, the individual is sufficiently cognitively developed to formulate an overall estimation regarding his or her level of self-esteem (that is, James' theory) and, also, incorporate into his or her sense of 'Self' perceptions of others' opinions about themselves (that is, Cooley's theory) (Harter, 2006). As the adolescent matures, one accrues greater experience, becomes more knowledgeable, and develops sufficient cognitive reasoning skills to appraise one's strengths and weaknesses (Shirima, Naude, & Esterhuysen, 2021). Thus, the evolving adolescent embarks upon an epoch of turbulence wherein his or her *global* sense of self-esteem is influenced by an array of extra-individual factors; indeed, the process of self-awareness is most acute during adolescence and ultimately impacts their relationship with the surrounding world (Mineev *et al.*, 2018). The more salient factors impacting adolescents' self-esteem are outlined below.

One of the more influential causal agents upon adolescents' self-esteem levels is their home environment and, specifically, parenting model; for instance, Perez-Fuentes *et al.* (2019) suggested adolescents recording the higher self-esteem scores were those who perceived the greatest affect and communication from their parents, were accorded the greater level of autonomy, and experienced the greater degree of humour in the parent-child relationship. In their four-wave longitudinal analysis of 674 Mexican-origin families living in the United States, Krauss, Orth, and Robins (2020) concluded that numerous family environment factors (parental warmth, parental monitoring, and the presence of a

father) contributed to children's self-esteem level. In addition to parent-child environmental circumstance, adolescent self-esteem levels are variously impacted by other factors, some of which include relations with friends, school environment, extent of physical activity, and body image (Sugiarti *et al.*, 2021; Caqueo-Urizar *et al.*, 2021; Nicolosi & Lipoma, 2012; Biddle & Asare, 2011; Javaid & Ajmal, 2019).

Having previously defined and expanded upon the trajectory of self-esteem through adolescence, above, the importance of self-esteem for the emerging and impressionable adolescent is readily apparent, since high- and low-levels of self-esteem have been variously associated with an array of positive and negative outcomes, respectively; for instance, low levels of self-esteem have been associated with delinquent behaviour, numerous risk-taking behaviours including smoking and drug experimentation, and suicidal ideation (Rosenberg, Schooler, & Schoenbach, 1989; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Kabiru, Elung'ata, Mojola, & Beguy, 2014; Byrne & Mazanov, 2001; Mazanov & Byrne, 2002; Lazuras, Eiser, & Rodafinos, 2009; Kassel, Wardle, & Roberts, 2007; Kavas, 2009; Kindlundh, Hagekull, Isacson, & Nyberg, 2001; Fisher, Zapolski, Sheehan, & Barnes-Najor, 2017; Lin, 2015; Extremera, Quintana-Orts, Merida-Lopez, & Rey, 2018; Shim & Jeong, 2018; Manani & Sharma, 2013), amongst others. As a warning to the above associations, it should be seen that high levels of self-esteem will not prevent children from smoking, drinking, abusing drugs, or participating in early sexual interactions (Baumeister, Campbell, & Krueger, 2003) and, by implication, SMD.

Previously, it was indicated that self-esteem might be considered at the *domain-specific* and *global* levels (Harter, 2006), whereby the former pertains to an individual's level of self-esteem for a specific activity (e.g., sporting self-esteem, academic self-esteem) and the latter provides an overall estimation of an individual's level of self-esteem taking in all the *domain-specific* levels. Self-esteem may be considered a multi-dimensional construct in that it may be examined at the *global* level or at *domain-specific* levels such as academic, physical, social, emotional, athletic, morality, romantic relationship, and verbal self-esteem (Seim *et al.*, 2021; Burger & Bachmann, 2021; Orth *et al.*, 2021).

Within the context of the thesis, an individual's level of self-esteem retains specific and empirically supported associations with depression, loneliness, social anxiety, and SMD.

### **2.2.1. Self-Esteem: High-Level Concept and Social Media**

Having defined and outlined the evolution of self-esteem above, it is appreciated the concept refers, in the broadest sense, to an individual's self-evaluation, which accommodates feelings of self-worth and self-respect (Coopersmith, 1967; Rosenberg, 1979; Song, 2021; Wang & Liu, 2022). Self-esteem references an individual's positive or negative feelings about oneself, and, concomitantly, represents a significant part of an individual's self-image (Tzonichaki & Kleftaras, 2002; Isomaa *et al.*, 2013). Isomaa *et al.* (2013: 392) suggested, "Self-esteem is involved in our thoughts, feelings, and behaviours", an assertion that cements the association between an individual's self-esteem and sense of 'Self' *per se*. Acknowledging self-esteem's natural association with an individual's self-concept (Rosenberg & Owens, 2001), self-esteem might be considered a fundamental human motive (Rosenberg, Schooler, & Schoenbach, 1989).

A contemporary concern arising from recent research is an association between self-esteem and social media *usage* (e.g., Errasti, Amigo, & Villadangos, 2017). Woods and Scott (2016) suggested that those who were more emotionally invested in social media experienced lower levels of self-esteem. Vogel *et al.* (2014) suggested the negative association between self-esteem and social media usage was mediated by increased exposure to upward social comparisons with others' on-line profiles, i.e., comparing oneself with superior others. Indeed, Rosenberg and Egbert (2011) observed the social media environment provided the perfect platform for users to present an *idealized* version of themselves, a version that might not reflect reality but, nonetheless, potentially negatively impacts viewers' self-esteem (Vogel *et al.*, 2014; Schmuck *et al.*, 2019) because the idealized version of the presented person leaves the viewer feeling inadequate in comparison (Fox & Vendemia, 2016; Vogel *et al.*, 2015; Pang, 2021).

Reflecting upon the impact of selective on-line self-presentation from the perspective of the person uploading the information to social media, Gonzales and Hancock (2011) suggested posters realized an elevation in their self-esteem levels, possibly as a result of

receiving positive feedback such as ‘likes’ (Yang & Brown, 2016; Pounders, Kowalczyk, & Stowers, 2016). By emphasizing their most desirable characteristics, low self-esteem posters can maintain the belief that strategic self-presentation will enable them to become more socially attractive (Wonseok, Bucy, & Cho, 2018). Adopting a pragmatic position, Valkenburg, Peter, and Schouten (2006) suggested the receipt of positive feedback enhanced adolescents’ self-esteem, while the receipt of negative feedback decreased self-esteem levels. Pempek, Yermolayeva, and Calvert (2009) suggested adolescents used social media as a means of gauging peer opinions about themselves, which potentially influenced identity formation.

The suggestion is that low self-esteem individuals were more likely to compare themselves to others on Facebook for self-evaluation, self-enhancement, self-improvement, and self-destructive purposes compared to people displaying higher levels of self-esteem (Cramer, Song, & Drent, 2016). Viewed in a positive light, Blachnio, Przepiorka, and Rudnicka (2016) suggested that Facebook usage was important to people with low self-esteem as it enabled them to improve their self-image; also, the authors suggested that low self-esteem users realized an enhancement in terms of bridging social capital, i.e., via Facebook, low self-esteem users strengthen weak ties within disparate on-line social networks, a finding supported by Ellison, Steinfield, and Lampe (2007).

Despite previous studies suggesting an association between self-esteem and social media usage, Skues, Williams, and Wise (2012) discovered *no* such association. Explaining the lack of significance between self-esteem and social media usage, the latter authors suggested the reason might be attributed to a user’s implicit use of social media. Although the relation between the variables was non-significant, the latter authors recommended further work and incorporation of confidence intervals as the *p*-value for the association between the variables was .06, which is close to significance. Pantic’s (2014) meta-analysis, however, concluded that the overall impact of social media usage upon self-esteem is complex. Acknowledging some of the negative connotations associated with SMD such as elevated depression, loneliness, social anxiety, and decreased academic performance (Kandee *et al.*, 2022; Bakry *et al.*, 2022; Lyvers *et al.*, 2022; Kobimdi, 2022), it is hardly surprising that one of the more pressing contemporary concerns relates to the growing pool of empirically-backed evidence suggesting a negative association between SMD and self-esteem, (e.g., Sam *et al.*, 2022; Kocak &

Younis, 2021; Khan, Khan, & Moin, 2021), and this association is discussed from the cross-sectional and longitudinal perspectives within the present chapter, below.

### **2.3. General Constructs of the Used Variables**

The aim of this sub-section is to present a contemporary review illustrating the empirically proven relationships between SMD, self-esteem, depression, loneliness, and social anxiety. The variables are addressed with respect to the Welsh language within sub-section 2.4, below.

#### **2.3.1. Social Media Dependency and Self-Esteem**

Kuss and Griffiths (2011) suggested that as users' expectations became satiated through social media usage, the potential for developing SMD increased accordingly. Additionally, the authors showed that the perceived expectations and benefits arising from social media engagement might go awry – especially for low self-esteem individuals. Low self-esteem people, the authors reasoned, might feel a need to devote increasing amounts of time to social media as they consider the activity advantageous, which might develop into an addiction. Acknowledging studies examining the association between SMD and self-esteem have generally established a negative association between the variables (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021) there is, nonetheless, data suggesting how usage of social media might actually help users with low levels of self-esteem; for instance, Gentile *et al.* (2012) found that users spending time thinking and editing their Facebook pages reported elevated levels of self-esteem. By way of explanation, the latter authors suggested the users employed selectively positive self-presentations in their profiles that tended to reinforce within their minds the good things they achieved, and this elevated their level of self-esteem. In another study, Gonzales and Hancock (2011) arrived at a similar conclusion.

Deploying exploratory and confirmatory factor analyses to obtain the most parsimonious model for the data, Liu and Ma's (2018) study accommodating 318 18-25-year-olds, affirmed a negative correlation between SMD and self-esteem. By way of explanation, the authors suggested that low self-esteem individuals held a belief that the social media environment was a safer place for them to express themselves. Similarly,

Forest and Wood (2012) suggested low self-esteem individuals perceived Facebook as an attractive environment for self-disclosure; however, low self-esteem individuals' negative comments attracted undesirable feedback from others. Affirming a negative association between the variables, Marino, Gini, Vieno, and Spada (2018a) synthesized earlier research and saw that people who are more aware of what others might think of them are at greater risk of developing SMD. Within the Facebook context, the combination of a need for approval and a fragile self-esteem explained the link between interpersonal sensitivity and a dependency upon others, thereby diminishing the possibility of experiencing positive social interactions. Accordingly – and simultaneously referencing and affirming Liu and Ma's (2018) explanation, people with low self-esteem would favour the perceptually more comfortable on-line environment over the face-to-face environment for social interactions. Deploying a structural equation model, Kircaburun, Demetrovics, and Tosuntas (2019) suggested a significant negative correlation (a sense of caution, though, is required due to the small effect size). Implicitly referencing predecessors' explanations, the authors suggested how individuals with lower self-esteem levels might compensate their desire for off-line social interactions and, also, avert problematic off-line social experiences, by using social media in an excessive manner. The latter authors also suggested that low self-esteem individuals might be attracted to gathering 'likes' as a means of enhancing their depleted self-esteem. Developing the 'likes' aspect, Andreassen, Pallesen, and Griffiths (2017) saw how users engage with social media as a means of elevating their levels of self-esteem via the acquisition of 'likes' and to escape their feelings of low self-esteem, both of which might trigger a dependency. Proposing an alternative explanation, Kose and Dogan (2019), upholding the negative correlation, suggested how a belief of having many on-line 'friends' encouraged excessive social media usage. However, following a reconciliation between the number of on- and off-line 'friends', users' self-esteem levels duly plummeted. The latter authors suggested, also, how low self-esteem individuals turn to social media as a way of dealing with face-to-face rejection. Referencing *Social Comparison Theory*, Acar *et al.* (2020) proposed the negative association between the variables betrayed a desire within low self-esteem individuals for upward social comparison (i.e., comparing oneself with superior others), wherein they might discover a better self-reflection; however, the receipt of negative feedback might diminish their already low level of self-esteem further. The negative association between self-esteem and SMD has received empirical support elsewhere, also (e.g., de Cock *et al.*, 2014; Blachnio, Przepiorka, & Pantic, 2016; van den



Eijnden, Lemmens, & Valkenburg, 2016; Andreassen, Pallesen, & Griffiths, 2017; Banyai *et al.*, 2017; van Rooij *et al.*, 2017; Hawi & Samaha, 2018; Hou *et al.*, 2019; Khan, Khan, & Moin, 2021; Zeynep, 2021).

In contrast to extant research suggesting a negative association between SMD and self-esteem, Kircaburun, Demetrovics, and Tosuntas' (2019) Pearson analysis did not demonstrate a negative association between SMD and self-esteem, which contrasted with their structural equation modeling analysis (described in the previous paragraph) that demonstrated a negative association. Demonstrating compatibility with Kircaburun *et al.*'s (2019) Pearson analysis, Ho, Lwin, and Lee (2017) also failed to demonstrate a significant correlation between SMD and self-esteem.

Implicitly recognizing the constraints associated with cross-sectional analyses (i.e., it is not possible to figure out whether self-esteem influences SMD, or *vice versa*), Marino, Gini, Vieno, and Spada (2018a) recommended deployment of longitudinal designs to explore the causal direction between the two variables; for instance, structural equation model analysis would permit significance testing between, say, time wave one SMD and time wave two self-esteem, and between time wave one self-esteem and time wave two SMD, etc. to better identify paths of significance.

### **2.3.2. Social Media Dependency and Self-Esteem: Longitudinal Perspective**

The lifespan trajectory of *self-esteem* has received extensive coverage within the reviewed literature (Robins *et al.*, 2002). Robins *et al.* (2002) and Robins and Trzesniewski (2005) suggest that, on average, levels of self-esteem tend to be relatively high in childhood, diminish during adolescence (especially for females), assume a gradual increase during adulthood, before declining quite sharply during old age. Despite expressing an apparently contrary conclusion regarding adolescents' self-esteem trajectories, subsequent studies are, for the most part, in broad agreement regarding the overall trajectory of self-esteem from childhood to old age (see Orth, Erol, & Luciano's (2018) meta-analysis). Previous studies have also suggested that levels of self-esteem increased throughout adolescence (e.g., Trzesniewski, Donnellan, & Robins, 2003; Erol & Orth, 2011; Birkeland *et al.*, 2012; Orth, Maes, & Schmitt, 2015; Wagner *et al.*, 2013; von Soest, Wichstrom, & Kvaalem, 2016; Kiviruusu *et al.*, 2015; Orth, Erol, & Luciano,

2018). Taken collectively, previous research suggests a certain instability regarding the trajectory of self-esteem during adolescence, and this aspect was echoed by Trzesniewski, Donnellan, and Robins (2003).

The research community has only recently directed its attention toward longitudinal *SMD* studies, and the absence of longitudinal designs has been recognized (Hussain & Starcevic, 2020; Bouna-Pyrrou *et al.*, 2018). Reflecting upon the dearth of longitudinal analyses, Hussain and Starcevic's (2020) meta-analysis found only seven longitudinal studies, which produced a conflicting sequence of results with some showing elevations in *SMD* over time (Raudsepp, 2019; Raudsepp & Kais, 2019), and another suggesting a U-shaped trajectory (Chen *et al.*, 2020c). In an apparent contradiction to Chen *et al.* (2020c), Boer *et al.* (2021a) suggested a modest inverted U-shaped trajectory. Emphasizing the embryonic stage of *SMD* longitudinal studies *per se*, Boer *et al.* (2021a) qualified their findings by showing there is presently no theoretical basis and empirical evidence regarding the course of *SMD* throughout adolescence. Concomitantly, the latter authors concluded that hypotheses relating to how adolescents' *SMD* develops over time have yet to be formulated. Confusing matters further, Boer *et al.*'s (2021b) three-wave analysis suggested participants' *SMD* scores did not change over time, while Chang *et al.*'s (2021) nine-month four-wave study demonstrated an erratic trajectory whereby there was a drop from T1 to T2, an increase from T2 to T3, and finally a drop from T3 to T4.

Rationalizing the few longitudinal *SMD* studies, the current state might be best described as lacking consensus. The present study hopes to develop the debate by factoring in a comparative linguistic dimension, which, to the best of the author's knowledge, has not been previously addressed. Considering the longitudinal association between self-esteem and *SMD*, the literature suggests this has yet to be fully addressed, which is an issue requiring resolution (Akkus, 2021).

### **2.3.3. Depression**

This sub-section reviews the literature regarding depression's empirically supported associations with self-esteem and *SMD*.

The prevalence of depression in children younger than 13-years has been estimated at 2.8%, while in adolescents aged 13-18-years, the prevalence has been estimated at 5.6%

(Costello, Erkanli, & Angold, 2006). In their analysis of 384 12-16-year-olds, Schoenbach *et al.* (1983) showed a prevalence of persistent symptoms of 1-15% in males, and 2-13% in females. Observing an increased prevalence of major depressive episodes amongst adolescents (de Mol D'Alcantara & Cresti, 2018), Mojtabai, Olfson, and Han (2016) showed the twelve-month prevalence of major depressive episodes increased from 8.7% (2005) to 11.3% (2014) amongst adolescents. The suggestion is that depression often starts during adolescence with significant increases from around 15-years (Garber and Cole, 2010). Garber and Cole (2010) found numerous risk factors such as genes, neurobiological dysregulation, negative thoughts, stress and trauma, maladaptive coping mechanisms, etc. Adolescent depression has been variously associated with abuse, neglect, impeded academic performance, substance abuse, early pregnancy, alcohol, suicide, increased school absenteeism, and bingeing (Clark, Jansen, & Cloy, 2012; Deykin, Levy, & Wells, 1987; Glied & Pine, 2002; Kelder *et al.*, 2001; Riggs *et al.*, 1995; McHugh *et al.*, 2020; Mohamed, Ahmad, & Hassaan, 2020; Moreira de Sousa, Moreira, Telles-Correia, 2018). Clark, Jansen, and Cloy (2012) suggested approximately 60% of adolescents experiencing depressive symptomology experience relapses throughout adulthood.

The suggestion is that low *self-esteem* is a defining characteristic of depression (Orth, Robins, & Roberts, 2008). Recognizing uncertainty with regard to the temporal association between the variables, Orth, Robins, Widaman, and Conger's (2014) review referenced two models: the *vulnerability model* postulates that low self-esteem is a causal risk factor of depression (Beck, 1967); conversely, the *scar model* states that low self-esteem is a consequence of depression because depressive experiences might inscribe permanent scars upon an individual's self-concept (Shahar & Davidson, 2003). Adopting a pragmatic perspective, Rosenberg, Schooler, and Schoenbach's (1989) appraisal suggests the strong association between self-esteem and depression is attributed to the realization that both variables reinforce one another; that is, there persists a bi-directional effect. The bi-directional effect has been suggested by Rosenberg and Owens (2001), also. In this regard, Rosenberg, Schooler, and Schoenbach (1989) suggest depressive feelings initiate low self-esteem, and low self-esteem facilitates depressive symptomology. Despite acknowledging the bi-directional relationship, the latter authors concede that depression exerts the greater influence, however.

Irrespective of whether depression causes low self-esteem or *vice versa*, empirical analyses have overwhelmingly demonstrated a negative association between self-esteem and depression (Babore *et al.*, 2016; Zhou, Tian, & Huebner, 2020; Pearlin *et al.*, 1981; DeSimone, Murray, & Lester, 1994; Rosenberg & Owens, 2001; Morris, Parra, & Stender, 2011; Elion *et al.*, 2012; Isomaa *et al.* 2013; Lin, 2015; Muris *et al.*, 2016; Duru, Balkis, & Turkdogan, 2019).

In addition to demonstrating a positive association between depression and social media *usage*<sup>2</sup> (Pantic *et al.*, 2012; Block *et al.*, 2014; Lin *et al.*, 2016; Woods & Scott, 2016; Frost & Rickwood, 2017; Sherlock & Wagstaff, 2018), a large volume of research has also suggested a positive association between depression and *SMD* (Blachnio, Przepiorka, & Pantic, 2015; Andreassen, 2015; de Cock *et al.*, 2014; Koc & Gulyagci, 2013; Shensa *et al.*, 2017; Pontes, 2017; Banyai *et al.*, 2017; Lin *et al.*, 2017; Marino, Gini, Vieno, & Spada, 2018b; Kircaburun *et al.*, 2020; Kircaburun, Demetrovics, Kiraly, & Griffiths, 2020; Wang *et al.*, 2018; Veiga *et al.*, 2019; Haand & Shuwang, 2020). Shensa *et al.*'s (2017) analysis suggested that *SMD* was independently associated with depressive symptomology irrespective of overall time devoted to social media use. From an explanatory perspective, the latter authors suggested individuals experiencing *SMD* neglect other constructive elements of their lives, which might facilitate depressive symptoms; for instance, greater use of computer-mediated technology might result in fewer face-to-face social interactions, increased sedentary behaviour, and disturbed sleep – all of which might contribute toward depressive symptomology. Wegman, Stodt, and Brand (2015) suggested depressive individuals hold an expectation that Internet use would decrease negative feelings – a response that facilitates increased social media usage, which potentially triggers dependency. Lee, Ho, and Lwin (2017b) suggested depressed individuals' deficient self-regulation created a *SMD* whereby they became reliant upon social media to alleviate dysphoric mood states, which effectively desensitized their self-regulatory capabilities. Upholding prior research suggesting a positive association between the variables, Jasso-Medrano and Lopez-Rosales (2018), whilst concluding there is no consensus on whether depression arises from *SMD* or

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<sup>2</sup> Please note the terms social media *usage* and *dependency* are distinct from one another and are not being used interchangeably. Social media *usage* is introduced as a stepping stone toward social media *dependency*, i.e., it introduces social media with respect to depression (the same approach is used for loneliness and social anxiety, which are explored below).

causes SMD, outlined two potential explanations: an individual might seek on-line refuge on account of depression; alternatively, on-line abstinence might trigger depression. Studies, though, appear to contradict one another regarding the direction of causality (Wang *et al.*, 2018; Kircaburun *et al.*, 2019). Although empirical analyses have suggested a positive relationship between the variables, Andreassen *et al.* (2016) offered a contrary perspective when they saw that depression often entails some form of social withdrawal, which might explain why depressed individuals might use social media *less* often. In other words, depressed individuals would be less likely to actively engage in social situations *per se*, which might explain why they would be less likely to engage with social media as it is an inherently social interaction forum.

#### **2.3.4. Loneliness**

This sub-section reviews the literature regarding loneliness's empirically supported associations with self-esteem and SMD.

The suggestion is that few adolescents avoid the trauma of loneliness (Brage, Meredith, & Woodward, 1993). Recognizing that most people experience loneliness at one time or another, Qualter *et al.*'s (2015) analysis showed that loneliness is often transient in nature. Appreciating that loneliness is an emotionally unpleasant condition arising from inadequate social relationships (Shevlin *et al.*, 2013), Hawkey and Cacioppo (2010) showed that loneliness is a common experience in those aged under 18 years. International prevalence rates of adolescent loneliness, though, tend to vary from one study to the next with estimates ranging 2.3% to 34.1% according to country surveyed (Pengpid & Peltzer, 2020; Favotto *et al.*, 2019; Sauter, Kim, & Jacobsen, 2019; Vancampfort *et al.*, 2019; Yang, Petersen, & Qualter, 2020).

Despite loneliness in itself being non-pathological and generally normative in that many people experience the sensation at one time or another (Asher & Paquette, 2003), the experience of loneliness does, nonetheless, markedly impact sufferers' lives; for instance, chronically lonely people likely experience high negative affectivity, appear more socially withdrawn, demonstrate a lack of trust in others, perceive a loss of influence regarding success or failure outcomes, and generally appear less satisfied with their relationships compared to non-lonely people (Ernst & Cacioppo, 1999). Loneliness has also been linked with an array of negative health-related and behavioural outcomes such as drug abuse, alcoholism, depressive symptoms during childhood and adolescence,

anxiety, suicidal ideation, increased risk of physical health issues, somatic symptoms such as headaches, disliking of school, increased odds of dropping out of school, social anxiety, reduced self-esteem, feelings of incompetence and worthlessness, and emotional and behavioural problems (Brage, Meredith, & Woodward, 1993; Vanhalst, Luyckx, van Petegem, & Soenens, 2018; Vancampfort *et al.*, 2019; Engels *et al.*, 2019; Rosenberg, 1965; Sauter, Kim, & Jacobsen, 2019; Maes *et al.*, 2019a; Gokmen, 2020).

Various causal explanations have been suggested for the onset of child and adolescent loneliness such as interparental conflict, decreased family cohesion, genetic and environmental factors, parent-child relational problems, over-committed and over-protective parents, incessant exposure to ridicule and humiliation, social instability (e.g., changing school), prolonged periods of self-inflicted isolation, and boredom (Johnson, LaVoie, & Mahoney, 2001; de Minzi & Sacchi, 2004; Moore & Schultz, Jr., 1983). For the impressionable adolescent, the quality of friendships becomes more salient (Qualter *et al.*, 2015) with the maturing individual desiring close friendships that are marked by validation, understanding, empathy, and self-disclosure. An added source of adolescent loneliness pertains to peer group acceptance and approval (Qualter *et al.*, 2015; Vanhalst, Luyckx, Goosens, 2014). Extending the peer group acceptance concept, Gallardo, Martin-Albo, and Barrasa (2018) suggested a significant relationship between peer group rejection and loneliness. Baumeister and Leary (1995) showed that humans have a basic need to belong. Empirical analyses have suggested a positive association between social belongingness and self-esteem (Baumeister, Dori, & Hastings, 1998; Gailliot & Baumeister, 2007; Verhagen, Lodder, & Baumeister, 2018; Blackhart *et al.*, 2009).

Pursuing the *self-esteem* theme, the literature suggests a negative association between loneliness and self-esteem; for instance, upholding the negative association, Lyyra *et al.* (2021: 9) stated, “Low self-esteem may be a direct reflection of the experience of loneliness and an [individual’s] dissatisfaction with their social life may be linked to broader dissatisfaction resulting in lower self-esteem”. Expanding upon Lyyra *et al.* (2021), Geukens *et al.* (2022) suggested an individual with low self-esteem is less likely to take steps to reconnect with other people thereby promoting greater loneliness over time; as a result, as self-esteem decreases over time, loneliness tends to increase. The negative association between the variables has received empirical support (McWhirter, 1997; McWhirter, Besett-Alesch, Horibata, & Gat, 2002; Karababa, 2021a). Affirming

the negative association, Dhal, Bhatia, Sharma, and Gupta (2007) suggested low self-esteem individuals would likely feel rejected by others as well as disapproving of others; also, such individuals would likely experience diminished levels of self-confidence and poorly refined social skills, which impede their ability to form and maintain social relationships. The negative association has been demonstrated within an array of contexts such as bullying, obesity, paraplegia, schizophrenia, and cyberbullying, amongst others (Tritt & Duncan, 1997; Strauss, 2000; Tzonichaki & Kleftras, 2002; Shioda, Tadaka, & Okochi, 2016; Varghese & Pistole, 2017).

Showing an inverse relationship between self-esteem and loneliness, Rosenberg and Owens (2001) said that loneliness is often a painful consequence for individuals experiencing low levels of self-esteem. The pain, the authors suggest, is attributed to the low self-esteem individual's belief that he or she stands alone amidst a hostile and unforgiving world despite wanting the company of others. The authors contend the pervasive sensation of loneliness experienced by low self-esteem individuals is due to three contributory deficiencies: the majority of people retain a strong need to feel that they belong and are a part of something – people experiencing low self-esteem merely feel left out; the sensation of loneliness is amplified by the low self-esteem individual's belief that no one else is capable of understanding his inner torments and conflicts; and low self-esteem individuals experience a more acute version of loneliness as they have no one to confide with. Implicitly extending Rosenberg and Owens' (2001) assertion that loneliness is often a consequence of low self-esteem, Vanhalst *et al.*'s (2013) two-part longitudinal study, which incorporated adolescents located within the Netherlands and Belgium, suggested a bi-directional negative relationship between self-esteem and loneliness.

The association between social media *usage* and loneliness has received considerable attention in the literature. Skues, Williams, and Wise (2012) saw an interesting paradox: bivariate analysis suggested a negative association between the number of Facebook friends and level of loneliness, which is a finding obtained by Lemieux, Lajoie, and Trainor (2013); conversely, regression analysis suggested that individuals reporting higher loneliness also reported having a greater number of Facebook friends. Explaining the paradox, Skues *et al.* (2012) suggested the positive association might be attributed to lonely individuals' desire to access on-line friendships in order to compensate for the

small number of friends in the off-line world. In contrast with the empirically supported negative association between SMD and loneliness, which is discussed below, empirical analyses have generally failed to establish an association between social media *usage per se* and loneliness (Aarts, Peek, & Wouters, 2015; Brusilovskiy, Townley, Snethen, & Salzer, 2016; Dienlin, Masur, & Trepte, 2017; Berryman, Ferguson, & Negy, 2018).

Empirical research has predominantly indicated a positive correlation between *SMD* and loneliness (e.g., Shettar *et al.*, 2017; Martila, Koivula, & Rasanen, 2021; van den Eijnden, Lemmens, & Valkenburg, 2016; de Cock *et al.*, 2014; Blachnio, Przepiorka, Boruch, & Balakier, 2016). The suggestion (Teppers, Luyckx, Klimstra, & Goosens, 2014) is that use of Facebook differentially affects loneliness; for instance, it was seen that where an individual uses Facebook for social skills compensation, the individual's level of peer-related loneliness increased over time. Related to the social skills deficit hypothesis, Rajesh and Rangaiah (2020) indicated that lonely people using Facebook may be trying to compensate for their deficient off-line social skills. Additionally, there is a suggestion that lonely people are more likely to make use of the Internet as a means of obtaining emotional support compared to less lonely individuals (Morahan-Martin & Schumacher, 2003), which might partially explain the positive association between SMD and loneliness. Relatedly, Ryan *et al.* (2014: 145) elaborated upon the support-oriented explanation for the positive association between both variables: "... in regard to Facebook addiction... individuals with low psychosocial wellbeing such as loneliness... are motivated to use Facebook to find social support or to pass time. The lift in mood that this provides (also known as mood alteration) leads to deficient self-regulation, possibly due to negative reinforcement". Suggesting a vicious circle whereby psychosocial distress (for instance, loneliness) and deficient self-regulation reinforce one another, thereby worsening the situation, Caplan (2003) proposed that individuals experiencing various forms of psychosocial distress are more likely to prefer on-line communication compared to off-line, face-to-face communication as they perceive the on-line setting less threatening and more rewarding. However, Caplan (2003: 638) suggests that people expressing a preference for on-line social interaction will likely, "engage in compulsive and excessive use of some synchronous CMC [computer-mediated communication] applications to the point that they suffer negative outcomes" that serve to escalate extant psychosocial problems. Approaching the positive association between the variables from an alternative perspective, Blachnio and Przepiorka (2019) proposed that people who



have many friends are probably open to social contacts and happily engage in Facebook communications. However, it is conceivable that a proportion of these Facebook users slowly come to disregard their off-line friendships in favour of on-line friendships, thereby opening themselves up to feelings of increasing loneliness (Blachnio & Przepiorka, 2019). Sounding a cautionary note, Boursier, Gioia, and Schimmenti (2020) saw that in the medium- to long-term, on-line social interactions could never wholly replace off-line social interactions in reducing individuals' feelings of loneliness. Indeed, the latter authors note, on-line social interactions would likely only improve well-being, social belongingness, and the quality of the social interaction provided they are deployed in tandem with off-line social interactional experiences.

Despite the majority of studies showing a positive association between SMD and loneliness, a minority of contrary associations have also been obtained; for instance, in failing to find an association between SMD and loneliness, Karakose *et al.* (2016) suggested use of Facebook facilitated contact with friends, family, and others, which tended to make the users feel happy and prevent the feeling of loneliness developing. Studies elsewhere have also failed to establish to a positive association between SMD and loneliness (e.g., Kircaburun *et al.*, 2018; Rachubinska, Cybulska, & Grochans, 2021; Baltaci, 2019).

### **2.3.5. Social Anxiety**

This sub-section reviews the literature regarding social anxiety's empirically supported associations with self-esteem and SMD.

With respect to adolescent social anxiety, Canals *et al.* (2019) suggested an overall prevalence of 4.0%, with females showing a higher prevalence rate (5.5% versus 2.4%). Indicating that it is not uncommon for a large number of people to experience social anxiety – especially amongst people with shy and inhibited personalities, Pickering, Hadwin, and Kovshoff's (2020) meta-analysis, which assessed twenty-four articles referencing the 8-19-year-old age group, suggested social anxiety sensations are usually temporary with minimal impact upon daily life. However, the latter authors caution that whenever social anxiety symptoms endure over a period of time, a diagnosis of Social Anxiety Disorder [SAD] cannot be ruled out.

Numerous risk factors have been implicated in the development of social anxiety (Pickering, Hadwin, & Kovshoff, 2020), such as peer acceptance (Greco & Morris, 2005). The latter authors proposed that overt expressions of social anxiety (e.g., avoidance and withdrawal behaviour) would likely impede the development of age requisite social skills due to a lack of peer interaction. The net consequence of reduced social interaction, Greco and Morris (2005) contended, would portray within peers' minds the image of someone behaving in an awkward and somewhat off-putting manner. Concomitantly, peers' later negative reactions to the individual's off-putting behaviour merely reinforces the individual's avoidance behaviour and concerns regarding social evaluation. Thus, a vicious circle is set in motion. The negative association between peer acceptance and social anxiety has received empirical support (Tillfors *et al.*, 2012; Erath, Flanagan, & Bierman, 2007; La Greca & Lopez, 1998; Ginsburg, La Greca, & Silverman, 1998; Early *et al.*, 2017). However, Chiu, Clark, and Leigh (2021) did not prove an association between peer acceptance and social anxiety. Relatedly, research has also suggested a negative relationship between social anxiety and social group membership (Carron *et al.*, 1999; Haslam *et al.*, 2019). Although this has yet to be studied, this raises the interesting question of whether FLWs' association with fellow FLWs reduces levels of social anxiety in that FLWs enjoy, for instance, greater peer acceptance?

Correlates of social anxiety have accommodated peer-related victimization, friendship quality, perceived social acceptance, social rejection, lower levels of peer support, negative interactions with best friends, school-related stress, traits such as having non-acceptance of emotions, experience of loneliness, parental over-control, and family satisfaction (Storch & Masia-Warner, 2004; Festa & Ginsburg, 2011; Inderbitzen, Walters, & Bukowski, 1997; La Greca & Lopez, 1998; La Greca & Harrison, 2005; Chiu, Clark, & Leigh, 2021; Stojiljkovic & Stankovic, 2018; Zhu, Huebner, & Tian, 2019; Weymouth *et al.*, 2019; Singh *et al.*, 2020; Maes *et al.*, 2019b).

Extending the empirically supported association between social anxiety and internalizing problems referenced above, irrespective of the *self-esteem* measure used, analyses predominantly suggest a negative association between social anxiety and self-esteem (de Jong *et al.*, 2012; Obeid *et al.*, 2013; McCarroll *et al.*, 2009; Iancu, Bodner, & Ben-Zion, 2015; Fatima, Niaza, & Ghavas, 2017; Murad, 2020; Jiang & Ngien, 2020; Ahmad *et al.* 2013). Although de Jong (2002) did not obtain unequivocal support for the

negative association, the author, nonetheless, offered a potential explanation for such an association persisting. Referencing a dysfunctional cognitive process, de Jong's (2002) review showed that socially anxious individuals demonstrated a greater frequency of reporting negative self-statements and negative self-evaluative cognitions. Further, the latter author showed that socially anxious individuals experience cognitive distortion in the sense that they are overly self-critical, which ultimately negatively impacted their levels of self-esteem, and this assertion has received empirical support (de Jong *et al.*, 2012; Ritter *et al.*, 2013). Reiterating the negative association between social anxiety and self-esteem, Ginsburg, La Greca, and Silverman (1998) showed socially anxious adolescents believe they are less socially accepted and report lower levels of global self-esteem. Fatima, Niaza, and Ghavas (2017) proposed that low self-esteem individuals showed a lack of confidence, uncertainty, and endured negative feelings, which resulted in social avoidance behaviour and general social disconnectedness, all of which increased the risk of social anxiety. Thus, according to Fatima, Niaza, and Ghavas (2017), social connectedness fully mediated the relationship between self-esteem and social anxiety.

Although previous studies' findings are inconclusive (Erliksson, Lindner, & Mortberg, 2020; Prizant-Passal, Shechner, & Aderka, 2016), numerous studies have suggested that individuals experiencing social anxiety are more likely to engage in frequent and passive *usage* of social media (e.g., O'Day & Heimberg, 2021; Shaw *et al.*, 2015; Scott *et al.*, 2018; Cheng *et al.*, 2019; Erliksson, Lindner, & Mortberg, 2020), and there is a suggestion that socially anxious individuals prefer on-line interactions over face-to-face interactions (Caplan, 2007; Prizant-Passal, Shechner, & Aderka, 2016). The 'passive' use of social media would likely appeal to a socially anxious user as it implies reduced *active* interaction with another on-line user, which is something the socially anxious person with reduced self-esteem would wish to avoid since direct social interaction conceivably triggers negative cognitions; accordingly, *passive* engagement with social media might be construed as social avoidance behaviour (Fatima, Niaza, & Ghavas, 2017). Acknowledging that face-to-face social interactions might trigger elevated levels of anxiety within socially anxious individuals (Frost & Rickwood, 2017), use of social media might be considered a coping mechanism that allows them to take part in social interactions free of the anxiety-inducing components experienced in face-to-face interactions (Clark, 2005; Honnekeri *et al.*, 2017; Fernandez, Levinson, & Rodebaugh, 2012; Frost & Rickwood, 2017; McCord, Rodebaugh, & Levinson, 2014; O'Day &

Heimberg, 2021). Amplifying extant research, Erwin *et al.* (2004: 630) suggest that “For socially anxious individuals, communicating with others on the Internet in a text-based manner (i.e., email, chat rooms, instant messaging) may allow them to avoid aspects of social situations they fear (e.g., blushing, stammering, others’ reactions to perceived physical or social shortcomings) while at the same time to partially meet their needs for interpersonal contact and relationships”. In addition to avoiding the apprehensions associated with face-to-face social interactions, compensatory use of social media might also reduce feelings of loneliness (Sheldon, 2008). Shaw *et al.* (2015) noted that privacy settings allow users (including socially anxious individuals) to control the quantity and quality of content they share with other on-line users. Accordingly, users are able to control their level of self-presentation without having to directly interact with others.

Simultaneously referencing and extending Shaw *et al.*’s (2015) self-presentation reference, above, Harman *et al.* (2005) suggested that children who indulged in on-line faking behaviour (e.g., pretending to be older) retained diminished social skills, lower levels of self-esteem, and elevated levels of social anxiety. Directly addressing the association between social anxiety and self-presentation, Leary (2010) noted that people endure social anxiety experiences before or during social interactions when they desire to impart a certain impression upon recipients but doubt their ability to do so, and that the likelihood and intensity of social anxiety will likely increase as their motivation to make a particular impression and belief they can do so rise and fall, respectively. Michikyan (2020) noted how highly socially anxious emerging adults (aged 18-29 years) confessed using an inauthentic, false ‘Self’ on Facebook with the intention of minimizing others’ negative evaluations, avoiding social rejection, and maintaining social acceptance and support. Whilst socially anxious individuals might feel more comfortable communicating on-line and use the Internet forum as an arena for self-disclosure, this form of behaviour might prove detrimental regarding well-being (Weidman *et al.*, 2012).

Whilst there persists a degree of uncertainty regarding the oft-proposed association between social anxiety and frequency of social media usage, there is less ambiguity with respect to the empirically supported positive association between social anxiety and *SMD* (e.g., Lee-Won, Herzog, & Park, 2015; Bodroza & Jovanovic, 2016; Yildiz Durak & Seferoglu, 2019; Necula, 2020; Kadavala *et al.*, 2021; Baltaci, 2019; Zsido *et al.*, 2021; Lyvers *et al.*, 2022). Except for one of the reviewed papers, Dobrean and Pasarelu’s (2016) meta-analysis suggested a significant positive association between the variables –

a conclusion that was affirmed by O'Day and Heimberg's (2021) meta-analysis, also. Attempts to explain the empirically supported positive association between the variables have, to a certain extent, replicated some of the arguments used to explain an association between social anxiety and social media usage *per se*, the more prominent of which having been identified, above (e.g., Caplan, 2007); for instance, suggesting social interaction anxiety significantly predicted Facebook dependency, Lee (2015) echoed predecessors' analyses by suggesting the more highly anxious individuals might feel more comfortable interacting via social media compared to face-to-face. From an evaluative perspective whereby the socially anxious individual fears his self-image might be negatively critiqued by others, which is one of the central components of social anxiety (e.g., Rapee & Heimberg, 1997), the afflicted individual – motivated to avoid negative evaluations - might demonstrate a preference for on-line social interaction (Caplan, 2007; Prizant-Passal, Shechner, & Aderka, 2016; Yildiz Durak & Seferoglu, 2019), which might be perceived as being more comfortable (Lee, 2015) and less judgmental (Necula, 2020). Chen, Li, Zhang, and Liu (2019) suggested also that a desire to connect with others, which is something they feel unable to achieve during uncomfortable face-to-face interactions, might also motivate anxious users to engage in more frequent use of social media applications – a behavioural pattern that increases the risk of SMD. Zsido *et al.*'s (2021: 1) analysis suggested individuals' "maladaptive emotion regulation strategies (rumination, catastrophizing, self-blame and other blame) mediated the relationship between social anxiety and... problematic SNS use".

## **2.4. The Welsh Language**

The aim of this sub-section is to review the vitality of the Welsh language. Thereafter, Welsh-speakers' social identification aspects are considered. The review goes on to examine the Welsh language with respect to each of the deployed variables, which have been explored above (i.e., SMD, self-esteem, depression, loneliness, and social anxiety).

### **2.4.1. Ethnolinguistic Vitality**

Paradoxically, a State-sponsored nineteenth century act of suppression provides a hint regarding Wales' unique linguistic and social identity within the broader context of the British socio-political landscape (Thomas, 1977). The Education Act of 1870 compelled Welsh primary schools to educate their children in English only, and this was ruthlessly

enforced: any child overheard speaking Welsh was forced to wear a wooden placard around his/her neck inscribed with the letters “W.N.”, which stood for “Welsh Not” (Edwards, 2005; Khleif, 1976; Madoc-Jones & Buchanan, 2004). The placard was a visible reminder of the language’s reduced status. Implicitly, the practice of “W.N.” suggested a division between the minority (Welsh) and majority (English) languages and their primary speakers, which indicated the Welsh language was inferior to the English language. This raises an important question regarding the strength of the Welsh language within the present socio-linguistic landscape. In this respect, the ensuing sub-section provides a contemporary analysis of the Welsh language’s vitality.

Appearing as a concept over forty years ago (Bourhis, Sachdev, Ehala, & Giles, 2019), *ethnolinguistic vitality* [EV] explores how minority linguistic communities maintain their vitality within majority linguistic settings. Giles, Bourhis, and Taylor (1977: 308) showed the vitality of an ethnolinguistic group determined the extent to which the group acted “as a distinctive and collective entity in inter-group situations”. Kuipers-Zandberg and Kircher (2020: 4) saw how a minority group’s EV “constitutes a good indicator of how likely that group is to survive as a distinctive entity within a particular contact situation”. Giles, Bourhis, and Taylor (1977) saw an ominous correlation: where an ethnolinguistic minority has little or no vitality, the group would likely cease to exist as a distinctive entity; *vice versa*. With only 28.5% of the population retaining an ability to speak Welsh (Welsh Government, 2021a), Welsh-speakers form a minority within their own country.

To figure out the strength of vitality enjoyed by a minority language group such as Welsh-speakers, vitality analyses reference an array of objective and subjective indicators (Giles, Bourhis, & Taylor, 1977; Harwood, Giles, & Bourhis, 1994; Bourhis & Landry, 2012; Smith, Ehala, & Giles, 2017). Three factors primarily make up objective vitality (Giles, Bourhis, & Taylor, 1977): *demographics*; *institutional support*; and *status*.

*Demographic* factors reference the absolute number and distribution of members within a group, with a greater number suggesting greater vitality (Giles, Bourhis, & Taylor, 1977). Approximately just over one-quarter of the Welsh population expressed an ability to communicate in Welsh (Welsh Government, 2021a), and the Welsh Government’s intention is to have one million Welsh-speakers by 2050 (Welsh Government, 2017). However, 2011 Census data (ONS, 2011) shows an unequal

geographic distribution of Welsh-speakers, who are primarily concentrated in the northern and western areas of Wales.

Giles, Bourhis, and Taylor's (1977) observation that a separation of language speakers effectively weakens the vitality of the language community might also apply to Wales since Welsh-speakers are becoming detached from one another (Welsh Government, 2012). Another demographic-related threat to the Welsh language's vitality is the inward migration of non-Welsh speakers into Welsh-speaking heartlands such as Ynys Môn (Williams, 2021). In addition to inward migration, traditional Welsh-speaking strongholds such as the rural areas of Mid, West, and North Wales are seeing Welsh-speakers move to areas considered less strong regarding the demographic vitality of the Welsh language such as Monmouthshire (Miller, 2013). Briefly returning to the geographic location of Welsh-speakers (i.e., Mid, West, and North Wales, which are referenced above), Jones' (2019) geographic approach to the distribution of Welsh-speakers within Wales – using an array of cartographical techniques - suggested that the geographic distribution of Welsh-speakers might vary according to method of study; for instance, map analyses based on the *percentage* of Welsh-speakers paints a different picture to map analyses based on the *absolute number* of Welsh-speakers. Jones' (2019) analysis considered the distribution of Welsh-speakers beyond the strict geographic sense, also, when he indicated the use of Welsh on Twitter originated from an array of countries such as Iceland, Bolivia, and the Korean peninsula. Accordingly, to pin down the use of the Welsh language to accommodate specific geographic regions alone without reference to the digital domain clearly distorts the overall picture showing where Welsh-speakers use Welsh. As posited by Jones (2019), acknowledging the identification of Welsh-speaking locations must necessarily accommodate the digital domain, in this sense, the Welsh language might be considered a global language and is no longer confined to select geographic regions. However, geographic considerations aside, great effort is being made to revitalize the Welsh language; for instance, the Welsh Government's stated objective is to have one million Welsh-speakers by 2050 (Welsh Government, 2017). Potentially countering the Welsh Government's 2050 objective, though, the most recent Census data indicates that in 2021 there were an estimated 538,000 Welsh residents aged three years and over (17.8%) reporting an ability to speak Welsh, which is a decrease since 2011 when 562,000 (19.0%) indicated an ability to speak Welsh (ONS, 2022). Demonstrating their concern for the future of the Welsh language, Cymdeithas yr Iaith "Protestors left

seven demands on the windows of the Welsh government offices in Carmarthen” on Saturday 14<sup>th</sup> January 2023 (BBC, 2023). Sioned Elin, of Cymdeithas yr Iaith, said, “If we don’t succeed in turning the tide now, it is unlikely that there will be any natural Welsh-speaking communities left in Carmarthenshire by the next Census. But it is certainly not a time to despair, it is a time to act. We will make seven demands on the Welsh government as the basis for an emergency plan of active steps to revive our Welsh language and communities” (BBC, 2023). Despite an earnest intention to revitalize the language, the unequal geographic distribution of Welsh-speakers (see above paragraph) does, however, remain a key issue. Harwood, Giles, and Bourhis (1994) suggest demographic factors are conceivably the most important asset of an ethnolinguistic minority group since the absolute number of group members can be deployed as a legitimizing weapon to empower minority groups with greater *institutional* control, which is the next aspect to be considered.

*Institutional* control factors reference the extent to which ethnolinguistic groups have reached both formal and informal representation at the community, regional, and national levels. *Informal* control references the extent to which a minority group has organized its members as a pressure group, e.g., the Welsh Language Society (Cymdeithas yr Iaith Gymraeg, 2021) effectively prevented traffic entering and leaving Aberystwyth during the 1963 Trefechan Bridge protest. *Formal* control references the extent to which an ethnolinguistic minority group has reached positions of power within, for instance, regional and governmental offices, industry, media, religious, and cultural institutions (Harwood, Giles, & Bourhis, 1994; Giles, Bourhis, & Taylor, 1977). The Welsh language enjoys support within the Welsh Government (Welsh Government, 2021b), whereby Welsh language standards, legislation, and action plans are documented; for instance, Hodges (2021) noted that the Welsh Language (Wales) Measure 2011 encourages usage of Welsh within public sector organizations and private sector companies providing key services such as gas, electricity, and telephony. Royles and Lewis’ (2019: 10) post-devolution analysis summarized the key institutional developments 1999-2015: “First, the Welsh Language (Wales) Measure 2011 accorded the [Welsh] language official status in Wales for the first time, led to the abolition of the Welsh Language Board and the establishment of the post of Welsh Language Commissioner. Second, three national language strategies established the Welsh Government’s plans to maintain and grow the Welsh language...” Royles and Lewis (2019: 11) emphasized the important role played by



Plaid Cymru: “The party system was important in instigating a substantial amount of Welsh language policy activity, particularly during devolution’s first term (1999-2003). Labour’s minority administration enabled Plaid Cymru to use its political influence to ensure plenary debate on the prospects of the Welsh language,” with the Welsh Labour-Plaid Cymru ‘pact’ comprising a cornerstone of the ‘One Wales’ agreement (Wheeler, 2018). The net consequence was the passing of a motion that “committed the Assembly to the ambitious objective of ‘creating a bilingual Wales’ and to committee-led policy reviews” (Royles & Lewis, 2019: 11). As Royles and Lewis (2019) observed, Plaid Cymru played a central role during the Assembly’s first term in office whereby they influenced the direction of language policy, with prominent elected Plaid Cymru members such as Cynog Dafis occupying key party and Assembly roles that ensured Welsh language policy remained a key political priority. Beyond the shores of the UK, Royles and Lewis (2019) observed how Welsh language policy and direction might be influenced by continental and global institutional structures; for instance, the Network to Promote Linguistic Diversity (established 2007) informs Wales’ policy-making. In real terms, the Welsh Language (Wales) Measure 2011 means the Welsh language should be treated in the same way as English (Wheeler, 2018). Indicating linguistic parity in principle, Wheeler (2018) noted that the National Assembly for Wales (Official Languages) Act 2012 declared the then National Assembly for Wales should have two languages (Welsh and English), and that both languages should receive equal treatment, with the Welsh Government’s (2022b) website declaring: “The Welsh Language (Wales) Measure 2011 makes Welsh an official language in Wales. This means it must be treated no less favourably than English.” Plaid Cymru (Plaid Cymru, 2021a) is represented within both the Senedd (Plaid Cymru, 2021b) and the House of Commons (UK Parliament, 2021). Beyond the political arena, the Welsh language is represented within the mass media, journalism, the ‘arts’, all sectors of education, the NHS, and theology (BBC Cymru, 2021; S4C 2021; Golwg 360, 2021; Y Dinesydd, 2021; Y Cymro, 2021; Arts Council of Wales, 2021; National Eisteddfod, 2021; Urdd, 2021; Welsh Government, 2021c; Prifysgol Abertawe, 2020; Prifysgol Caerdydd, 2020; Iechyd yng Nghymru, 2020; Yr Eglwys yng Nghymru, 2021). Evidence suggesting Welsh-English linguistic parity within the private sector, however, is rather more sporadic (Welsh Government, 2020b; Bangor University, 2011), and this is discussed below.

Use of Welsh within the private sector is an interesting and contentious issue, which was demonstrated by a petition to the Senedd (Senedd Cymru, 2016) that attracted 442 signatures. Petitioning for greater opportunity to use Welsh within the private sector, the petition stated: “We call upon the National Assembly to insist that the Welsh Government ensures that all private and voluntary sectors that come within the scope of the Welsh Language Measure 2011 offer enhanced Welsh-language services by collaborating with the Welsh Language Commissioner to introduce regulations to the National Assembly prior to the 2016 Assembly election or at the earliest opportunity.” The petition indicated that hundreds of thousands of people within Wales are being denied Welsh language services by a considerable number of private sector organizations. The BBC (2018) indicated that “Water, energy and bus companies will not be forced to provide services in Welsh after plans were put on hold.” Despite these apparent setbacks, are there indications that pro-Welsh language policies and practices are being taken up by the private sector? Facilitating greater Welsh usage within the private sector, the on-line website *Helo Blod* invites businesses to send in text for Welsh translation to be used in their businesses (Welsh Government, 2022c). Encouragingly, there are examples where organizations are making concerted efforts to use Welsh (Ellen, 2019): Dŵr Cymru’s (2022) bilingual website offers services to customers in both Welsh and English; Tesco *Cymru* provides a Welsh Twitter account *Tesco Newyddion Cymru* (Tesco, 2022); and, within the legal sector, JCP Solicitors (located throughout south and west Wales) indicates that 20% of its staff speak Welsh (JCP Solicitors, 2022). A random Google search of some prominent multi-national organizations with a strong Welsh-based presence also reveals significant Welsh language usage *omissions*: Boots’ on-line website does not provide an option to make contact using Welsh (Boots, 2022); similarly, Sainsbury’s contact page (Sainsbury’s, 2022). Regarding Welsh language provision in the financial sector, the *Statutory Review of the Welsh Language Services of High Street Banks in Wales* (Welsh Language Commissioner, 2015b: 9) stated, “... there appear to be fewer opportunities for customers to use the Welsh language when dealing with their banks”, with the review providing an obvious economic incentive for businesses to incorporate Welsh within their business models: “Customers are favouring companies and charities that show respect towards Welsh culture and community, and show an understanding of how to operate in a country where the Welsh language has official status.” Despite the criticisms raised within the review, the financial sector has made concerted attempts to accommodate the Welsh language; for instance, Lloyds Bank’s

(2022) *Welsh Language Policy* states the bank has actively accommodated the Welsh language regarding Welsh-speaking staff, telephony and correspondence, translation services, branch signage, promotional material, Cashpoint® machine and immediate deposit machine facilities, and cheque books and paying-in books. Notwithstanding those organizations trying to incorporate the Welsh language within their policy and practice, the *correct* usage of Welsh remains an issue (Ellen, 2019). However, as Ellen (2019) noted in her interview with a Plaid Cymru Councilor based in Wrexham, incorrect adoption of the Welsh language appears to be nothing more than a token gesture, which is reputation damaging for those businesses making these mistakes. Implying a lack of respect for the Welsh language, Ellen (2019) suggested that many private sector organizations do not value the Welsh language sufficiently to invest money into hiring professional Welsh-language translation services.

Signs of a Welsh language revitalization are encouraging, and this was noted by Hodges (2021) who acknowledged that the creation of new Welsh-speakers and immersion education form an important part of the Welsh Government's Welsh language revitalization strategy. Despite the signs of encouragement and the immersive approach to education, Hodges (2021), nonetheless, observed a couple of issues: first, there is limited linguistic progression between the primary, secondary, further, and higher education sectors in Wales; and second, at the university level, few students study their respective courses through the Welsh medium, which ultimately impacts the sustainability of a truly bilingual workforce.

Ethnolinguistic minority groups that have reached a degree of institutional control are likely to enjoy enhanced *social status* (Harwood, Giles, & Bourhis, 1994), and this has been suggested by the European Commission (EURYDICE, 2020) with respect to the Welsh language. The suggestion is that there is a positive association between a minority language group's status factor (i.e., social prestige, socio-historic status, and status of its language and culture) and the group's collective vitality (Harwood, Giles, & Bourhis, 1994; Giles, Bourhis, & Taylor, 1977). Contrasting Wales' socio-historic fortunes with England's, Giles, Bourhis, and Taylor (1977) suggested Wales' history has been scarred by numerous symbols of linguistic oppression and very few symbols espousing glory. The latter authors note, though, that linguistic oppression can sometimes mobilize and solidify an oppressed group, which enhances the group's vitality.

Viewed from a State control perspective, Bourhis and Landry's (2012) *Continuum of Language Planning Ideologies Towards Linguistic Minorities* model demonstrates the extent to which States tolerate and accommodate ethnolinguistic minorities. As depicted by Figure 1, there are primarily four ideological approaches States might adopt regarding their degree of ethnolinguistic minority group tolerance, and these are arranged along a continuum from total acceptance (Pluralism Ideology) to complete intolerance (Ethnist Ideology).

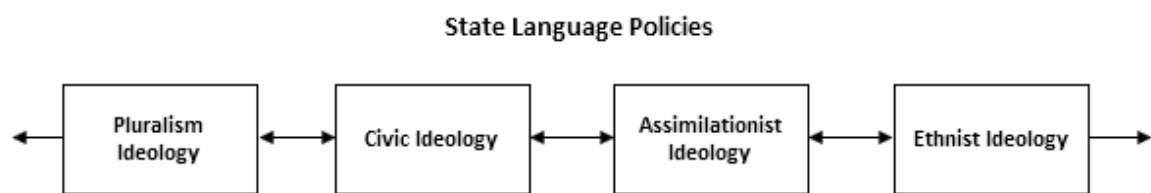


Figure 1. *Continuum of Language Planning Ideologies*. After Bourhis & Landry, 2012

State-sponsored language policies will affect the objective vitality of minority and majority languages in significant ways (Bourhis, Sachdev, Ehala, & Giles, 2019). The above model is a fluid model, which means State decision-makers are at liberty to move from one ideology to another. Pluralistic ideological policies infer that the dominant language group approves of linguistic minority groups keeping the salient characteristics of their culture and language. Reflecting upon the Welsh Government's pro-Welsh language philosophy (detailed above), it is likely the Pluralistic Ideology best describes the Welsh scenario. Certainly, the increasingly intolerant ideologies of Civic Ideology (i.e., no State support for the minority language group), Assimilationist Ideology (i.e., abandonment of the minority language in favour of the majority language), and Ethnist Ideology (i.e., zero recognition of the minority language and its speakers) appear too totalitarian in scope and application.

Acknowledging that just over one-quarter of Wales' population showed an ability to speak Welsh and that a smaller percentage did so daily (Welsh Government, 2021a; Welsh Government, 2019a), it would appear that Crystal's (2000) assimilationist philosophy – which is not the same thing as *Assimilationist Ideology* in Figure 1 - holds

with respect to Welsh-speakers. Asserting that language loss is a threat to cultural identity, Crystal (2000) suggested that approximately 10% of the world's 6,000 languages might be considered safe from the threat of extinction. According to Bourhis and Landry's (2012) *Wellness Model*, the Welsh language's state of linguistic health might be considered stable but problematic, which suggests medium-low demographic vitality and medium-high institutional support. However, acknowledging the Welsh Government's actively pro-Welsh language agenda post-devolution in 1999 (Royles & Lewis, 2019), it is probable the Welsh situation has since improved.

Prior to examining social identity mechanisms, it is important to see how variations within the Welsh language itself suggest the existence of more than one Welsh language. Dialectical variation in a given language implicitly suggests the existence of more than a single language and this was seen with respect to Welsh (Crystal, 2000). According to the pedagogical model *Cymraeg Byw*, the Welsh language might also be differentiated according to 'old' Welsh, 'Bible' Welsh, 'literary' Welsh, 'modern standard' Welsh, and 'normalized' Welsh (Crystal, 2000). Accordingly, a language (and its linguistic variations) shall continue to survive so long as there are people able to communicate in that language and its dialectical variants (Crystal, 2000). Thus, any attempt to formulate an overarching definition of the Welsh language would need to accommodate the variations noted above.

#### **2.4.2. Social Identity**

Operating from the *social identity* perspective, the essential principle relating to group membership is that individuals define themselves as belonging to specific groups and are defined by others as belonging to those groups (Tajfel & Turner, 1979). The term 'group' might be defined (Tajfel & Turner, 1979: 40), "as a collection of individuals who perceive themselves to be members of the same social category, share some emotional involvement in the common definition of themselves, and achieve some degree of social consensus about the evaluation of their group and their membership of it". Stets and Burke (2000: 22) added, "Through a comparison process, persons who are like the self are categorized with the self and are labeled the in-group; persons who differ are categorized the out-group".

Stets and Burke's (2000) reference to "self" is appropriate since Tajfel and Turner (1979) saw how the process of social categorization helps to create and define an individual's place within society, and, in this sense, social groups provide group members with an identification of themselves from a social perspective. The latter authors note that group identification in this context is essentially relational and comparative in nature since they define individuals as either similar to or different from individuals belonging to other groups. According to Tajfel and Turner (1979: 40), social identity includes "those aspects of an individual's self-image that derive from the social categories to which he perceives himself as belonging". This latter observation was supported by Hogg, Abrams, Otten, and Hinkle (2004: 249) who showed individuals "construct group norms from appropriate in-group members and in-group behaviours and internalize and enact these norms as part of their social identity". The latter authors showed how an individual's self-esteem grows whenever the individual simultaneously values his or her social identity and believes he or she belongs to a prestigious social group.

Accommodating the above authors' observations that an individual's social identity essentially absorbs and reflects the characteristics of the individual's in-group, Hendry, Mayer, and Kloep (2007) suggested the social identity of the contemporary Welsh adolescent is complex as its form is shaped by numerous sources such as family, friends, teachers, and the community. Indeed, implying an internalizing process, adolescents' prose suggested a sense of pride and belongingness regarding national culture. The latter authors noted how adolescents' identification with 'Wales' was tied in with their community.

That members of Welsh communities *feel* Welsh (i.e., the concept of being Welsh has become a part of the adolescents' sense of 'Self') has received empirical support (Hendry, Mayer, & Kloep, 2007; Jones, 2002). In identifying the main components of what it is to be 'Welsh', adolescents provided clichéd suggestions incorporating rugby, age-endured references to Anglo-Welsh rivalry, and overt symbolism espousing the daffodil, St. David, cultural festival days, and the red dragon flag (Hendry, Mayer, & Kloep, 2007). Notably, the Welsh language was considered a salient aspect of Welsh identity, which has received support (Tajfel and Turner, 1979; Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Amplifying the association between Welsh language and identity, Harries, Byren and Lymperopoulou (2014: 1) stated, "People who can speak Welsh are

more likely to report only a Welsh national identity (77%) than those who do not speak Welsh (53%)". However, despite the overall picture suggesting "a direct association between those who describe themselves as only Welsh and those who report they 'can speak Welsh'" (Harries, Byren, & Lymperopoulou, 2014: 3), the authors detected variation at the local authority level. Although Dabrowska (2017: 145) stated that Wales has not "totally abandoned its attachment to its former traditional homogenous identity based on culture, religions, or language", there is recognition that Welsh identity has become increasingly "diverse, fragmented, and multi-faceted". Acknowledging the salience of language with respect to an individual's identity, Mejía (2007) concluded that whilst language might not determine an individual's identity, it does, however, provide a way for the individual to express it.

Support for the Welsh language-cultural identity relationship was suggested following Coupland, Bishop, Evans, and Garrett's (2006) survey of 2,000 participants, which showed the most competent Welsh-speakers engaged most strongly with Welsh cultural life and retained the strongest affiliation with Wales. Recognition of the Welsh language's importance to Welsh identity has received support (Livingstone, Spears, Manstead, & Bruder, 2009; Livingstone, Manstead, Spears, & Bowen, 2011; Griffiths, 1994; Dabrowska, 2017; Iaith Pawb, 2003; Statistical Bulletin, 2018).

Social identities may be considered a part of an individual's 'Self' (e.g., Giles, Bourhis, & Taylor, 1977), and whenever an individual's social identity is threatened, the individual becomes motivated to defend his or her social identity (Livingstone, Manstead, Spears, & Bowen, 2011). The authors contend that minority group members assert certain criteria considered essential for continued membership of the group, and it is the specific criteria that enables group members to differentiate themselves from other out-groups. Acknowledging the linguistic distinction between first language and non-first language Welsh-speakers, Giles, Bourhis, and Taylor (1977; Johnson-Weiner 1998) noted how ethnic groups dissociate themselves from one another on the basis of language; for instance, Johnson-Weiner (1998) showed that Old Order Amish and Old Order Mennonites maintained their German language in order to resist the dominant society, which enabled them to hold on to their traditions. Within the political context of the United States, the Traditionalist Worker Party asserts its group's uniqueness by placing great emphasis upon the homogeneity of its members, "which it constructs around notions

of shared goals, language, territory and tradition” (Lorenzo-Dus & Nouri, 2020: 27). In this way, by upholding the unique aspects of the minority group, the group’s members are asserting the group’s identity. Thus, the group’s social identity informs the behaviour of its constituent members, and comparison with similar yet distinct out-groups threatens the group’s status by potentially eroding the group’s uniqueness (Tajfel & Turner, 1979; Gatbonton, Trofimovich, & Segalowitz, 2011). Gatbonton *et al.*’s review (2011) showed how members of a community moderated their behaviour by using a vowel to distinguish themselves from the influx of tourists visiting their home area, which allowed them to preserve their group’s identity. The latter authors also showed how a speaker’s accent might be used to demonstrate group identity, loyalty, and allegiance. The following passage illustrates the association between language and identity (Gann, 2004: 112): “Adolescents... are apt to treat language much as they do clothing, trying it on, deciding what fits their budding sense of identity and discarding what doesn’t fit.”

The implication arising from the previous paragraph is the concept of inter-group conflict. Tajfel (1982) saw that, via the process of categorization, within-group differences are minimized, while between-group differences are maximized. In-group members, Tajfel (1982) noted, were assumed to hold more similar beliefs compared to out-group members, and this principle has been suggested with respect to Welsh-speakers who showed similar pro-Welsh language beliefs (Statistical Bulletin, 2018). Tajfel (1982) noted that in-group members tend to view out-group members as a relatively undifferentiated whole, i.e., out-group members are no longer perceived as distinct individuals. This suggests the out-group has become dehumanized, which indicates stereotyping behaviour (Tajfel, 1982) wherein out-group members’ characteristics are reflective of their social group (Hogg, Abrams, Otten, & Hinkle, 2004). From the in- and out-group members’ perspectives, Tajfel and Turner (1979) saw a correlation: the greater the intensity of an inter-group conflict, the greater the probability group members will behave toward one another as a function of their respective group affiliations, and not as individual – in other words, group members’ individual behaviour reflects that of the social group, which is something observed within the Amish community of North America (Johnson-Weiner, 1998).

Implicitly suggesting an antecedent to inter-group conflict, Livingstone, Spears, Manstead, and Bruder (2009) found two components within the minority-majority inter-



group relationship that inform group members' responses: a perception of illegitimacy; and a perception of identity threat. The belief of illegitimacy (i.e., the perceived unfairness associated with the majority group's dominance) directs attention toward the majority group as the cause of the unfairness. The perception of identity threat (i.e., the threat presented to the minority group's identity) serves to focus attention on the need to *protect* the minority group's identity and distinctiveness (Giles, Bourhis, & Taylor, 1977) from the threat presented by the out-group's dominating influence. The latter belief implies a defensive reaction, which has been proven by Jones (2002) within the rural Llanrwst community whereby the indigenous Welsh youth attributed anti-social behaviour to the in-migrant English youth. In this way, the Welsh youth 'maintained' their social and cultural identity and distinctiveness via the process of differentiation (Jetten, Spears, & Postmes, 2004). In their study, the latter authors concluded that group members strongly identifying with the group are more likely to try a restoration of the group's distinctiveness when confronted by a threat that challenges the group's social identity.

Through the process of self-categorization, group evaluation, and the value of belonging to a group in terms of an individual's self-concept, an individual's social identity arises (Trepte & Loy, 2017). Trepte and Loy (2017) saw that a positive social identity equates to a higher level of self-esteem. Developing the analogy, a Welsh-speaker defining him or herself as such, might favourably evaluate the Welsh-speaking collective compared to non-Welsh-speakers, which, according to Trepte and Loy (2017), ought to heighten the individual's social identity and self-esteem; *vice versa*. Elaborating, Tajfel (1982) showed that in situations where social interactions are decided by individuals' group membership, positive social identity may only be reached via appropriate inter-group comparisons. Thus, individuals are motivated to protect or enhance their in-group's status compared to other out-groups because *group* evaluation is essentially *self*-evaluation, and this is because the in-group has become a part of the individual's 'Self' (Hogg, Abrams, Otten, & Hinkle, 2004). As the latter authors saw, an individual's desire to protect and enhance his or her in-group's status is driven by the basic human motivation for self-enhancement and self-esteem, and this has received support from Dang, Liu, and Li (2019). Although the literature is silent on this aspect, an interesting question would be to consider the extent to which members of social groups protect the status of their social group within the on-line context? If an individual is unable to

establish a positive evaluation against an out-group, in an attempt to maintain or enhance his or her social identity and self-esteem, the individual might elect to pursue one of three social identity restorative strategies (Tajfel & Turner, 1979; Hogg, Abrams, Otten, & Hinkle, 2004; Trepte & Loy, 2017; Giles, Bourhis, & Taylor, 1977): *social mobility* (i.e., effectively leave the in-group and psychologically identify with another, more highly valued out-group); *social creativity* (i.e., alter the dimension of the comparison between the in- and out-group); and *social competition* (i.e., engaging head-to-head with the out-group regarding the same dimension, e.g., Welsh language activists campaigning for equal rights and respect relative to the English language). However, the extent to which an individual engages in these strategies will be decided by two independent factors (Giles, Bourhis, & Taylor, 1977): *stability-instability*; and *legitimacy-illegitimacy*. The former refers to the extent an individual believes the status of his or her in-group compared to the out-group can be changed or reversed. The latter refers to the extent to which an individual believes the position of his or her in-group compared to the out-group is fair or unfair.

Thus far, consideration has been given to the concept and evolution of SMD and self-esteem, and, latterly, an exposition of the Welsh language using EV and social identity processes. Having identified and explored the necessary foundations of the research, consideration is necessarily directed toward the dependent and independent variables and their interactions from a literature review perspective.

Having explored the Welsh language with respect to EV and social identification, the rest of this sub-section explores the relationship between the Welsh language and each of SMD, self-esteem, depression, loneliness, and social anxiety.

### **2.4.3. Social Media Dependency**

Previously, a case was presented arguing for an association between the Welsh language and EV and social identity; further, it is suggested the more proficient exponents of the Welsh language engaged most strongly with Wales *per se* (Coupland, Bishop, Evans, & Garrett, 2006). Operating from a social identity perspective, it might be asserted that Welsh-speakers' individual and collective identities might be strengthened through association with other Welsh-speakers wherein adherence to group cultural norms are implicitly enforced, and defensive instincts aroused whenever the group's identity is

threatened by an actual or perceived dominant out-group (Hendry, Mayer, & Kloep, 2007; Stets & Burke, 2000; Livingstone, Manstead, Spears, & Bowen, 2011; Tajfel & Turner, 1979).

Recognizing how linguistic processes might favour the dissemination of certain languages over others, Baker (2003) suggested recognition of a minority language enhanced a person's self-esteem. Previously, we explored the EV of the Welsh language using *objective* and *subjective* estimates (*cf.* Giles, Bourhis, & Taylor, 1977) that were devised before the advent of the Internet. Concomitantly, minority language analyses ought to factor into the EV estimation equation an added component – the relative health of a minority language within the *digital* context. Within the digital domain, it has been estimated that at least 21 European languages were considered to be in danger of becoming digitally extinct, with one of the endangered languages being Welsh (Welsh Government, 2018). Kornai's (2013) prophesy was no less optimistic when he suggested, “less than 5% of all languages can ascend to the digital realm”; expressed more prosaically, in excess of 95% of the world's languages will become redundant as a ‘vital’ and ‘active’ language used within the digital context.

Acknowledging that dialectical variation constitutes its own form of linguistic change, Crystal (2000) recognized the threat posed by code-switching, wherein minority language speakers incorporate within their communications words and terminology associated with the dominant, non-threatened language; for instance, within the Facebook context, an examination of Malaysian students' wall posts and comments revealed the students' first language Bahasa Malaysia frequently incorporated individual words and strings of words from English (Shafie & Nayan, 2013). Cunliffe and Harries (2007) saw that code-switching behaviour is more prevalent in spoken Welsh as opposed to written Welsh. Amplifying the threat presented to minority languages, Cunliffe (2019) saw how English-based ‘text-talk’ phonetic spellings – for purposes of efficiency – were incorporated within hitherto Welsh language-based communications. However, as a warning, Crystal (2000) said that languages are fluid in nature and that healthy languages borrow from one another.

Operating from an exclusively Facebook perspective, Honeycutt and Cunliffe (2010) indicated that Welsh-speakers are effectively creating and maintaining language norms within Facebook specifically, and other on-line environments in general. Indeed, Reuters

reported that Facebook provides its estimated 2.3 billion users with menus and prompts in 111 different languages (Fick & Dave, 2019), with the Welsh interface launched during 2008 (Honeycutt & Cunliffe, 2010). The latter authors note that the crowd-sourced Welsh interface entailed in excess of 1,000 individuals supplying approximately 36,000 translations. A sense of caution, though, is needed regarding other on-line sites' ability to provide acceptable and demonstrable Welsh translations; for instance, the ability of Google Translate to provide acceptable English-Welsh translations has received criticism (Cellan-Jones, 2018). Despite demonstrating a significant and active Welsh language on-line presence and tangible opportunities for Welsh-speakers to use their first language on-line, Honeycutt and Cunliffe (2010), nonetheless, showed that 25.5% of the Welsh-speakers did *not* use Welsh in their on-line profiles. The latter authors suggested that whilst not all Welsh-speakers consider use of Welsh on Facebook as a normal, everyday reality, they might use the language within other (unidentified) Facebook contexts. Recognizing that considerable progress has been made to normalize the use of Welsh on Facebook, the authors saw that whenever minority and majority languages 'clash' with one another, the minority language usually suffers the consequence. The term 'clash' requires clarification since languages *per se* do not collide in a literal sense but, rather, the speakers of minority languages might be forced into making a choice between using their minority language or the majority language. The reality is that a speaker of a minority language would use the minority language for a specific purpose; for instance, communicating with friends and family who also shared the minority language. Conversely, a minority language speaker would probably use the majority language in situations where the target audience were speakers of the majority language and where use of the minority language would constitute a deterrent to effective communication since the majority language speakers may not understand the minority language. Thus, a speaker's choice of language would be context-driven. However, it is accepted that research would be recommended to refute/demonstrate this assertion.

In addition to demonstrating a Welsh language Facebook presence (*cf.* Honeycutt & Cunliffe, 2010), Keegan, Mato, and Ruru's (2015) study suggested the Welsh language is similarly represented within the microblogging-oriented (i.e., short messages including no more than 140 characters, which includes hyperlinks and URLs) Twitter platform. Focusing primarily on the te reo Māori language, data analysis of the Indigenous Tweets website (launched March 2011 with the express purpose of connecting indigenous

language speakers) suggested a Twitter presence for an array of indigenous languages including Basque, Haitian Creole, Irish Gaelic, Frisian (Netherlands), Kapampangan (Philippines), etc. Welsh was similarly represented. When the various languages were ranked according to the number of people ‘tweeting’ per indigenous language, number of tweets per indigenous language, and top ‘tweeters’ per indigenous language, the Welsh language consistently held a top three position out of the twenty indigenous languages surveyed. Paralleling Honeycutt and Cunliffe’s (2010) network analysis, above, Keegan, Mato, and Ruru (2015: 60) similarly suggest social networking platforms offer the possibility of connecting geographically removed speakers of indigenous languages such as Welsh, a concept the authors termed an “online language community”. Supporting the findings of Honeycutt and Cunliffe (2010) and Keegan, Mato, and Ruru (2015), Jones (2011: 141) similarly saw a significant Welsh language presence within social media: “Welsh is increasingly visible on the Internet. On Facebook there are over 300 Welsh-medium groups, and on Twitter there are almost 3000 users who regularly tweet in Welsh.”

Having identified that the Welsh language enjoys a significant social media presence, above, the ensuing passages develop Honeycutt and Cunliffe’s (2010) above observation regarding the *proportion* of Welsh-speakers actively using Welsh on social media, since this aspect retains specific relevance regarding Welsh-speakers’ potential levels of self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022) and, relatedly, SMD (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021).

Whilst recognizing the influence of a user’s off-line social network when selecting the on-line language used, Cunliffe, Morris, and Prys (2013a) observed that Welsh-speakers’ perception that Facebook was the application of choice for Welsh-speakers did *not* translate into on-line Welsh language dominance where English was the main language used by the surveyed Welsh-medium school participants, who were equally split between north-west and south-east Wales. Regarding primary English-speakers, it was seen that 74.1% used English on Facebook, whereas 17.3% used Welsh. Regarding primary Welsh-speakers, however, the distribution was more evenly split, with 39.8%, 30.1%, and 30.1% using English, a mix of English and Welsh, or all Welsh on Facebook, respectively. Thus, the data suggest a sizeable proportion of primary Welsh-speakers (i.e., 39.8%) switch to

English on Facebook. Echoing Cunliffe, Morris, and Prys (2013a), although the data covered a broader array of on-line activities and, therefore, cannot be directly compared, McAllister, Blunt, and Prys' (2013: 31) review suggested, "Regular usage of Welsh online is very low – fewer than one in five (17%) said they always or usually use Welsh for web searches, social media or emailing". Adopting a more granular perspective, the latter authors' survey ( $n = 483$ ; fluent Welsh-speakers = 308) revealed 25%, 5%, and 1% of fluent, semi-fluent, and low ability Welsh-speakers, respectively, used Welsh on-line in any way.

Bilingual speakers of Welsh and English are presented with a choice of which language to use on-line (Johnson, 2013); for instance, when constructing and maintaining personal profiles (Cunliffe, Morris, & Prys, 2013a; Cunliffe, 2019). Their choice, though, appears to be influenced by a combination of conscious and subconscious factors such as the language spoken by the target audience, and Johnson (2013: 114) identified this with respect to Twitter: "The bilingual Welsh and English users of Twitter in this survey predominantly interact with each other in Welsh when tweeting, but a small minority use English far more often than others. English is used exclusively with Twitter users who show no sign of proficiency in Welsh." Another factor potentially influencing an individual's choice of on-line language is the degree of confidence the individual has with respect to his or her linguistic ability. Cunliffe, Morris, and Prys (2013a) noted, for instance, that participants using Welsh on Facebook showed a greater degree of confidence regarding their ability to use Welsh. The authors showed that it was difficult to make comparisons with other studies due to the lack of social media-oriented studies examining the Welsh language, an assertion supported by Cunliffe, Morris, and Prys (2013b). An added factor potentially deciding the choice of language used on social media are "any previously established language norms between sender and receiver" (Cunliffe, 2019: 461). Recognizing that an individual's choice of language used on social media might be influenced by an array of factors, Cunliffe (2019) suggested that whilst some factors might influence the choice of language for a single social media message, other factors might exert a greater influence and affect the entirety of the individual's social media communicative experience. Another potentially confounding factor deciding Welsh-speakers' choice of language on social media are technological constraints within a social media application (i.e., difficulties associated with functionally using Welsh), and this was implicitly recognized by McAllister, Blunt, and Prys (2013) who saw that poor

website design sometimes made it challenging for minority language speakers to attain information in their own language. However, recognition of and a desire to address perceived inadequacies regarding bilingual provision in technology has been recognized by the Welsh Government (Welsh Language Commissioner, 2015a; Welsh Government, 2018; Welsh Government, 2020a). Despite the Welsh Government's honest and noble intentions, their remit does not extend to the social media conglomerates. Whilst there are opportunities to use Welsh on-line, the reviewed empirical analyses, above, offer statistical data suggesting that bilinguals and first language Welsh-speakers do not always take advantage of them (i.e., not all Welsh-speakers use Welsh on social media) despite opportunities to use Welsh existing.

Despite a lack of studies examining the interaction between social media and Welsh-speakers' use (or non-use) of their language on-line – and a complete absence of studies examining the association between the Welsh language (or any minority language) and SMD, extant research suggests the Internet and social media might be considered both a threat and an opportunity regarding minority language maintenance (Cunliffe, Morris, & Prys, 2013b; McMonagle, 2022; Cassels, 2019). That the Internet and social media can be harnessed as a means of facilitating the use and maintenance of minority languages such as Welsh has been implicitly suggested via the practice of on-line second language acquisition whereby students have reported elevated linguistic skills, motivation, and confidence (Kabilan, Ahmad, & Abidin, 2010). The proliferation of mobile technology has enhanced Welsh language learners' experiences; for instance, students experience a combination of formal and informal learning styles, studying from home, and taking advantage of micro-blogging to perfect their Welsh reading and writing skills (Jones, A., 2015a; Jones, A., 2015b). Amplifying the last point, the BBC (2022) ran a story showing how TikTok is being used to connect FLWs and encourage the use of the Welsh language. In the BBC report, the two referenced TikTok sites promoting the Welsh language have indicated they both have in excess of 40,000 followers, some of whom are non-Welsh-speakers looking to learn something new. The creators of the Welsh language TikTok sites identified TikTok “as being particularly accessible for people looking to learn something new”. In terms of representing a potential *threat* to minority language maintenance, despite Belmar and Glass (2019: 14) acknowledging that virtual communities provided “breathing spaces” for minority languages, they also recognized the threat posed by the majority language: “For a fluent speaker of a language with

relative vitality such as Welsh, for instance, a Facebook group discussing grammatical features of Welsh through the medium of English may not be a breathing space at all, whereas a group with a Welsh-only policy may.” Social media, therefore, also provides new opportunities for dominant languages to become stronger (Keegan, Mato, & Ruru, 2015). Viewed from a socio-cultural perspective, Blattner and Fiori (2009) suggested the on-line environment could provide language learners with opportunities to enhance their linguistic ability within the context of significant relationships. Inferentially, the latter authors’ significant relationship aspect suggests closer and more harmonious relations persisting within the social media community via friendship making, building a sense of community, etc., a suggestion that has received empirical support (Liu *et al.*, 2013; Dogoriti, Pange, & Anderson, 2014).

Operating from a school-specific context, Baker (2003: 100) suggested that recognition of an individual’s minority language is associated with elevations in self-esteem: “In heritage language education... children’s self-esteem may be raised... When a child’s language is replaced by the majority language, the child, the parents and the child’s community may seem to be rejected. When the home language is used in school, then children may feel themselves, their home and community to be accepted, thus maintaining or raising their self-esteem”. The concept of societal recognition of one’s minority language and culture equating to a higher level of self-esteem for the minority group has received support (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022). To-date, with the exception of Odulaja (2021), there have been no studies examining minority language recognition within the social media context and any association with first language speakers’ levels of self-esteem. Examining the association between indigenous youths’ well-being and self-esteem with respect to their use of social media, Odulaja’s (2021) qualitative analysis indicated that where an individual used his/her native Secwepemc language on social media, the enhanced level of connection attained with family and friends also using Secwepemc *elevated* the user’s level of self-esteem. From a FLW’s perspective this might demonstrate an important association: *opportunity* to use one’s minority language on social media *promoted* level of self-esteem. Acknowledging that not all FLWs use Welsh within the on- and off-line contexts (due to language choice, language of target audience, etc.), application of the above researchers’ (e.g., Baker, 2003) societal recognition hypothesis and Odulaja (2021) to the social media domain potentially attracts a similar self-esteem impacting response within



the FLW; however, in order to establish such an association, further work would be required and actively encouraged. A FLW perceiving fewer opportunities to use Welsh on social media would, in all probability, use social media *less* and not *more*. However, there exists an alternative and contradictory proposition, and is the one adopted by the thesis: the adopted proposition is derived from the basis that perceived or actual marginalization and discrimination of one's language initiates a *lower* level of self-esteem (Wei, Wang, & Ku, 2012; Wright & Bougie, 2007; Ekwere, 2022), with *lower* levels of self-esteem empirically associated with *elevated* SMD (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021). Taking the lead from Chebanne and Kewagamang (2020) who showed that exclusion of a minority language encouraged the perception of being marginalized, an FLW perceiving restricted opportunities to use Welsh on social media might also consider him or herself marginalized; however, it is acknowledged that further work would be required to definitively establish such an association. That said, such a proposition attracts a degree of logic. Within the political context, marginalized social groups have used social media to “express their identities and fight for justice and political power” – in other words, social media was used as a tool to achieve greater equality (Lane, Do, & Molina-Rogers, 2022: 80). The concept of marginalized groups using social media as a means of empowerment has received support from elsewhere, also (Gonzales *et al.*, 2021). Thus, the notion of a FLW perceiving restricted opportunities to use Welsh on social media actually using social media *more* rather than *less* might attract a degree of logic when one reflects upon the above studies demonstrating how marginalized groups use social media to fight for greater equality. Indeed, there is precedent demonstrating that Welsh language activists have on occasion forcibly expressed their angst regarding perceived Welsh language inequality; for instance, Welsh language campaigners chained themselves to the gates outside Welsh Government offices because the protestors believed the Welsh Government had failed to arrest the decline in the number of Welsh-speakers (BBC, 2014). Evidence of Welsh language protests goes back 60 years with some of the key moments detailed within Cymdeithas yr Iaith Gymraeg (2022). The fight for minority language equality has also been shown within the social media context and demonstrates how speakers of repressed minority languages can use social media to communicate their plight to a larger audience (Yusupova, 2022: 629): “In late 2017, ethnic activists in Tatarstan repeatedly failed to get permission from local authorities to organize a rally against the new language policy. This forced them to find other ways to resist... Tatar activists organized a spontaneous street concert inviting Tatar

singers and theatre stars to sing a popular song about the Tatar language on a main street and broadcast the event online on various social media platforms. They made sure the whole gathering would not be longer than 20 min; the main goal was to record the event to draw public attention to the language issue, both on the streets and on social media.” Indeed, reacting against perceived injustice and marginalization might be considered a tactic that protects minority language speakers’ self-esteem (Greene, 2010). The thesis does, however, recognize the potentially paradoxical nature of the adopted proposition (stated above); however, in mitigation, as demonstrated above, the adopted proposition is theoretically driven and based on established empirically supported analyses; for instance, reduced levels of self-esteem are associated with elevated SMD, and marginalized groups – including speakers of threatened minority languages – use social media as a tool for achieving greater equality and broadcasting their plight to a larger audience (e.g., Sam *et al.*, 2022; Lane, Do, & Molina-Rogers, 2022; Yusupova, 2022).

In addition to the above possible reason why FLWs might use social media *more*, there exist numerous other reasons why a FLW might use social media more often. Odulaja (2021) observed how use of one’s native language on social media promoted self-esteem, which is suggestive of an intrinsic human need. This would make sense when one considers Maslow’s (1943) hierarchical needs model, which is a five-tiered model moving from an individual’s lowest order needs (physiological needs relating to air, water, food, shelter, sleep, etc.) to an individual’s highest order needs (self-actualization where an individual aspires to be the best he or she can be). The second highest tier – entitled “Esteem” – accommodates an individual’s self-esteem. Combining Odulaja and Maslow’s findings, it might be appreciated how speakers of native languages such as Welsh might be especially motivated to use social media more often. There are also other reasons that might encourage greater usage of social media by FLWs compared to FLEs. One factor potentially driving FLWs’ greater use of social media is the geographic distribution of FLWs, who are predominantly located within the northern and western parts of Wales (ONS, 2011). A FLW located within a predominantly non-Welsh-speaking sector of Wales such as Blaenau Gwent, Monmouthshire, and Bridgend (based on the percentage of Welsh-speakers) (Welsh Government, 2021e) might be attracted to social media to connect with other FLWs, which would tie in with FLWs’ closer affiliation to Welsh culture and community, and related social identification processes with the Welsh language considered a salient aspect of Welsh identity and, also, personal identity (Tajfel

& Turner, 1979; Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014; Statistical Bulletin, 2018; Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006; Welsh Government, 2022a). The benefits associated with group affiliation within the social media context have been shown with respect to second language students who have benefited in terms of motivation, improved linguistic skills, confidence, and enhanced self-esteem (Kabilan, Ahmad, & Abidin, 2010; Aziz, Hashim, & Yunus, 2019) – factors that might also apply to FLWs looking to maintain and develop their Welsh language skills via social media, which might drive greater social media usage.

#### **2.4.4. Self-Esteem**

Empirical research suggests a positive association between self-esteem and cultural identification; for instance, Tsai, Ying, and Lee (2001) saw that participants' cultural orientation and, specifically, pride in their heritage culture significantly predicted self-esteem. Of especial relevance to minority ethnolinguistic groups *per se* is the associative link between self-esteem and ability in the native language (Portes, 2002). Further, participation in the indigenous group culture related positively to self-esteem (Schnittker, 2002).

Social identity theory [SIT] references the degree to which an individual's sense of 'Self' is defined by his or her affiliation to a specific social group (Tajfel & Turner, 1979); for instance, a Welsh-speaker affiliating with fellow Welsh-speakers within a social context such as social media. The individual's social identity is the certainty that he or she has been accepted as a member of the group, and this sense of belonging enables the individual to understand who he or she is with respect to the group, i.e., the individual's defining characteristics reflect the group's collective characteristics (Hogg, Terry, & White, 1995). Thus, there persists a symbiotic relationship between the individual and his or her social group.

SIT predicts a significant positive correlation between group identification and an individual's level of self-esteem (Tajfel & Turner, 1979; Shepherd & Sigg, 2015; Kaye, Carlisle, & Griffiths, 2019; Hoffmann *et al.*, 2020). Acknowledging that Welsh-speakers closely identify with other Welsh-speakers, the suggestion is that a group identification mechanism persists with respect to FLWs within Wales (Giles, Taylor, & Bourhis, 1977).

Concomitantly, it would be expected that Welsh-speakers' closer affinity with one another would promote levels of self-esteem amidst its constituent group members via SIT processes.

Before proceeding to the coverage of depression, loneliness, and social anxiety, it is important to clarify and evidence an underpinning notion of the thesis: through a simultaneous association with their first language and Welsh/Bilingual-medium schools' stronger affiliation to the Welsh language and associated culture relative to English-medium schools and FLEs (Welsh Government, 2007; Coupland, Bishop, Evans, & Garrett, 2006; please refer also to **3.3.1**, which delineates the Welsh language emphasis between Welsh/Bilingual- and English-medium schools), FLWs would retain a closer Welsh linguistic and cultural affinity relative to FLEs and pupils attending English-medium schools. Conceivably, *higher* Welsh language ability FLEs might also benefit from closer Welsh language and cultural affinity as they would not feel linguistically marginalized and, therefore, feel more included within the Welsh-speaking community. In this sense, higher Welsh language ability FLEs would derive a similar Welsh language, cultural and community benefit as FLWs. However, *lower* Welsh language ability FLEs might not realize such a benefit. This assertion, though, would benefit from research to clarify the situation. Acknowledging FLWs are bilingual (or even, in some instances, multi-lingual) in that they also communicate in English, it must be recognized their linguistic and cultural reference points accommodate also the linguistic and cultural references shared by FLEs. However, as indicated already, the distinction between FLWs and FLEs is the greater affinity to Welsh language and culture enjoyed by FLWs, and this is the dividing line adopted by the thesis. Recognizing that Welsh/Bilingual- and English-medium schools participate in overt Welsh-oriented cultural festival activities such as in-school Eisteddfods, a case might be presented suggesting a blurring of the linguistic-cultural line between the two school types; however, Welsh/Bilingual-medium schools' greater immersion within the Welsh language is a key differential that underscores the importance of a person's first language to his/her cultural identity (Livingstone, Spears, Manstead, & Bruder, 2009; Livingstone, Manstead, Spears, & Bowen, 2011; Griffiths, 1994; Dabrowska, 2017; Iaith Pawb, 2003; Statistical Bulletin, 2018).

#### 2.4.5. Depression

Within the self-esteem review sub-section above, the linguistic debate suggested by Tajfel and Turner's (1979) SIT predicted a significant and positive correlation between group identification and an individual's level of self-esteem. Operating from a depression-oriented perspective, SIT once again comes into play (Cruwys *et al.*, 2015). In their review, Cruwys *et al.* (2015) suggested social identities provide protection for health generally, and against depression in particular – an assertion similarly shared by other researchers (Hoffmann *et al.*, 2020; Cross *et al.*, 2018; McIntyre, Wickham, Barr, & Bentall, 2018; Tong, Reynolds, Lee, & Liu, 2019; Smeekes *et al.*, 2017). Referencing Tajfel and Turner (1979), an individual's self-concept will internalize the target group's norms and expectations. In essence, whenever an individual's 'Self' is defined by a specific social identity (e.g., a group of people demonstrating specific allegiance to a nation such as the Basques or the Welsh), an individual will see others within his social group not as something distinct but, rather, as a part of something whom he is and what he stands for (Cruwys *et al.*, 2015). Thus, "the term social identity refers to individuals' identification with or sense of belonging to social groups" (McIntyre, Wickham, Barr, & Bentall, 2018: 681). With specific reference to Welsh cultural identity, we have already seen how Welsh-speakers' affiliation to Welsh culture and the community is particularly strong (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Giles, Taylor, & Bourhis, 1977; Coupland, Bishop, Evans, & Garrett, 2006); further, pupils attending Welsh/Bilingual-medium schools conceivably retain closer ties with the Welsh language as a result of Welsh/Bilingual-medium schools placing a stronger emphasis upon the Welsh language (Welsh Government, 2007) relative to English-medium schools. Thus, in this sense, we are witness to a social identification mechanism within a Welsh language community context. As Cruwys *et al.* (2015: 65) observed: "When groups are internalized in this way, they provide us with a sense of belonging, purpose, and direction and therefore have the capacity to enrich our lives."

Extending and validating the concept that social identification mechanisms protect against depression, Postmes, Wichmann, van Valkengoed, and van der Hoef's (2018) meta-analysis incorporating seventy-six studies suggested that individuals identifying most highly with the social group reported lower levels of depression; however, a sense of caution was tendered since the authors observed how the relationship between social

identification and depression is complex: despite most of the reviewed studies suggesting a negative association between social identification and depression, there are, however, one or two inconsistencies such as inadequately explained analyses, different ways of measuring depression, or small effect sizes.

Cruwys *et al.* (2014) found four key processes that collectively explain how social identities might reduce depression; they: provide a sense of meaning to an individual's life; facilitate and encourage the provision of support between individuals; permit social influence within the shared group dynamic; and create a feeling of belongingness.

Summarizing, FLWs' closer affiliation to culture and heritage language (e.g., Coupland, Bishop, Evans, & Garrett, 2006) constitutes a bond that unites the individuals into a collective, which subsequently elevates group members' self-esteem levels through social identification mechanisms (Tajfel & Turner, 1979) whilst reducing depressive symptomology (Cruwys *et al.*, 2014); also, as previously indicated, enhanced levels of self-esteem have been empirically linked with diminished levels of depression (e.g., Orth, Robins, & Roberts, 2008).

#### **2.4.6. Loneliness**

Operating from a loneliness perspective, social identity mechanisms once again come into play (e.g., Wann, 2006; Russell & Russell, 2018). Wann (2006) suggested high levels of identification with a local sporting team related to psychological well-being. In identifying with the local team, the individual strengthens his attachment to the larger social group (i.e., the local team's fan base). Viewed from the social identification perspective, Wann (2006: 80) suggested, "These associations to other fans form the basis for a valuable connection to society at large and serve as a buffer to loneliness, isolation, and so forth". Within a U.S. military context, Russell and Russell (2018) showed military veterans' participation and, more specifically, strong identification with Veterans Service Organizations [VSO] produced a reduced sense of isolation. The latter authors saw how the veterans' social identification with the VSO played a far greater role than mere physical participation with VSO-related activities, thereby underscoring the salience of a shared affiliative bond amongst the VSO veterans. Recognizing the extended geographical distribution of U.S. veterans, Russell and Russell (2018) identified the

crucial role played by social media in establishing a sense of identity within each veteran via a shared VSO connection.

Extending Wann (2006), and Russell and Russell's (2018) social identification concept, above, numerous studies have suggested how a perception of increased support from an individual's social group decreased feelings of loneliness; for instance, Jackson, Soderlind, and Weiss' (2000) analysis showed that perceptions of inadequate social support were associated with an elevation in loneliness. Relatedly, Nicpon *et al.* (2006) suggested a negative association between the level of peer support experienced and loneliness. Upholding the negative association, Lee and Goldstein (2016) suggested the buffering effect of social support against loneliness was dependent upon the source of social support received. The negative association between social group support and loneliness has received empirical backing (e.g., Lee, Goldstein, Dik, & Rodas, 2020; Travaglino *et al.*, 2020).

Thus far, the reviewed literature has focused upon the interaction between social identification mechanisms, which canvassed an array of sociological contexts, and loneliness. Predominantly, the empirically supported assertion is that there persists a negative association between the level of social support received and perceived level of loneliness experienced. Within Wales, the Welsh-speaking community constitutes a linguistically oriented social group. With specific reference to Welsh cultural identity, we have previously seen how Welsh-speakers' affiliation to Welsh culture and community is particularly strong (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Giles, Taylor, & Bourhis, 1977; Coupland, Bishop, Evans, & Garrett, 2006) and, in this sense, we are witness to social identification within a Welsh language community context, which might diminish feelings of loneliness. However, there is a recognition that Welsh-speakers are becoming detached from one another, which reduces opportunities for Welsh-speakers to communicate with one another (Welsh Government, 2012). Explicitly referencing the issue of loneliness, the Welsh Government (2019c), declaring a commitment to developing a cross-government and cross-sector approach to addressing the issue of loneliness and isolation within Wales, showed that loneliness can affect anyone, and that loneliness might be triggered by an array of sociological experiences – including language and communication barriers. Amplifying the issue, the Welsh Government's (2019c) public consultation concluded that Welsh-speakers were a group at risk of loneliness and social isolation. The consultation report suggested that greater use of

technology might alleviate loneliness and isolation. However, there is a recognition of access-related issues, which was an issue initially found by the then Welsh Assembly Government (2003) when they showed that resolution of the ‘digital divide’ would facilitate social inclusion via the on-line unification of Welsh-speaking communities. The passage of time, it would appear, has failed to resolve the access issue, since the Welsh Government’s (2019c) public consultation revealed the majority of respondents referenced poor mobile connectivity and broadband services within certain parts of Wales with the problem being more pronounced within the rural regions. One of the consultation’s findings showed widespread public support for the Welsh Government’s digital inclusion programme *Digital Communities Wales*; however, there was a conviction that greater financial investment was needed to ensure every Welsh community enjoyed access to high-speed broadband connections (Welsh Government, 2019c).

#### **2.4.7. Social Anxiety**

An acceptance that being part of a social group conceivably reduces social anxiety (Carron *et al.*, 1999; Haslam *et al.*, 2019) encourages the notion that closer affiliation with one’s cultural group might attract a similar consequence; for instance, primary Welsh-speakers’ closer affinity to the broader Welsh cultural and identity collective wherein constituent members share a national and cultural linguistically infused identity (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Giles, Taylor, & Bourhis, 1977; Coupland, Bishop, Evans, & Garrett, 2006).

#### **2.4.8. Social Media: Depression, Loneliness, and Social Anxiety**

A potentially interesting sequence of scenarios arise with respect to the social media environment. As previously stated, the concept of societal *recognition* of one’s minority language equating to a higher level of self-esteem for the minority group has received support (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022; Odulaja, 2021). With the exception of Odulaja (2021) who showed that use of one’s native language on social media promoted self-esteem, no studies have examined minority language recognition within the social media context and any association with first language speakers’ self-esteem levels. Acknowledging that not all FLWs use Welsh



within the on- and off-line contexts (due to language choice, etc.) (e.g., Cunliffe, Morris, & Prys, 2013a), application of the above researchers' (e.g., Baker, 2003) societal recognition hypothesis to the social media domain (conceivably, a similar argument might be presented with regards the off-line environment, also) potentially attracts a similar self-esteem impacting response within the FLW; if the FLW perceives limited opportunity to use Welsh on social media, it is possible (according to Baker, 2003) this transmits a message that perhaps the Welsh language does not enjoy wholesale societal recognition. (To substantiate this, however, further work – perhaps of a qualitative nature – is strongly recommended. However, conceptually this raises an important and interesting point for subsequent study.) Pursuing the argument, in accordance with Baker (2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022; Odulaja, 2021), a lack of societal recognition of the Welsh language would potentially reduce the FLW's level of self-esteem, and we know from the literature that that there exists a negative association between self-esteem and depression (Babore *et al.*, 2016; Zhou, Tian, & Huebner, 2020), loneliness (Pop, Iorga, & Iurcov, 2022; Lyyra *et al.*, 2021; Geukens *et al.*, 2022), and social anxiety (Wu, Qi, & Zhen, 2021; Kong *et al.*, 2021; Seon, 2021).

## 2.5. Hypotheses

Hypotheses are constructed from two contrasting perspectives. The first perspective, with SMD assuming the *predictor* variable role and self-esteem the *outcome* variable, is labelled the *linguistic devaluation* perspective. The reviewed literature suggests that not all FLWs use Welsh on social media, which conceivably diminishes self-esteem levels, with self-esteem being negatively associated with SMD. The reviewed literature has also suggested how FLWs' social media usage might be driven by other factors such as a desire to increase self-esteem or to connect with other FLWs who might be geographically separated from other FLWs. Within this *SMD*-driven construct, associations between the dependent and independent variables are considered from the position whereby Welsh/Bilingual-medium and FLW participants endure an elevated level of SMD compared to English-medium and FLE participants. Operating from this perspective, the question is whether Welsh/Bilingual-medium and FLW participants' hypothesized higher levels of SMD translates into a significant *disadvantage* compared to English-medium and FLE participants. Taking hypothesis **H1** as an example, the

hypothesis predicts that Welsh/Bilingual-medium and FLW participants' SMD scores would exceed English-medium and FLE participants' scores.

The second perspective, with self-esteem assuming the *predictor* variable role and SMD the *outcome* variable, is labelled the *social identification* perspective. Within the reviewed literature the suggestion is that social identification processes and close affiliation to Welsh culture and the Welsh-speaking community promotes a higher level of self-esteem for FLWs. Within this *self-esteem*-driven construct, associations between the dependent and independent variables are considered from the position whereby Welsh/Bilingual-medium and FLW participants enjoy an elevated level of self-esteem compared to English-medium and FLE participants. Operating from this perspective, the question is whether Welsh/Bilingual-medium and FLW participants' hypothesized higher level of self-esteem translates into a significant *advantage* compared to English-medium and FLE participants. Taking hypothesis **H2** as an example, the hypothesis predicts that Welsh/Bilingual-medium and FLW participants' self-esteem scores would exceed English-medium and FLE participants' scores.

Please note the following qualifications, since they retain important implications regarding the explanations detailed within the empirical chapters' 'Discussion' sub-sections. Statistical analyses primarily assess FLWs versus FLEs where both attended Welsh/Bilingual-medium schools; however, some of the hypotheses accommodate a comparison between Welsh/Bilingual- versus English-medium schools, also. Thus, analyses work at *two* levels: one is purely *linguistic* in orientation; the other is explicitly *school-type* in orientation. Referencing FLW versus FLE comparative analyses, this is a direct *linguistic*-oriented comparison wherein the FLWs were all first language Welsh-speakers, and the FLEs were all first language speakers of English (and 'Other' languages). Accordingly, formulated explanations within the empirical chapters addressing differences/similarities between the linguistic groups place unequivocal reliance upon the *social identification* and *linguistic devaluation* hypotheses. The situation alters, though, with respect to the *school-type* comparison scenario whereby not all Welsh/Bilingual-medium school participants are FLWs (out of the 836 participants ( $n = 844$ ) declaring a first language, 62.1% stated their first language was English, whilst 37.9% stated their first language was Welsh). Whilst a difference in *linguistic* emphasis and affiliation between the two types of school *might* influence, in part, any suggested

differences between Welsh/Bilingual- and English-medium schools' responses, to place undue reliance upon a linguistic-based explanation should be treated with caution. Given FLWs' close affiliation to their national language, culture and community, it would be expected that the impact of the Welsh language upon FLWs would be greater compared to FLEs where *both* attended Welsh/Bilingual-medium schools. Accordingly, differences between Welsh/Bilingual- and English-medium schools might also be partially attributed to non-linguistic variables, too. However, with one-third of Welsh/Bilingual-medium participants being FLWs, it is anticipated that Welsh/Bilingual-medium participants taken as a whole would show a stronger affiliation to the Welsh language, culture and community compared to English-medium participants for whom 97.9% were FLEs (out of the 865 participants, 855 declared a first language). The *individual* hypotheses are delineated within the respective empirical chapters.

### **3. CHAPTER THREE: Methodology**

#### **3.1. Ethical Statement**

Ethical consent to proceed with the research was obtained from the Department of Psychology Ethics Committee, Swansea University. The approval communication is detailed within the Appendices.

#### **3.2. Inclusion and Exclusion Criteria**

##### **3.2.1. Participant Inclusion Criteria**

Time wave 1 participant inclusion criteria: attend either a Welsh/Bilingual- or English-medium secondary school; the participant must be aged 12 or over prior to the commencement of time wave 1; and the participant must have read, understood, signed, and dated the consent form.

Time waves 1 to 3 participant inclusion criteria: in addition to the inclusion criteria set out at time wave 1, the participant must have completed the questionnaires at each of the three time points. Failure to complete one of the questionnaires resulted in the participant being excluded from the longitudinal analytical phase.

##### **3.2.2. Participant Exclusion Criteria**

Participant exclusion criteria: participant declined participation; participant withdrew mid-way through the questionnaire completion process; and the participant's school chose to withdraw from the research.

##### **3.2.3. School Inclusion Criteria**

School inclusion criteria: the school must be a State-maintained school found within Wales; and the school must be either a Welsh/Bilingual- or English-medium school.

##### **3.2.4. School Exclusion Criteria**

Private schools were excluded from the study.

### 3.3. Schools

#### 3.3.1. Time Wave One

During the school identification and selection phase, there were 55 Welsh/Bilingual- and 140 English-medium secondary schools located throughout Wales. The full list of secondary schools within Wales is available from the Welsh Government (Welsh Schools Database, 2020).

Selected schools were allocated to one of two broad categories: Welsh/Bilingual- or English-medium schools. The rationale is predicated upon the linguistic classification deployed at the time the schools were selected (see Welsh Government, 2021d for a summary). Accordingly, the two broad categories utilized were:

**Welsh/Bilingual-medium** schools: Welsh Medium: Welsh is the day-to-day language of the school. Welsh is used as the language of communication with the pupils and for the school's administration personnel. The school communicates with pupils' parents in Welsh and English; Bilingual (Category A): a minimum 80% of subjects apart from English and Welsh are taught only through the medium of Welsh to all pupils. One or two subjects are taught to some pupils in English or in Welsh and English; Bilingual (Category B): a minimum 80% of subjects (except Welsh and English) are delivered through the medium of Welsh; but are also delivered through the medium of English; Bilingual (Category C): 50-79% of subjects (except Welsh and English) are delivered through the medium of Welsh; but are also delivered through the medium of English; Bilingual (Category D): all subjects (except Welsh and English) are delivered to all pupils using Welsh and English; and English with significant Welsh: Welsh and English are used to teach subjects, with 20-49% of the subjects delivered through the medium of Welsh. Each subject will usually be delivered through the medium of English, too.

**English-medium** schools: English Medium: the pupils are mainly taught through the medium of English. Welsh is taught as a second language up to Key Stage 4.

Schools were randomly selected using the on-line random number generator RANDOM.ORG (2020). Following discussions with Head Teachers and Deputy Head Teachers, 5 Welsh/Bilingual- and 4 English-medium secondary schools agreed to take part. The Welsh/Bilingual-medium schools were found within Bridgend (age range: 11-

19; roll: 617), Gwynedd (age range: 11-19; roll: 396), Conwy (age range: 11-19; roll: 652), Isle of Anglesey (age range: 11-19; roll: 632), and Newport (age range: 11-16; roll: 81). The English-medium schools were found within Swansea (age range: 11-16; roll: 485), Bridgend (age range: 11-19; roll: 1,285), and two in Carmarthenshire (age range: 11-16; roll: 465; and age range: 11-16; roll: 1,009).

In terms of linguistic classification representation, participating Welsh/Bilingual-medium schools accommodated 2 ‘Welsh Medium’, 1 Category ‘A’, and 2 Category ‘B’ schools. All 4 participating English-medium schools belonged to the ‘English Medium’ category.

### **3.3.2. Time Waves Two and Three**

Prior to the commencement of time wave two, two of the Welsh/Bilingual-medium schools dropped out of the study. One school declined further participation, and the Head Teacher of the other school held GDPR-related concerns, which meant that it was not possible to track and correlate participants’ responses between time waves one, two, and three.

## **3.4. Participants**

### **3.4.1. Time Wave One**

Before agreeing to take part in the research, parents/guardians received a “Parent/Guardian Information Sheet” explaining the purpose of the research, assurance regarding participants’ anonymity, identified risks and benefits, and contact points for further information. A sample copy is detailed within the Appendices. The first questionnaire contained an information sheet and consent form for the participants, which they signed and dated if they consented to take part in the survey. Copies of the three bilingual questionnaires are contained within the Appendices.

The Welsh/Bilingual-medium schools received 1,397 questionnaires and returned 844 completed forms, which equates to a 60.4% return rate. The English-medium schools received 1,568 questionnaires and returned 865 completed forms, which equates to a 55.2% return rate. Combining Welsh/Bilingual- and English-medium schools, 1,709

completed forms were returned from an allocation of 2,965, which equates to an overall return rate of 57.6%. Participants completed the questionnaires in-class under the direction of their class teachers, which might explain the relatively high return rates. Using G\*Power version 3.1.9.7 (Faul, Erdfelder, Lang, & Buchner, 2007) (criteria: two-tailed; effect size  $d = 0.2$ ;  $\alpha$  error probability = 0.05; power:  $1 - \beta$  error probability = 0.95; allocation ratio set to 1), the theoretical ideal total sample size was 1,302 (critical  $t = 1.961$ ,  $df = 1,300$ ), split equally between both groups (i.e., 844 Welsh/Bilingual- and 865 English-medium school participants). The actual sample size of 1,709 was satisfactory.

Gender participation rates were approximately equally distributed between the Welsh/Bilingual- and English-medium schools (410 Welsh/Bilingual males; 434 Welsh/Bilingual females; 418 English males; and 447 English females).

Participants' ages ranged from 12- to 15-years at the commencement of the data gathering phase. The overall average age of the participants was 13.61 years (standard deviation  $\pm 0.933$ ). There was little difference in participants' mean ages when participants were separated according to gender and Welsh/Bilingual- and English-medium schools. The average age for the Welsh/Bilingual-medium participants with males and females combined was 13.44 years ( $\pm 0.944$ ). The average age for Welsh/Bilingual-medium males was 13.42 years ( $\pm 0.951$ ) and for the females the average age was 13.47 years ( $\pm 0.938$ ). The average age for English-medium participants with males and females combined was 13.74 ( $\pm 0.904$ ). The average age for English-medium males was 13.75 years ( $\pm 0.896$ ) and for the females the average age was 13.73 years ( $\pm 0.912$ ).

Socio-economic analysis has been derived from the Welsh Index of Multiple Deprivation (2014) [WIMD]. The WIMD operates on an index ranking system whereby geographical areas are ranked from 1 (the most deprived) to 1,909 (the least deprived), and accommodates eight socio-economic categories (income, employment, health, education, access to services, community safety, physical environment, and housing). Based upon the designated categories, each of the 1,909 geographic regions was distributed to one of five deprivation divisions (ranging from the 10% most deprived to the 50% most deprived). Whilst the above categories supply a discernible degree of granularity for those geographic regions considered most deprived, the all-encompassing "50% most deprived" category appears too broad in its socio-economic profile and offers little opportunity for granular analysis. To facilitate compatible granular analysis across

the socio-economic spectrum, a pragmatic approach has been adopted whereby participants have been distributed to one of seven rank-based divisions. The deployed ranking mechanism has been derived from the following simple formula: Total number of ranks (1,909) / Total number of desired deprivation divisions (7). The product of 273 constitutes the approximate number of ranks falling within a given division. The number of deprivation divisions (i.e., 7) was an arbitrary value that distributes a reasonable number of ranks to each socio-economic division. Category ‘1’ equates with the most deprived socio-economic regions, and category ‘7’ was considered the least socio-economically deprived.

Table 1 provides a breakdown of the number of participants falling within each deprivation division. Due to GDPR-related concerns, one of the Welsh/Bilingual-medium schools refrained from supplying personal identifying information such as participants’ postcodes. The dissenting school accounted for 189 participants’ responses out of a total of 844 Welsh/Bilingual participants. Acknowledging the dissenting school’s potential distorting impact regarding the overall socio-economic picture, the following table accommodates two scenarios: one incorporating missing data values; another omitting missing data values.

*Table 1. Socio-Economic Groups at Time One*

	<b>1: Most Deprived SES</b>	<b>2: Second Most Deprived</b>	<b>3: Third Most Deprived</b>	<b>4: Fourth Most Deprived</b>	<b>5: Third Least Deprived</b>	<b>6: Second Least Deprived</b>	<b>7: Least Deprived SES</b>	<b>Missing Data</b>	<b>Total Including Missing Data</b>	<b>Total Excluding Missing Data</b>
Welsh/Bilingual	67	65	121	129	51	25	42	344	844	500
English	50	154	125	104	78	111	65	178	865	687
Total (Combined)	117	219	246	233	129	136	107	522	1,709	1,187

To identify socio-economic differences/similarities between Welsh/Bilingual- and English-medium participants, a series of chi-square ( $\chi^2$ ) statistical tests were undertaken. At the whole-group level, a  $\chi^2$  test of homogeneity was run, with an adequate sample size. The two multinomial probability distributions were not equal in the population,  $\chi^2 (6) = 78.861, p < .001$ . *Post hoc* analysis involved pairwise comparisons using multiple z-tests



of two proportions with Holm-Bonferroni  $\alpha$  corrections. With a Holm-Bonferroni corrected  $\alpha$  set at .007, which was less than the omnibus  $\alpha$  .05, there were statistically significant differences in the proportion of Welsh/Bilingual participants belonging to category ‘1’ (i.e., the most deprived) ( $n = 67, 13.4\%$  versus  $n = 50, 7.3\%$ ), and category ‘4’ ( $n = 129, 25.8\%$  versus  $n = 104, 15.1\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .036, there were statistically significant differences in the proportion of Welsh/Bilingual participants belonging to category ‘3’ ( $n = 121, 24.2\%$  versus  $n = 125, 18.2\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .007, there were statistically significant differences in the proportion of English participants belonging to category ‘2’ ( $n = 154, 22.4\%$  versus  $n = 65, 13.0\%$ ) and category ‘6’ ( $n = 111, 16.2\%$  versus  $n = 25, 5.0\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at 1.000, there were no statistically significant differences in the proportion of Welsh/Bilingual and English participants belonging to category ‘5’ ( $n = 51, 10.2\%$  versus  $n = 78, 11.4\%$ ) and category ‘7’ (i.e., the least deprived) ( $n = 42, 8.4\%$  versus  $n = 65, 9.5\%$ ).

Participants’ self-reported ethnicities are recorded within Table 2.

Table 2. Ethnicity Groups at Time One

	<b>White</b>	<b>Black</b>	<b>Asian</b>	<b>Mixed</b>	<b>Other</b>	<b>Do not wish to say</b>	<b>Missing Data</b>	<b>Total Including Missing Data</b>	<b>Total Excluding Missing Data</b>
Welsh/Bilingual	603	4	3	25	3	27	179	844	665
English	775	8	25	27	11	18	1	865	864
Total (Combined)	1,378	12	28	52	14	45	180	1,709	1,529

To identify ethnic composition differences/similarities between Welsh/Bilingual- and English-medium school participants, a series of  $\chi^2$  statistical tests were undertaken. At the whole-group level, a  $\chi^2$  test of homogeneity was run, with an adequate sample size. The two multinomial probability distributions were not equal in the population,  $\chi^2(5) = 20.992, p = .001$ . *Post hoc* analysis involved pairwise comparisons using multiple z-tests of two proportions with Holm-Bonferroni  $\alpha$  corrections. With a Holm-Bonferroni corrected  $\alpha$  set at .006, which was less than the omnibus  $\alpha$  .05, there was a statistically significant difference in the proportion of English participants belonging to the ‘Asian’ category ( $n = 25, 2.9\%$  versus  $n = 3, 0.5\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .115, there was no statistically significant difference in the proportion of Welsh/Bilingual

and English participants belonging to the ‘Do not wish to say’ category ( $n = 27$ , 4.1% versus  $n = 18$ , 2.1%). With a Holm-Bonferroni corrected  $\alpha$  set at .376, there was no statistically significant difference in the proportion of Welsh/Bilingual and English participants belonging to the ‘Another’ category ( $n = 3$ , 0.5% versus  $n = 11$ , 1.3%). With a Holm-Bonferroni corrected  $\alpha$  set at 1.000, there were no statistically significant differences in the proportion of Welsh/Bilingual and English participants belonging to the categories ‘Black’ ( $n = 4$ , 0.6% versus  $n = 8$ , 0.9%), ‘Mixed’ ( $n = 25$ , 3.8% versus  $n = 27$ , 3.1%), and ‘White’ ( $n = 603$ , 90.7% versus  $n = 775$ , 89.7%).

### **3.4.2. Time Wave Two**

The Welsh/Bilingual-medium schools returned 324 completed questionnaires (males = 142; females = 182), and the English-medium schools returned 638 completed questionnaires (males= 302; females = 336).

### **3.4.3. Time Wave Three**

The Welsh/Bilingual-medium schools returned 378 completed questionnaires (males = 154; females = 224), and the English-medium schools returned 619 completed questionnaires (males = 283; females = 336).

## **3.5. Materials**

Scale choice was decided by each scale’s empirically demonstrated reliability and validity, and these are summarized below. Reliability references the extent to which a specific scale provides consistent results when tested and re-tested under the same conditions and with the same participants. Validity references the degree to which the scores obtained from a given scale are reflective of the host variable, e.g., the scores obtained on the Children’s Loneliness Scale ought to reflect the concept loneliness. The deployed scales are detailed below. The internal consistency of each scale with respect to the present study is detailed below, also. Please note that within SEM, SMD and self-esteem adopt the *predictor* and *outcome* roles, respectively, with depression, loneliness, and social anxiety adopting the dependent variable roles.

The questionnaires employ various terminology, which are accordingly defined. Participants' "First language" was requested and this specifically references the main language utilized by each participant. With specific reference to the participants indicating their first language as Welsh, it is acknowledged these participants would likely be Welsh-English bilingual speakers and, in some cases, possibly trilingual (data, however, did not capture this aspect). To a lesser extent, participants indicating their first language as English might also be described bilingual since Welsh is taught in all Welsh schools irrespective of medium. However, the objective of the question was to capture the language participants considered their *first* language. Although not quantifiable in a mathematical sense, participants were requested to indicate the frequency Welsh/English were used on social media *per se*; thus, the scale "Never to "Always" provides an estimation regarding participants' usage of Welsh/English within the social media-specific context. Likert-type scales are utilized elsewhere, also; for instance, the self-esteem scale utilizes a scale ranging from "Strongly Agree" to "Strongly Disagree". Participants were also asked to indicate their proficiency for Welsh and English, too.

### **3.5.1. Self-Esteem**

A definitive measurement of self-esteem has yet to be realized. Robins, Hendin, and Trzesniewski (2001) saw that numerous studies have adopted an array of measures with self-report scales and experience sampling supplying two examples. As the latter authors saw, nowadays, the majority of self-esteem research uses self-report scales, such as the Rosenberg Self-Esteem Scale [RSES] (Rosenberg, 1979), which is possibly the most widely used measure of *global* self-esteem within the social sciences (Sinclair *et al.*, 2010; Gomez-Lugo *et al.*, 2016; Garcia *et al.*, 2019). In addition to the RSES, there are numerous self-esteem scales available, a couple of which are listed within Harris, Donnellan, and Trzesniewski (2017); for example, some scales are designed for multiple age groups such as Harter's Self-Perception Profiles and March's Self-Description Questionnaire. Another frequently used scale is the Coopersmith Scale of Self Esteem Inventory, which is designed to assess people's attitudes concerning social, academic, family, and personal experiences (Bogard *et al.*, 2021). In addition to accommodating the assessment of adolescent populations (Cong & Cheong, 2022), the RSES was selected for three main reasons: the scale enjoys acceptable psychometric properties (discussed

below); facilitates discrimination at low, medium, and high levels of self-esteem (discussed below, also) (Garcia *et al.*, 2019); and is very straight forward to administer (Umunnah *et al.*, 2021).

The extensively employed RSES has reported excellent psychometric properties and is considered a valid and reliable measure of self-esteem (Vasconcelos-Raposo *et al.*, 2012; Martin-Albo *et al.*, 2007; Rojas-Barahona, Zegers, & Forster, 2009; Bagley, Bolitho, & Bertrand, 1997; Galanou *et al.*, 2014; Mimura & Griffiths, 2007). Sinclair *et al.* (2010) assessed the psychometric properties of the RSES and concluded the scale was satisfactory. Summarizing the psychometric properties established by Sinclair *et al.* (2010): item convergent validity: overall, generally satisfied with all items correlating  $r = .40$  or greater – only one item failed the assumption with an item-scale correlation of  $r = .39$ ; item discriminant validity: overall, this assumption was satisfied; internal consistency reliability: the overall Cronbach  $\alpha$  was .91, which was satisfactory, thereby suggesting an acceptable level of internal consistency; floor and ceiling effects (i.e., the percentage of respondents scoring the lowest and highest scores, respectively): none of the respondents scored at the floor, but there was variability in the percentage of respondents scoring at the ceiling; and component structure assessment (determined by principal component analysis): overall, 55.5% of the RSES item-level variance was accounted for by a single component, which was acceptable. Blascovich and Tomaka (1991) concluded the RSES was a reliable measure of self-esteem within Western cultures.

The RSES is a 10-item self-report Likert-type inventory and is one of the most often deployed estimates of people's *global* self-esteem levels (Kling, Hyde, Showers, & Buswell, 1999). Each of the ten items on the scale consists of a simple statement, e.g. "On the whole, I am satisfied with myself." Each item was rated on a 4-point Likert scale (0 = *Strongly Disagree*; 1 = *Disagree*; 2 = *Agree*; and 3 = *Strongly Agree*). Items 2, 5, 6, 8, and 9 are negatively worded. Following reverse coding, summation of all ten values provides an overall (i.e., *global*) estimation regarding an individual's level of self-esteem, with higher scores denoting a higher level of *global* self-esteem. Despite there being no widely accepted cut-off points for low- and high-levels of self-esteem (Isomaa *et al.*, 2013; Ruzansky & Harrison, 2018; Nilsson, Dahlstrom, Priebe, & Svedin, 2015; University of Maryland, 2021), the following cut-off points based on Ozkesici (2021) and Terra, Marziale, and Robazzi (2013) are applied: low  $\leq 15$ ; medium = 16-19; and high  $\geq 20$ . The theoretical score range runs from 0-30. The RSES has reported excellent psychometric

properties and is considered a valid and reliable measure of self-esteem (Vasconcelos-Raposo, Fernandes, Teixeira, & Bertelli, 2012; Martin-Albo, Nunez, Navarro, & Grijalvo, 2007). As a *global* estimation of people's self-esteem levels, the RSES is considered, "the standard against which new measures are evaluated" (Blascovich & Tomaka, 1991: 123).

Cronbach's  $\alpha$  analysis supplies a reliable measure about the internal consistency for a given scale. A Cronbach's  $\alpha$  score  $\geq 0.7$  is perfectly acceptable (DeVellis, 2003; Kline, 2005). The present study showed excellent Cronbach's  $\alpha$  scores. Time wave 1: combining all participants ( $n = 1,709$ ), the Cronbach's  $\alpha$  was .874. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 844$ ) was .859, and for all English participants ( $n = 865$ ) the Cronbach's  $\alpha$  was .888. Time wave 2: combining all participants ( $n = 770$ ), the Cronbach's  $\alpha$  was .894. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 262$ ) was .884, and for all English participants ( $n = 508$ ) the Cronbach's  $\alpha$  was .898. Time wave 3: combining all participants ( $n = 770$ ) the Cronbach's  $\alpha$  was .894. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 901$ ) was .901, and for all English participants ( $n = 508$ ) the Cronbach's  $\alpha$  was .889.

### **3.5.2. Social Media Dependency**

The previously standardized Bergen Facebook Addiction Scale [BFAS] (Andreassen *et al.*, 2012) was adapted to assess a specific hypothesis (Andreassen, Pallesen, & Griffiths, 2017); in this instance, the word 'Facebook' was changed to 'social media'. For the purposes of their study, Andreassen, Pallesen, and Griffiths (2017: 289) defined social media as constituting "Facebook, Twitter, Instagram, and the like".

Before continuing to the adapted version of the BFAS, it is necessary to consider the validity and reliability of the BFAS. Whilst the measure is still a relatively new construct, research has demonstrated support; for instance, utilizing a Portuguese version of the BFAS, Pontes (2017) affirmed the scale's validity and reliability. Reliability and validity aspects have been proven elsewhere, also (Salem, Almenaye, & Andreassen, 2016; Andreassen *et al.*, 2012; Pontes, Andreassen, & Griffiths, 2016).

The Bergen Social Media Addiction Scale [BSMAS] has reported acceptable psychometric properties and is considered a valid and reliable measure of SMD (Monacis, de Palo, Griffiths, & Sinatra, 2017; Lin *et al.*, 2017; Banyai *et al.*, 2017; Balcerowska *et al.*, 2020; Chen *et al.*, 2020a; Chen *et al.*, 2020b; Leung *et al.*, 2020; Watson, Prosek, &

Giordano, 2020). Lin *et al.* (2017) assessed the psychometric properties of the BSMAS, which are summarized as follows: satisfactory psychometric properties of the BSMAS were suggested by both classic test theory and Rasch analyses. Results suggested all six items had strong factor loadings using confirmatory factor analysis [CFA] (0.64-0.83) and also showed acceptable item-total correlations (0.56-0.69). No items had an infit/outfit mean square outside the accepted range (infit mean square = 0.88-1.28; outfit mean square = 0.86-1.22), and no items revealed substantial differential item functioning across gender (DIF contrast = -0.48-0.24). Minimal floor and ceiling effects were detected (ceiling = 2.2% (cut-off <20); floor = 4.7% (cut-off <20)). The internal consistency was acceptable returning a Cronbach  $\alpha$  0.86. Average variance extracted (0.51) and composite reliability (0.86) were slightly higher than the recommended cut-off, and the standard error of measurement slightly lower (1.81). CFA's fit indices were excellent: root mean square [RMSEA] = 0.057 (0.046, 0.068) (cut-off <0.08); comparative fit index [CFI] = 0.993 (cut-off >0.9); Tucker-Lewis index = 0.989 (cut-off >0.9); standardized root mean square residual [SRMR] = 0.039 (cut-off <0.08). Additionally, Rasch analyses were acceptable: item separation reliability = 0.99 (cut-off >0.7); item separation index = 11.80 (cut-off >2); person separation reliability = 0.80 (cut-off >0.7); person separation index = 1.99 (cut-off >2).

The BSMAS (Andreassen, Pallesen, & Griffiths, 2017) includes six core elements of addiction (i.e., salience, mood modification, tolerance, withdrawal, conflict, and relapse) (Griffiths, 2005). Each of the six questions is answered using a 5-point Likert scale (1 = *Very Rarely*; 2 = *Rarely*; 3 = *Sometimes*; 4 = *Often*; and 5 = *Very Often*). A summation of all six values provides an overall estimation regarding an individual's level of SMD, with higher scores denoting a higher level of SMD. A cut-off score of over 19 suggests problematic usage of social media (Wong *et al.*, 2020; Raudsepp, 2019; Panno *et al.*, 2020; Imperatori *et al.*, 2021; Chen *et al.*, 2020d; Banyai *et al.*, 2017; Sujarwoto, Saputri, & Yumarni, 2021; Lin *et al.*, 2021). However, a higher cut-off score of 24 was suggested by Luo *et al.* (2021). The following cut-off points have been applied: low = 6-12; medium = 13-19; and high  $\geq$ 20. The theoretical score range runs from 6-30. The BSMAS has reported excellent psychometric properties and was considered a valid and reliable measure of SMD (Monacis, de Palo, Griffiths, & Sinatra, 2017; Lin *et al.*, 2017; Banyai *et al.*, 2017; Balcerowska *et al.*, 2020; Chen *et al.*, 2020a; Chen *et al.*, 2020b; Leung *et al.*, 2020; Watson, Prosek, & Giordano, 2020).

Cronbach's  $\alpha$  analysis supplies a reliable measure of the internal consistency for a given scale. A Cronbach's  $\alpha$  score  $\geq 0.7$  is perfectly acceptable (DeVellis, 2003; Kline, 2005). Within the present study, the scale showed acceptable levels of internal consistency. Time wave 1: combining all participants ( $n = 1,709$ ), the Cronbach's  $\alpha$  was .755. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 844$ ) was .764, and for all English participants ( $n = 865$ ) the Cronbach's  $\alpha$  was .744. Time wave 2: combining all participants ( $n = 770$ ), the Cronbach's  $\alpha$  was .757. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 262$ ) was .748, and for all English participants ( $n = 508$ ) the Cronbach's  $\alpha$  was .757. Time wave 3: combining all participants ( $n = 770$ ), Cronbach's  $\alpha$  was .793. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 262$ ) was .822, and for all English participants ( $n = 508$ ) the Cronbach's  $\alpha$  was .773.

Adopting a similar strategy to Andreassen, Pallesen, and Griffiths (2017), three modified versions of the validated BSMAS were administered. The modification deployed the terms 'Snapchat', 'Instagram', and 'keeping-in-touch with existing friends' instead of the term 'social media'. Each of the six questions on the scale is answered using a 5-point Likert scale (1 = *Very Rarely*; 2 = *Rarely*; 3 = *Sometimes*; 4 = *Often*; and 5 = *Very Often*). Summation of all six values provides an overall estimation regarding an individual's level of dependency, with higher scores denoting a higher level of dependency. The theoretical score range runs from 6-30. Cronbach's  $\alpha$  values for the *Instagram* version of the BSMAS: combining all participants ( $n = 982$ ), the Cronbach's  $\alpha$  was .859; the Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 370$ ) was .876; and the Cronbach's  $\alpha$  for all English participants ( $n = 612$ ) was .843. Cronbach's  $\alpha$  values for the *Snapchat* version of the BSMAS: combining all participants ( $n = 978$ ), the Cronbach's  $\alpha$  was .882; the Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 367$ ) was .897; and the Cronbach's  $\alpha$  for all English participants ( $n = 611$ ) was .870. Cronbach's  $\alpha$  values for the '*Keeping-in-touch with existing friends*' version of the BSMAS: combining all participants ( $n = 974$ ), the Cronbach's  $\alpha$  was .820; the Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 362$ ) was .820; and the Cronbach's  $\alpha$  for all English participants ( $n = 612$ ) was .816.

### 3.5.3. Depression

There exist many self-report measures of depression; for instance, the Zung Self-Rating Depression Scale [SDS], the Center for Epidemiologic Studies Depression Scale [CES-D – ‘D’ denotes the adult version; ‘DC’ denotes the children’s version], the Beck Depression Inventory [BDI], and the Patient Health Questionnaire Depression Scale [PHQ-9] (Umegaki & Todo, 2017). The authors note that despite certain dissimilarities such as symptom coverage, the various scales, nonetheless, each supply a measure of depression. The CES-DC has showed acceptable levels of reliability and validity (Fendrich, Weisman, & Warner, 1990; Ohannessian, 2012; Ohannessian *et al.*, 1999; Shapira *et al.*, 2020; Khan & Shahzad, 2020; Betancourt *et al.*, 2012; Stockings *et al.*, 2015; Essau *et al.*, 2013; Carvalho *et al.*, 2015; Li, Chung, & Ho, 2010; Eddolls, *et al.*, 2018). Essau *et al.* (2013) determined the CES-DC supplied a good overall level of internal consistency (Cronbach  $\alpha = .87$ ). Additionally, Essau *et al.*’s (2013) CFA showed an excellent model fit for the four-factor CES-DC ( $\chi^2 = 992.06$ ,  $df = 164$ ,  $p < .001$ , normed fit index [NFI] = .97 (cut-off  $> .90$ ), non-normed fit index [NNFI] = .97 (cut-off  $> .90$ ), CFI = .98, RMSEA = .051, SRMR = .078).

The Center for Epidemiologic Studies Depression Scale [CES-DC] (Fendrich, Weissman, & Warner, 1990) includes twenty items that requests participants aged 6-17-years-old to show the frequency of depressive symptoms experienced during the previous seven days. Each of the twenty statements is rated on a 4-point Likert scale (0 = *Not at all*; 1 = *A little*; 2 = *Some*; and 3 = *A lot*). Summation of all twenty values provides an overall estimation regarding an individual’s level of depressive symptomology, with higher scores denoting a higher level of depressive symptomology. A total score of 15 or higher has been suggested as indicative of elevated depressive symptoms (Fendrich, Weissman, & Warner, 1990; Brown *et al.*, 2012; Shahid, Wilkinson, Marcu, & Shapiro, 2012; Bettge *et al.*, 2008; El-Najjar, Negm, & El-Sayed, 2014; Salah *et al.*, 2013; Singh *et al.*, 2018). The following cut-off points have been applied: non-elevated depressive symptomology = 0-14; elevated depressive symptomology 15-37; and higher elevation = 38-60. The theoretical score range runs from 0-60. The CES-DC is considered a valid and reliable measure of depressive symptoms (e.g., Ohannessian, 2012; Ohannessian *et al.*, 1999; Shapira *et al.*, 2020; Khan & Shahzad, 2020; Betancourt *et al.*, 2012; Stockings *et al.*, 2015; Essau *et al.*, 2013).



Cronbach's  $\alpha$  analysis supplies a reliable measure of the internal consistency for a given scale. A Cronbach's  $\alpha$  score  $\geq 0.7$  is considered perfectly acceptable (DeVellis, 2003; Kline, 2005). The present study showed excellent Cronbach's  $\alpha$  scores. Combining all participants ( $n = 1,709$ ), Cronbach's  $\alpha$  was .918. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 844$ ) was .922, and for all English participants ( $n = 865$ ) the Cronbach's  $\alpha$  was .915.

#### **3.5.4. Loneliness**

Despite the existence of numerous loneliness scales, the Children's Loneliness Scale [CLS] (Asher & Wheeler, 1985) is considered the most suitable scale for the 13-15 age range since its design specifically addresses the pre-teen and adolescent cohort (Asher, Hymel, & Renshaw, 1984; Battistella & Conaco, 1998; Levitt *et al.*, 2005; Liu *et al.*, 2010; Maes *et al.*, 2015; Ling, Fu, & Zhang, 2015). The most widely used self-report measure (Russell, 1996) – the University of California, Los Angeles, Loneliness Scale [UCLA LS] – tends to focus on a broader societal sector and, accordingly, may be considered less targeted regarding adolescent samples. The broad age spectrum covered by the UCLA LS typically ranges from pre- and early-teens (Guertin *et al.*, 2001), adolescence (Cheng & Furnham, 2002; Lasgaard, 2007), and early adulthood and beyond (Durak & Senol-Durak, 2010; Banks & Banks, 2002; Liu & Guo, 2007; Wu *et al.*, 2010). The reliability and validity of the CLS has been proven (Asher, Hymel, & Renshaw, 1984; Maes *et al.*, 2015; Luo, Liu, & Zhang, 2020; Tekinarslan & Kucuker, 2015; Ara, Talepasand, & Rezaei, 2017; Kucuker, Aydemir, & Tikiroglu, 2018). Tekinarslan and Kucuker's (2015) psychometric evaluation of the CLS demonstrated that the scale retains a high-level of internal reliability and supplies measurement stability. Specifically, the latter authors employed exploratory factor analysis [EFA] to assess the scale's factor structure. The Kaiser-Meyer-Olkin [KMO] value was .91 (cut-off  $>.60$ ) and an acceptable Bartlett's test of sphericity ( $\chi^2 = 3004.985$ , standard deviation [SD] = 120,  $p <.01$ ) showed the scale could be subjected to factor analysis. Principal components analysis [PCA] revealed that 16 items loaded into three factors whose eigenvalues were  $>1$ , and the three factors explained 50.58% of the total variance. Cronbach's  $\alpha$  was .97, which suggests a high-level of internal consistency. EFA suggested the CLS retains a single factor structure. CFA was conducted on the 16 primary scale items, and acceptable

goodness of fit [GFI] indices were returned ( $\chi^2 = 427.56$ ,  $SD = 90$ ,  $\chi^2/SD = 4.75$ ,  $RMSEA = 0.076$ ,  $NFI = 0.94$ ,  $NNFI = 0.95$ ,  $CFI = 0.95$ , incremental fit index [IFI] = 0.95,  $SRMR = 0.055$ ,  $GFI = 0.92$ ).

The Children's Loneliness Scale [CLS] (Asher & Wheeler, 1985) includes twenty-four items, eight of which are filler items. Each of the sixteen assessed statements is rated on a 5-point Likert scale (1 = *That is not true about me at all*; 2 = *That is hardly ever true about me*; 3 = *That is sometimes true about me*; 4 = *That is true about me most of the time*; and 5 = *That is always true about me*). Summation of the sixteen non-filler items provides an overall estimation about an individual's level of loneliness, with higher scores denoting a higher level of loneliness (e.g., Ling, Fu, & Zhang, 2017; Ling, Fu, & Zhang, 2015; Goossens & Beyers, 2002; Cao *et al.*, 2020). With the literature not revealing clearly demarcated and accepted cut-off points, based on Jia and Tian (2010), "The 50<sup>th</sup> (median value) and 85<sup>th</sup> percentile of CLS score were taken as cut-off points... We classified children who scored more than the median value as being 'more lonely', and those who scored 85<sup>th</sup> percentile plus as at risk for severe loneliness". The median value for the dataset ( $n = 1,709$ ) was 31.00. The 85<sup>th</sup> percentile for the dataset was 45.58. Accordingly, the following have been applied: low loneliness = 16-30; increased loneliness = 31-45; and risk of severe loneliness  $\geq 46$ . The theoretical score range runs 16-80. The CLS is considered a valid and reliable measure of loneliness (e.g., Asher, Hymel, & Renshaw, 1984; Maes *et al.*, 2015; Luo, Liu, & Zhang, 2020). Cronbach's  $\alpha$  analysis supplies a reliable measure of the internal consistency for a given scale. A Cronbach's  $\alpha$  score  $\geq 0.7$  is considered perfectly acceptable (DeVellis, 2003; Kline, 2005). The present study showed excellent Cronbach's  $\alpha$  scores. Combining all participants ( $n = 1709$ ), Cronbach's  $\alpha$  was .908. The Cronbach's  $\alpha$  for all Welsh/Bilingual participants ( $n = 844$ ) was .906, and for all English participants ( $n = 865$ ) the Cronbach's  $\alpha$  was .912.

### **3.5.5. Social Anxiety**

Confirmatory factor analysis showed structural validity of the Liebowitz Social Anxiety Scale for Children and Adolescents self-report version [LSAS-CA-SR] and reliable internal consistency (Schmits, Heeren, & Quertemont, 2014). The reliability and validity of the LSAS-CA-SR has received support elsewhere, also (Olivares, Sanchez-Garcia, & Lopez-Pina, 2009). The LSAS-CA (non-self-report version) has also showed good levels of reliability and validity (Masia-Warner *et al.*, 2003; Shachar, Aderka, &

Gilboa-Schechtman, 2014). Schmits, Heeren, and Quertemont's (2014) psychometric evaluation of the LSAS-CA-SR suggested the scale enjoyed acceptable psychometric properties, including a reliable level of internal consistency. The authors tested various structural models of the LSAS-CA-SR with the more parsimonious model returning acceptable fit indices ( $\chi^2 = 3102.35$ , degrees of freedom [*df*] = 1050, normed  $\chi^2 = 2.95$ , SRMR = .048, RMSEA = .038, RMSEA 90% confidence interval [CI] = .037-.040, GFI = .90, CFI = .73, Akaike information criterion [AIC] = 3354.35, Browne-Cudek criterion [BCC] = 3363.35, expected cross-validation index [ECVI] = 2.50). With the exception of one item, all standardized factor loadings ranged from .460 to .793. Cronbach's  $\alpha$  values exceeded .75 for all factors, thereby suggesting a reliable level of internal consistency.

The Liebowitz Social Anxiety Scale for Children and Adolescents Self-Report [LSAS-CA-SR] (Masia-Warner *et al.*, 2003) includes forty-eight items, twenty-four about measures of fear, and twenty-four regarding avoidance measures. The fear and avoidance components accommodate relationship and performance subscales (Olivares, Sanchez-Garcia, & Lopez-Pina, 2009). Each of the twenty-four items relating to fear is rated on a 4-point Likert scale (0 = *No fear*; 1 = *Mild*; 2 = *Moderate*; and 3 = *Severe*). Each of the twenty-four items relating to avoidance is rated on a 4-point Likert scale, also (0 = *Never*; 1 = *Occasionally*; 2 = *Often*; and 3 = *Usually*). Summation of the forty-eight items provides an overall estimation regarding an individual's level of social anxiety, with higher scores denoting a higher level of social anxiety. As suggested by Masia-Warner *et al.* (2003: 1080): "An LSAS-CA total score of 22.5 supplied optimal sensitivity and specificity. That is, 95.9% of individuals with social phobia were correctly classified and none of the nonpsychiatric comparisons was misclassified." Masia-Warner *et al.* (2003: 1081) concluded: "ROC findings indicate that an LSAS-CA total score of 22.5 discriminates well between participants with social phobia and healthy nonpsychiatric volunteers." Accordingly, the following have been applied: no social phobia = 0-22; social phobia = 23-83; elevated social phobia = 84-144. The theoretical score range runs 0-144. The LSAS-CA-SR is considered a valid and reliable measure of social anxiety (e.g., Schmits, Heeren, & Quertemont, 2014; Olivares, Sanchez-Garcia, & Lopez-Pina, 2009). Cronbach's  $\alpha$  analysis supplies a reliable measure regarding the internal consistency for a given scale. A Cronbach's  $\alpha$  score  $\geq 0.7$  is considered perfectly acceptable (DeVellis, 2003; Kline, 2005). The present study showed excellent Cronbach's  $\alpha$  scores. Combining all participants ( $n = 1709$ ), Cronbach's  $\alpha$  was .960. The Cronbach's

$\alpha$  for all Welsh/Bilingual participants ( $n = 844$ ) was .958, and for all English participants ( $n = 865$ ) the Cronbach's  $\alpha$  was .962.

### **3.6. Procedure**

Time wave one provided data for the cross-sectional analyses. Time waves one, two, and three provided data for the longitudinal analyses. Longitudinal analyses covered a nine-month period with an approximately four-month interval separating each time wave. Acknowledging participating schools' time constraints and accommodating an academic year, a pragmatic decision was taken to run the analyses over a nine-month period.

#### **3.6.1. Time Wave One**

Consenting participants received questionnaire booklets in-class, and these were completed under the direction of their class teachers, who were able to help with completion-related enquiries. Points-of-contact were printed on the forms, and participants were free to raise questions, concerns, etc. Participants were informed that participation was voluntary, and they reserved the right to withdraw from the study at any time without having to supply a reason. Assurances regarding confidentiality were explicitly stated within the booklets. Participants completed the questionnaire between 6<sup>th</sup> June and 20<sup>th</sup> July 2018. Whilst participants were not restricted to a specific completion time, the estimated completion time for the questionnaire was 45-50 minutes. The Welsh/Bilingual schools received bilingual questionnaires, which were translated into Welsh by Swansea University's Welsh Translation Team.

The questionnaire contained the following measurement scales: Self-Esteem: Rosenberg Self-Esteem Scale (Rosenberg, 1979); SMD: Bergen Social Media Addiction Scale (Andreassen, Pallesen, & Griffiths, 2017); Depression: Center for Epidemiologic Studies Depression Scale (Fendrich, Weisman, & Warner, 1990); Loneliness: Children's Loneliness Scale (Asher & Wheeler, 1985); and Social Anxiety: Liebowitz Social Anxiety Scale for Children and Adolescents self-report version (Masia-Warner *et al.*, 2003). Participants were provided with a list of 14 social media platforms and were requested to indicate the average time usage per day. Participants were also allowed to record social media platforms not included in the list. Participants were also provided with a list of 10 social media activities and were requested to indicate the average daily

time devoted to each task. Participants were also allowed to record activities not included in the list.

### **3.6.2. Time Wave Two**

The time wave one questionnaire completion criteria was applied. Participants completed the questionnaire between 28<sup>th</sup> November 2018 and 13<sup>th</sup> December 2018. The questionnaire completion time was estimated at a couple of minutes. The questionnaire had the following measurement scales: Self-Esteem: Rosenberg Self-Esteem Scale; and SMD: Bergen Social Media Addiction Scale.

### **3.6.3. Time Wave Three**

The time wave one questionnaire completion criteria was applied. Participants completed the questionnaire between 5<sup>th</sup> March and 8<sup>th</sup> April 2019. The questionnaire completion time was estimated to be no more than 5 minutes. The questionnaire had the following measurement scales: Self-Esteem: Rosenberg Self-Esteem Scale; SMD: Bergen Social Media Addiction Scale; Instagram Dependency: modified version of the Bergen Social Media Addiction Scale whereby the term “social media” was replaced with “Instagram”; Snapchat Dependency: modified version of the Bergen Social Media Addiction Scale whereby the term “social media” was replaced with “Snapchat”; and Dependency upon the activity keeping in touch with existing friends: modified version of the Bergen Social Media Addiction Scale whereby the term “social media” was replaced with “keep in touch with existing friends.”

### **3.6.4. Qualitative Interviews**

Twenty-three interviews were conducted within two of the Welsh/Bilingual- and two of the English-medium schools. Interview details are as follows: first English-medium school (interview date: 23<sup>rd</sup> September 2019: males = 3; females = 3); second English-medium school (interview date: 23<sup>rd</sup> September 2019: males = 3; females = 3); first Welsh/Bilingual-medium school (interview date: 15<sup>th</sup> March 2019: males = 2; females = 3); and second Welsh/Bilingual-medium school (interview date: 19<sup>th</sup> June 2019: males = 3; females = 2). All interviews took place within the participants’ schools. The interview format was the same for all interviews wherein participants were mostly interviewed in

pairs (two of the males and one of the females attending Welsh/Bilingual schools were interviewed alone). Participants were presented with an identically worded question. The question was open-ended as opposed to closed. Teachers were not present during any of the interviews. Each interview lasted approximately 45-60 minutes. As a condition of participation, all participants had previously engaged in the quantitative phase. The researcher conducted all of the interviews in English, which were digitally recorded for purposes of efficiency and accuracy. Participants' anonymity was assured ahead of each interview session. Participants reserved the right to decline answering the question and, also, withdraw from the interview. Participants' consent to partake in the interviews was secured and recorded at time wave one. Post-interviews, participants' responses were coded by a single coder – the author.

### **3.6.5. Statistical Test Selection Rationale**

The selection of the deployed statistical tests was determined by the comparative nature of the research questions and hypotheses. In all instances, the objective was to compare the responses provided by FLWs versus FLEs, and Welsh/Bilingual- versus English-medium schools. Bivariate analyses incorporating t-tests, ANOVAs, chi-squares, and Pearson analyses permitted direct inter-group comparisons; for instance, the t-test facilitated the direct comparison of groups' mean values for the dependent and independent variables, whereas the ANOVA analyses facilitated the comparison of three or more groups simultaneously to determine where group variances persisted. In addition to bivariate analyses, analysis also used more sophisticated statistical techniques incorporating structural equation modelling. Structural equation modelling is a multivariate statistical technique comprising two stages: the first stage explores the relationship between the items within a given scale (for example, the ten items comprising the Rosenberg Self-Esteem Scale) to determine the 'best fit' for the data; the second stage constructs an analytical model using the data obtained in the first stage. The primary benefit of this form of analysis is that it provides the most parsimonious model for the tested data and – using path-by-path controls – facilitated a direct inter-group comparison for a given path; for example, comparing the strength of the relationship between SMD and depression for FLWs versus FLEs.

Combined, statistical analyses provided a comprehensive statistical understanding regarding the tested groups' comparative relationships with the deployed variables (and inter-variable associations) within the context of the research questions and hypotheses.

## 4. CHAPTER FOUR: Empirical Analysis – Social Media Dependency: Cross-Sectional

### 4.1. Introduction and Hypotheses

The hypothesis (**H1**) states: Welsh/Bilingual-medium and FLWs' SMD scores would be higher than English-medium and FLEs' scores. Despite only one-third of Welsh/Bilingual-medium school participants indicating their first language was Welsh, comparative analysis operates at the school level, too. However, relative to FLWs alone, it would be expected that the impact of the Welsh language upon SMD would be reduced with respect to the Welsh/Bilingual population taken as a *whole* compared to *just* the FLWs. The supportive rationale for the hypothesis is based on a number of different factors. The *first* factor is based on empirical research suggesting a perceived societal devaluation, marginalization, and discrimination (termed *linguistic devaluation*) of one's first language ultimately *decreases* an individual's level of self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022; Wei, Wang, & Ku, 2012; Wright & Bougie, 2007; Ekwere, 2022), with a *decreased* level of self-esteem empirically associated with a *higher* level of SMD (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021). Despite enjoying empirical support, the paradoxical nature of this factor is acknowledged, i.e., a perception of one's language being devalued, marginalized, and/or discriminated against within the social media domain would – logically – result in *reduced* social media use and not *more*. *Second*, an additional factor potentially driving FLWs' greater usage of social media might be a desire to attain greater language equality within the social media domain (for examples demonstrating how social media can be used as a force for equality, see Lane, Do, & Molina-Rogers (2022), Yusupova (2022), and Gonzales *et al.* (2021)). Indeed, reacting against perceived injustice and marginalization might be considered a tactic that protects minority language speakers' self-esteem (Greene, 2010). *Third*, reflecting upon Odulaja (2021), it is noted how use of one's native language on social media promoted self-esteem, which might be a factor in FLWs' continued - or even excessive - use of social media despite a possible perception that fewer Welsh language opportunities prevail on social media. As indicated previously, this would make sense considering that self-esteem is a basic human need (Maslow, 1943). Combining Odulaja and Maslow, it might be appreciated how speakers



of native languages such as Welsh might be motivated to use social media more. *Fourth*, another factor potentially driving FLWs' greater use of social media is the geographic distribution of FLWs throughout Wales, who are predominantly located within the northern and western regions (ONS, 2011). A FLW living in a geographic region containing fewer FLWs such as Monmouthshire (Welsh Government, 2021e) might be attracted to social media to connect with other FLWs. *Fifth*, the benefits associated with group affiliation within the social media context have been demonstrated with respect to second language students who have benefited in terms of motivation, improved linguistic skills, confidence, and enhanced self-esteem (Kabilan, Ahmad, & Abidin, 2010; Aziz, Hashim, & Yunus, 2019) – reasons that might also apply to FLWs looking to maintain and develop their Welsh language skills via social media, which might result in greater social media usage.

## **4.2. Method**

### **4.2.1. Participants**

Participants attended Welsh/Bilingual- and English-medium secondary schools found within Wales. The number of Welsh/Bilingual-medium school participants was 844 (males = 410; females = 434), and the number of English-medium school participants was 865 (males = 418; females = 447).

### **4.2.2. Procedure**

Consenting participants received questionnaire booklets in-class, and these were completed under the direction of their class teachers. Participants completed the questionnaire between 6<sup>th</sup> June and 20<sup>th</sup> July 2018 (i.e., time wave 1).

### **4.2.3. Material**

Participants completed the 6-item self-report Bergen Social Media Addiction Scale (Andreassen, Pallesen, & Griffiths, 2017). Validity and reliability aspects are addressed within Chapters One and Three, above.

### 4.3. Results

#### 4.3.1. Frequency of Using Welsh and English on Social Media and Face-to-Face

On- and off-line linguistic preference was applied to FLWs and FLEs, where both groups attended Welsh/Bilingual-medium schools. The first analysis addresses the first language used on social media. The second analysis addresses the first language used in the off-line context.

Initial analysis focused upon the language primarily used on social media. Table 3 below depicts the number of FLWs and FLEs ‘Never’, ‘Rarely’, ‘Sometimes’, ‘Often’, and ‘Always’ using Welsh and English on social media.

*Table 3. Language Primarily Used on Social Media – First Language Welsh and English Speakers Attending Welsh/Bilingual Medium Schools Only*

	Never	Rarely	Sometimes	Often	Always
<b>Frequency English used on Social Media</b>					
FLWs ( <i>n</i> = 303)	20 (6.6%)	29 (9.6%)	45 (14.9%)	85 (28.1%)	124 (40.9%)
FLEs ( <i>n</i> = 509)	7 (1.4%)	1 (0.2%)	8 (1.6%)	32 (6.3%)	461 (90.6%)
<b>Frequency Welsh used on Social Media</b>					
FLWs ( <i>n</i> = 301)	39 (13.0%)	39 (13.0%)	42 (14.0%)	73 (24.3%)	108 (35.9%)
FLEs ( <i>n</i> = 499)	245 (49.1%)	155 (31.1%)	75 (15.0%)	19 (3.8%)	5 (1.0%)

The above data suggests differences between FLWs and FLEs using English or Welsh on social media, with a greater proportion of FLEs ‘Always’ using English on social media, and, conversely, a greater proportion of FLWs ‘Often’ or ‘Always’ using Welsh on social media. Follow-up  $\chi^2$  tests of independence (*R* x *C* table) confirmed statistical significance. Regarding the use of English on social media, there was a statistically significant difference in the two populations with a greater proportion of the FLEs ‘Always’ using English on social media,  $\chi^2(4) = 239.521, p < .05$ , Cramer’s *V* = .543. Regarding the use of Welsh on social media, there was a statistically significant difference in the two populations with a greater proportion of the FLWs ‘Often’ or ‘Always’ using Welsh on social media,  $\chi^2(4) = 324.547, p < .05$ , Cramer’s *V* = .637.

Analysis also focused upon the language primarily used during off-line, face-to-face communication. Table 4 below depicts the number of FLWs and FLEs ‘Never’, ‘Rarely’, ‘Sometimes’, ‘Often’, and ‘Always’ using Welsh and English during face-to-face communication.

Table 4. Language Primarily Used Off-Line – First Language Welsh and English Speakers

	Never	Rarely	Sometimes	Often	Always
<b>Frequency English used during Face-to-Face Communication</b>					
FLWs ( <i>n</i> = 303)	17 (5.6%)	31 (10.2%)	52 (17.2%)	110 (36.3%)	93 (30.7%)
FLEs ( <i>n</i> = 510)	0 (0.0%)	0 (0.0%)	6 (1.2%)	73 (14.3%)	431 (84.5%)
<b>Frequency Welsh used during Face-to-Face Communication</b>					
FLWs ( <i>n</i> = 305)	2 (0.7%)	21 (6.9%)	46 (15.1%)	76 (24.9%)	160 (52.5%)
FLEs ( <i>n</i> = 505)	66 (13.1%)	126 (25.0%)	159 (31.5%)	129 (25.5%)	25 (5.0%)

The above data suggests differences between FLWs and FLEs using Welsh and English during face-to-face communication, with a greater proportion of the FLWs ‘Always’ using Welsh, and a greater proportion of the FLEs ‘Always’ using English. Follow-up  $\chi^2$  tests of independence (*R* x *C* table) confirmed statistical significance. Regarding the use of English off-line, there was a statistically significant difference in the two populations with a greater proportion of the FLEs ‘Always’ using English,  $\chi^2$  (4) = 275.117, *p* < .05, Cramer’s *V* = .582. Regarding the use of Welsh off-line, there was a statistically significant difference in the two populations with a greater proportion of the FLWs ‘Always’ using Welsh,  $\chi^2$  (4) = 277.3, *p* < .05, Cramer’s *V* = .585.

The rest of this section focuses upon whole- and sub-group comparisons. Initial analyses accommodate the entirety of the dataset (i.e., pooled Welsh/Bilingual- and English-medium school data) and compares FLWs versus FLEs. Thereafter, data analyses assume a more granular aspect whereby the following comparisons are explored: Welsh/Bilingual- versus English-medium schools; and using data extracted from the Welsh/Bilingual-medium school cohort *only*, FLWs versus FLEs.

### 4.3.2. Analysis of Welsh/Bilingual and English-medium School Participants Combined

This sub-section analyses the data whereby Welsh/Bilingual- and English-medium school participants were *combined* into a single data set. Accordingly, this affords an overview at the whole-group level whereby FLW and FLE participants' responses were compared with one another.

Table 5 below provides an overall breakdown of the SMD scores for FLW and FLE participants (where dependency scores were classified: low = 6-10; medium = 11-19; and high  $\geq 20$ ).

Table 5. Social Media Dependency - Number and Percentage – First Language Welsh and English Speakers

	<b>Low</b>	<b>Medium</b>	<b>High</b>
All Participants ( <i>n</i> = 1,691)	485 (28.7%)	1,032 (61.0%)	174 (10.3%)
FLWs ( <i>n</i> = 335)	96 (28.7%)	207 (61.8%)	32 (9.6%)
FLEs ( <i>n</i> = 1,356)	389 (28.7%)	825 (60.8%)	142 (10.5%)

Figure 2 supplies a graphical representation of the percentage of participants registering low, medium, and high levels of SMD.

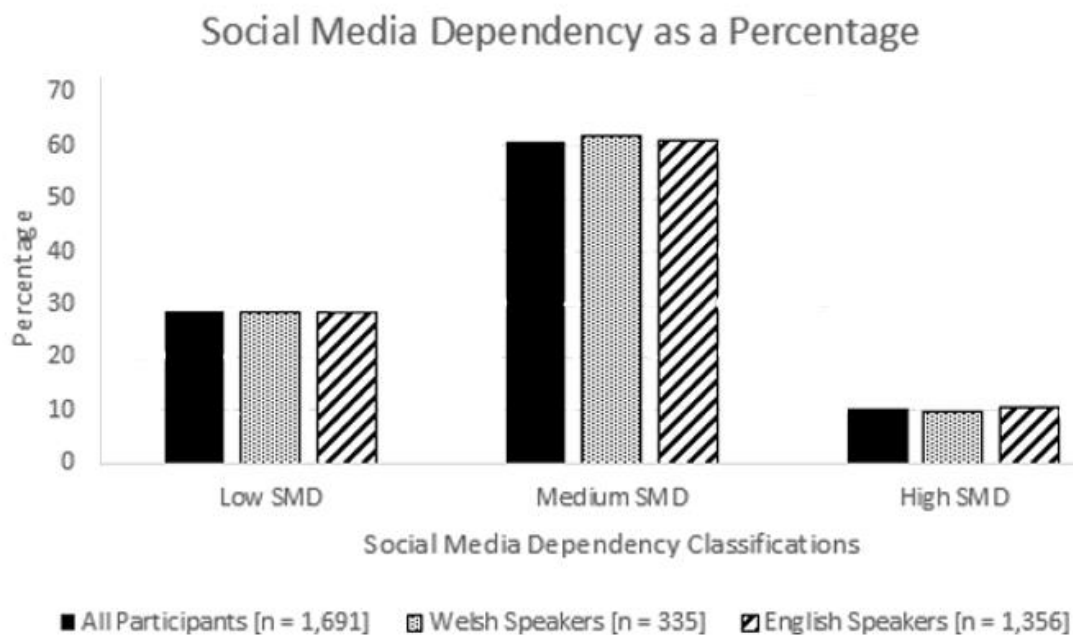


Figure 2. Social Media Dependency - Low, Medium, and High

To find a potential difference in SMD scores between FLW ( $n = 335$ ) and FLE participants ( $n = 1,356$ ), data was subjected to a t-test.

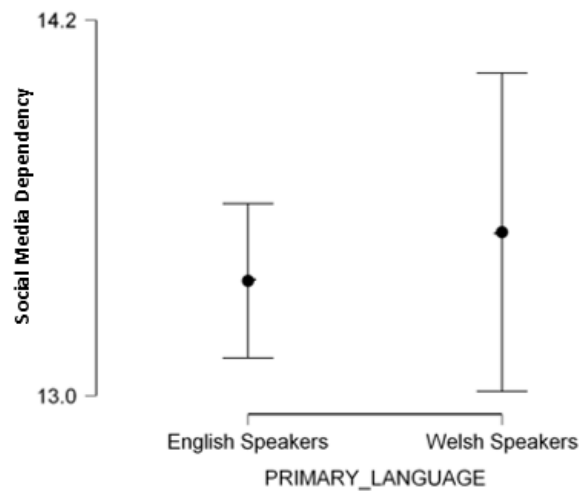


Figure 3. Social Media Dependency – First Language Welsh and English Speakers

Figure 3 depicts the SMD scores. There was no statistically significant difference in mean SMD score between FLWs and FLEs,  $.155$ , 95% CI  $[-.711, .401]$ ,  $t(1689) = -.547$ ,  $p > .30$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.079$ , error = 0.040), thereby supporting the null hypothesis ( $H_0$ ), i.e., the population means of the two groups are equal (i.e.,  $\mu_1 = \mu_2$ ). Prior/posterior analysis provides added evidence in support of  $H_0$  (95% CI  $[-0.151, 0.086]$ ).

Figure 4 below depicts the mean SMD scores for FLWs and FLEs attending Welsh/Bilingual- and English-medium schools. The participants declaring a first language were placed into one of four groups: FLWs attending Welsh/Bilingual schools; FLWs attending English schools; FLEs attending Welsh/Bilingual schools; and FLEs attending English schools. Irrespective of first language indicated, participants attending Welsh-Bilingual-medium schools reported the higher mean score. A two-factor between-subject ANOVA (first language (Welsh versus English) x school type (Welsh/Bilingual versus English)) revealed a significant main effect of school attended ( $F(1, 1687) = 3.908$ ,  $p = .048$ ,  $\eta^2 p = .002$ ), but no main effect of first language ( $F(1, 1687) = 1.276$ ,  $p = .259$ ,  $\eta^2 p < .001$ ). There was also no interaction effect ( $F(1, 1687) = .748$ ,  $p > .30$ ,  $\eta^2 p < .001$ ).

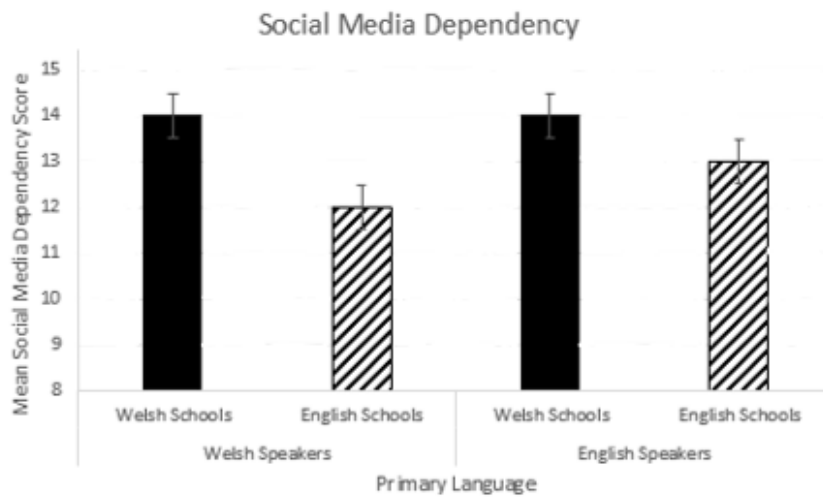


Figure 4. Social Media Dependency Score – First Language Welsh and English Speakers Attending Welsh/Bilingual and English Schools

#### 4.3.3. Analyses of Welsh/Bilingual versus English-medium Schools, and Welsh versus English-Speakers Attending Welsh/Bilingual-medium Schools

The final part of the analyses considers the following comparisons: Welsh/Bilingual-versus English-medium schools; and, using data extracted from the Welsh/Bilingual cohort *only*, FLWs versus FLEs.

To ascertain a potential difference in SMD scores between Welsh/Bilingual- versus English-medium school participants, data was subjected to a t-test.

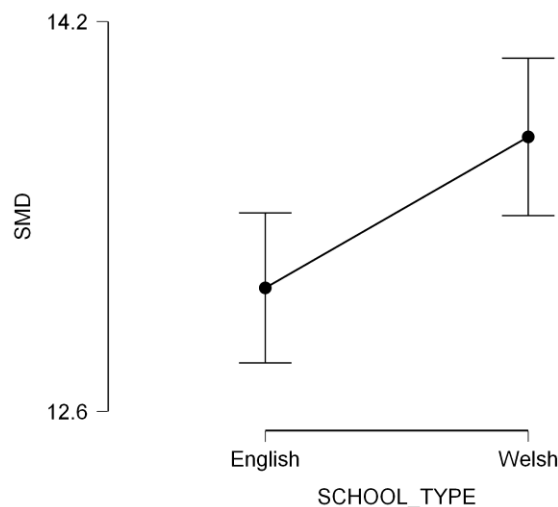


Figure 5. Social Media Dependency - Welsh/Bilingual and English-Medium Schools

Figure 5 above depicts the mean SMD scores. There was a statistically significant difference in mean SMD score between Welsh/Bilingual- and English-medium participants,  $0.620$ ,  $95\% \text{ CI } [.174, 1.065]$ ,  $t(1707) = 2.727$ ,  $p = .006$ ,  $d = .13$  (small effect size according to Cohen, 1988), with Welsh/Bilingual participants registering the higher score ( $13.727$  versus  $13.107$ ). Statistical significance was affirmed using Bayesian analysis ( $\text{BF}_{10} = 2.153$ ,  $\text{error} = 4.362e -4$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., Welsh/Bilingual participants' SMD scores would be higher than English participants' scores. [Note:  $\text{BF}_{10}$  expresses the odds in favour of  $H_1$ ;  $\text{BF}_{01}$  expresses the odds in favour of  $H_0$ .] Prior/posterior analysis provides added evidence in support of  $H_1$  ( $95\% \text{ CI } [0.036, 0.227]$ ) with the CI not being bisected by a zero indicating significance:

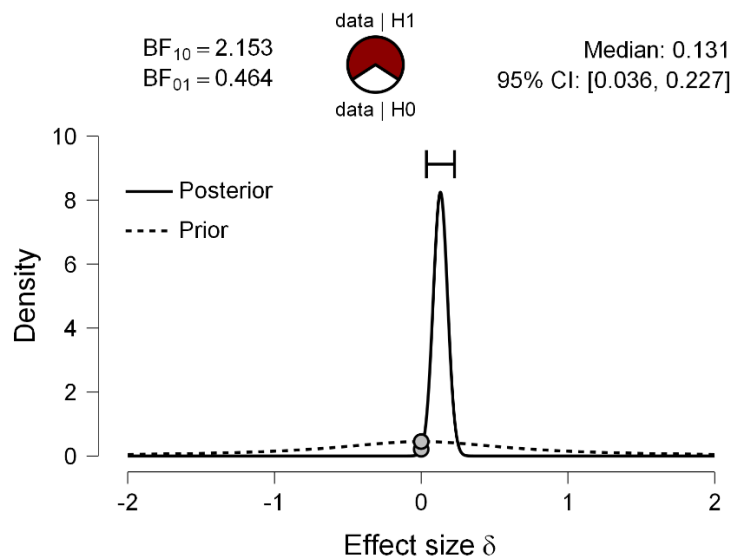


Figure 6. Social Media Dependency - Linguistic Prior/Posterior Graph - Welsh/Bilingual and English-Medium Schools

Combined, frequential and inferential analyses support the alternative ( $H_1$ ) hypothesis, i.e., the mean SMD scores between Welsh/Bilingual- and English-medium school participants are statistically significantly different from one another, with participants attending Welsh/Bilingual-medium schools recording the higher mean score.

The data was explored further using a  $2 \times 2$  factorial between-subjects ANOVA design. Analysis used one dependent variable (i.e., SMD) and two independent variables (i.e., the first language spoken by the participants - Welsh or English, and the type of school attended – Welsh/Bilingual- or English-medium). The ANOVA revealed a significant main effect of school attended (i.e., Welsh/Bilingual- or English-medium),  $F(1, 1687) =$

3.881, 95% CI [.001, .313],  $p = .049$ ,  $\eta^2_p = .002$ , no significant main effect of first language,  $F(1, 1687) = 1.387$ , 95% CI [-.062, .250],  $p = .239$ ,  $\eta^2_p < .001$ , and no interaction of school type\*language,  $F(1, 1687) = .704$ ,  $p > .30$ ,  $\eta^2_p < .001$ . Reflecting upon the significant main effect of school type, SQRT transformed estimated marginal mean values reveal Welsh/Bilingual-medium schools scored more highly than English-medium schools (3.65 versus 3.49), thereby affirming the hypothesis. Figure 7 illustrates the significance of the school main effect.

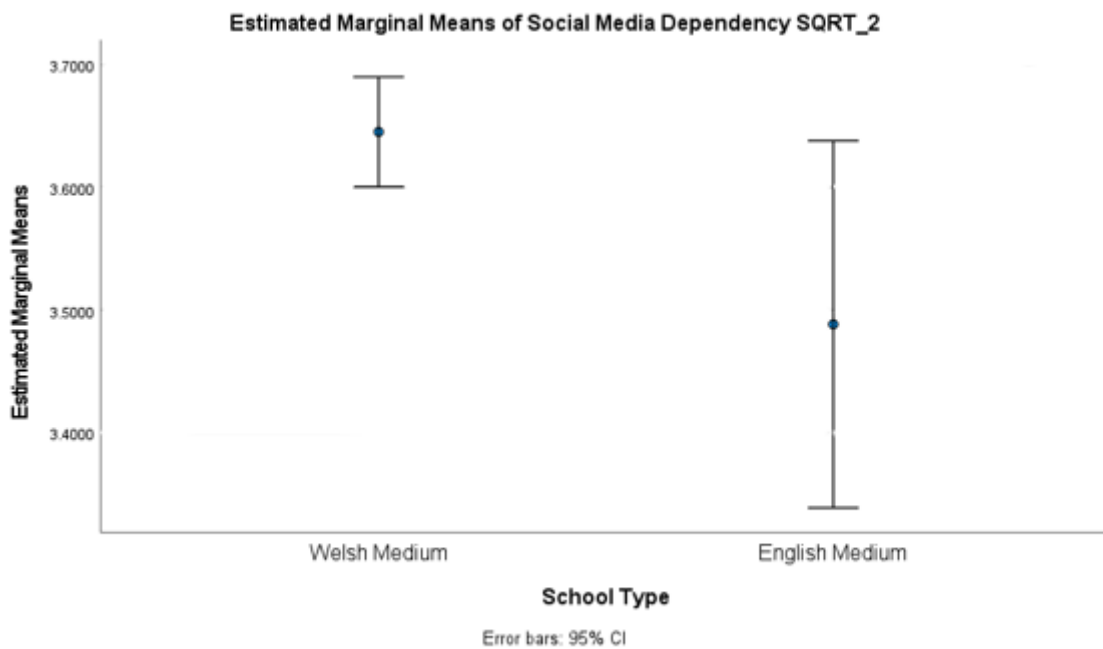


Figure 7. Social Media Dependency - Interaction Effect - Welsh/Bilingual and English-Medium Schools

Simple effect analysis also determined there was no significance where FLWs and FLEs attended Welsh/Bilingual-medium schools ( $F(1, 1687) = .349$ , 95% CI [-.063, .116],  $p > .30$ ,  $\eta^2_p < .001$ ) or English-medium schools ( $F(1, 1687) = 1.108$ , 95% CI [-.139, .460],  $p = .293$ ,  $\eta^2_p = .001$ ). FLEs attending Welsh/Bilingual-medium schools scored higher than FLEs attending English-medium schools,  $F(1, 1687) = 6.334$ , 95% CI [.020, .160],  $p = .012$ ,  $\eta^2_p = .004$ . There was no significance between FLWs attending Welsh/Bilingual- and English-medium schools,  $F(1, 1687) = 2.078$ , 95% CI [-.081, .528],  $p = .150$ ,  $\eta^2_p = .001$ .



Attention was then directed toward participants' first languages. Using data extracted from the Welsh/Bilingual-medium schools *only*, FLW and FLE participants' data were subjected to a t-test.

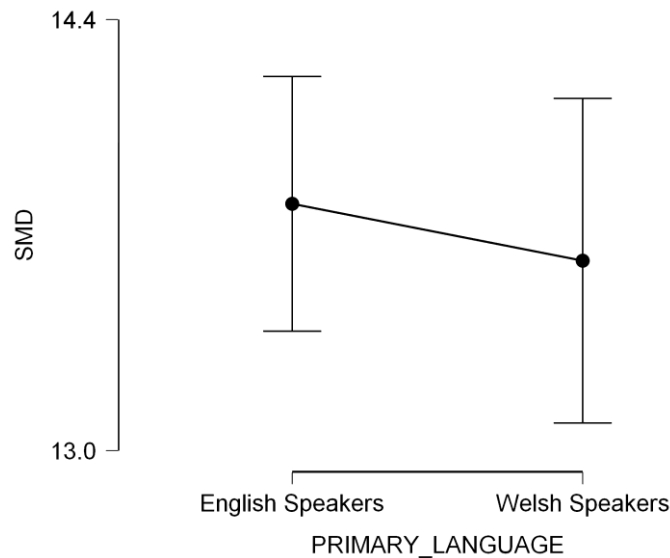


Figure 8. Social Media Dependency Scores - First Language Welsh and English Speakers

Figure 8 above depicts the mean SMD scores. There was no statistically significant difference in mean SMD score between FLWs and FLEs,  $t(834) = .542, p > .30$  (mean scores: FLWs = 13.617; FLEs = 13.802). Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.092$ , error = 0.002), thereby supporting the null ( $H_0$ ) hypothesis, i.e., the population means of the two groups are equal (i.e.,  $\mu_1 = \mu_2$ ). Prior/posterior analysis provides added evidence in support of  $H_0$  (95% CI [-0.100, 0.176]) with the CI bisected by a zero.

A  $\chi^2$  test of homogeneity ( $R \times 2$  table) was undertaken to decide whether differences existed between Welsh/Bilingual- and English-medium school participants' SMD scores at low, medium, and high levels. The group probability distributions were equal in the population,  $\chi^2(2) = 5.382, p = .068$ , i.e., there were no differences between Welsh/Bilingual- and English-medium school participants' scores at low, medium, and high levels of SMD.

Extending from the previous analysis, attention was subsequently directed toward a specific linguistic comparative context. To ascertain potential differences at low, medium, and high levels of SMD between FLW and FLE participants' scores, data extracted from the Welsh/Bilingual cohort *only* was subjected to  $\chi^2$  test of homogeneity ( $R \times 2$  table). The group probability distributions were equal in the population,  $\chi^2 (2) = 2.176, p = .337$ , i.e., there were no differences between FLW and FLE participants' scores at low, medium, and high levels of SMD.

Constituting something of a hybrid in respect to the previous analyses within this subsection, present analysis assesses FLW and FLE participants' SMD scores when they respectively attended Welsh/Bilingual- and English-medium schools. Figure 9 below depicts participants' mean SMD scores. Participants declaring a first language were distributed to one of four groups: FLWs attending Welsh/Bilingual-medium schools; FLWs attending English-medium schools; FLEs attending Welsh/Bilingual-medium schools; and FLEs attending English-medium schools. Participants attending Welsh/Bilingual-medium schools had a higher mean SMD than those attending English-medium schools. A two-factor between-subject ANOVA (first language x school type) revealed a significant main effect of school attended ( $F(1, 1660) = 4.04, 95\% \text{ CI } [.000, .009], p = .045, \eta^2_p = .003$ ), no significant main effect of first language ( $F(1, 1660) = 1.42, 95\% \text{ CI } [.000, .006], p = .233, \eta^2_p < .001$ ), and no interaction effect ( $F(1, 1660) < 1.0, 95\% \text{ CI } [.000, .006], p > .30, \eta^2_p < .001$ ).

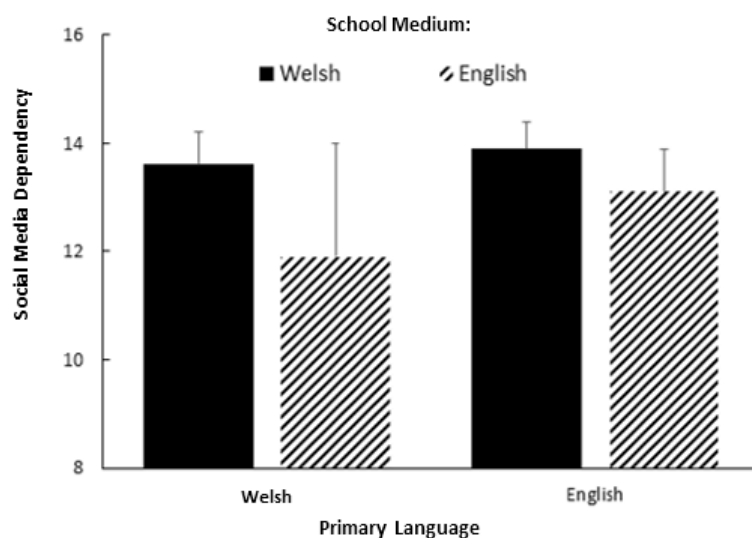


Figure 9. Social Media Dependency for First Language Welsh and English Speakers in Welsh/Bilingual and English Medium Schools

The rest of this sub-section focuses upon two of the more popular social media platforms reported at time wave one: Instagram and Snapchat. Additionally, the most popular social media activity reported at time wave one was also included, i.e., keeping-in-touch with existing friends.

#### 4.3.4. Instagram

The first aim was to determine whether there were differences regarding Instagram usage rates between Welsh/Bilingual- and English-medium school participants. Table 6 below supplies a breakdown of self-reported Instagram daily usage rates.

Table 6. Instagram Usage Rates Per Day - Welsh/Bilingual and English-Medium Schools

	I do not use this provider	<1 hour per day	1-2 hours per day	2-3 hours per day	3-4 hours per day	>4 hours per day
Welsh/Bilingual Schools [n = 762]	139 (18.2%)	229 (30.1%)	197 (25.9%)	102 (13.4%)	49 (6.4%)	46 (6.0%)
English Schools [n = 808]	148 (18.3%)	206 (25.5%)	211 (26.1%)	133 (16.5%)	50 (6.2%)	60 (7.4%)

The above data was subjected to a  $\chi^2$  test of independence to decide whether there was a difference between the groups – there was no statistical significance,  $\chi^2(5) = 6.59$ ,  $p = .253$ , Cramer’s V = .065.

To find a potential difference in Instagram dependency scores between Welsh/Bilingual- versus English-medium school participants, data was subjected to a t-test.

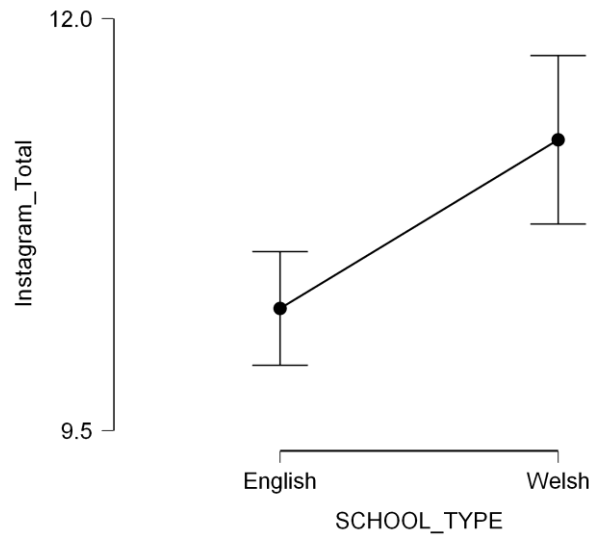


Figure 10. Instagram Dependency Scores - Welsh/Bilingual and English-Medium Schools

Figure 10 above depicts the mean Instagram dependency scores (Welsh/Bilingual = 11.265; English = 10.242). There was a statistically significant difference in mean Instagram dependency score between Welsh/Bilingual- and English-medium participants, 1.023, 95% CI [.429, 1.618],  $t(980) = 3.377$ ,  $p < .001$ ,  $d = .22$  (small effect size according to Cohen, 1988). Statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 19.608$ , error =  $1.068e^{-5}$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., Welsh/Bilingual participants recorded a higher mean Instagram dependency score. Prior/posterior analysis provides evidence in support of  $H_1$  (95% CI [0.092, 0.349]) with the CI not bisected by a zero thereby indicating significance:

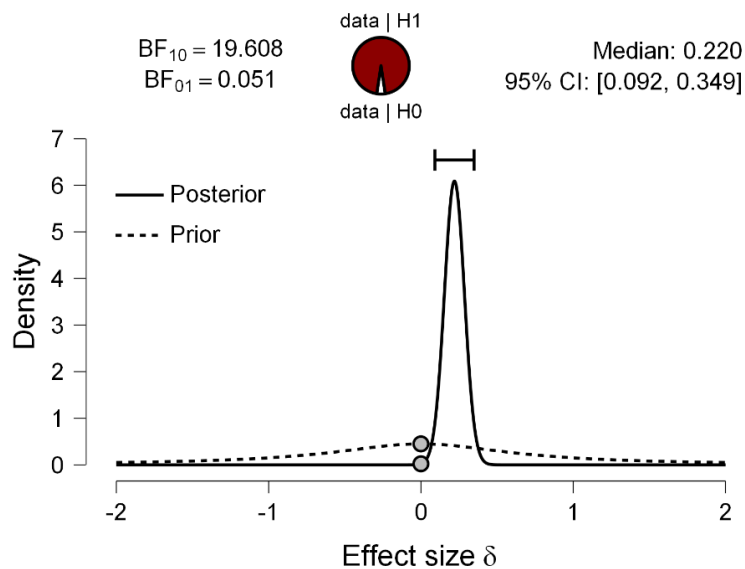


Figure 11. Instagram Dependency - Prior/Posterior Graph - Welsh/Bilingual and English-Medium Schools

Combined, frequential and inferential analyses support the alternative ( $H_1$ ) hypothesis, i.e., the mean Instagram dependency scores between Welsh/Bilingual- and English-medium schools are statistically significantly different from one another, with participants attending Welsh/Bilingual-medium schools recording the higher mean Instagram dependency score.

Attention subsequently switched to a specific linguistic comparative context, whereby FLW and FLE participants' scores were contrasted with one another. Data was extracted from the Welsh/Bilingual-medium school cohort *only*. Data was subjected to a t-test.

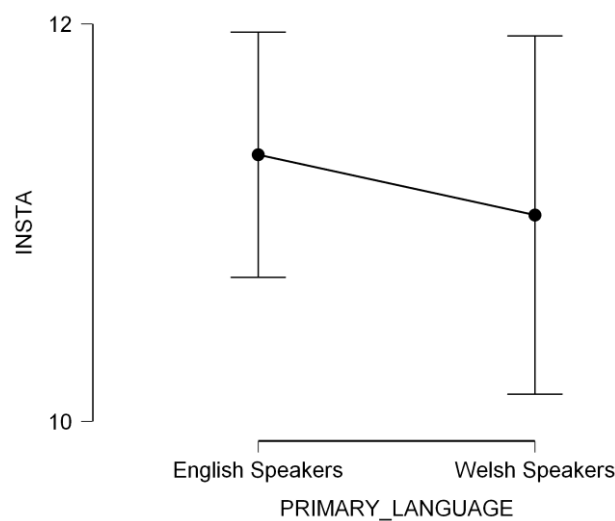


Figure 12. Instagram Dependency – First language Welsh and English Speakers

Figure 12 above depicts the mean Instagram dependency scores (FLWs = 11.038; FLEs = 11.342). There was no statistically significant difference in mean Instagram dependency score between FLWs and FLEs, 0.303, 95% CI [-.815, 1.421],  $t(365) = .534$ ,  $p > .30$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = .145$ , error = 6.743e-6), thereby supporting the null ( $H_0$ ) hypothesis, i.e., no difference in mean Instagram dependency score between both populations. Prior/posterior analysis provides evidence in support of  $H_0$  (95% CI [-0.163, 0.273]) with the CI bisected by a zero.

Combined, frequential and inferential analyses support the null ( $H_0$ ) hypothesis, i.e., the mean Instagram dependency scores between FLWs and FLEs are not statistically significantly different from one another.

### 4.3.5. Snapchat

The first aim was to decide whether there were differences regarding Snapchat usage rates between Welsh/Bilingual- and English-medium school participants. Table 7 below supplies a breakdown of self-reported Snapchat daily usage rates.

Table 7. Snapchat Usage Rates Per Day - Welsh/Bilingual and English-Medium Schools

	I do not use this provider	<1 hour per day	1-2 hours per day	2-3 hours per day	3-4 hours per day	>4 hours per day
Welsh/Bilingual Schools [n = 778]	158 (20.3%)	123 (15.8%)	118 (15.2%)	128 (16.5%)	92 (11.8%)	159 (20.4%)
English Schools [n = 809]	146 (18.0%)	146 (18.0%)	124 (15.3%)	131 (16.2%)	63 (7.8%)	199 (24.6%)

The above data was subjected to a  $\chi^2$  test of independence to decide whether there was a difference between the groups – there was statistical significance with a greater proportion of English-medium school participants using Snapchat >4 hours per day,  $\chi^2(5) = 11.92, p = .036$ , Cramer’s V = .087.

To find a potential difference in Snapchat dependency scores between Welsh/Bilingual- versus English-medium schools, data was subjected to a t-test.

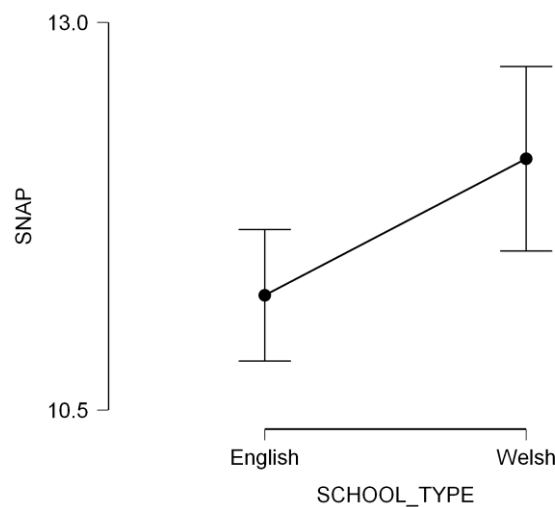


Figure 13. Snapchat Dependency Scores - Welsh/Bilingual and English-Medium Schools

Figure 13 above depicts the mean Snapchat dependency scores (Welsh/Bilingual = 12.121; English = 11.240). There was a statistically significant difference in mean Snapchat dependency score between Welsh/Bilingual- and English-medium school participants,  $0.880$ , 95% CI [ $0.166, 1.595$ ],  $t(976) = 2.418$ ,  $p = .016$ ,  $d = .16$  (small effect size according to Cohen, 1988). Statistical significance was marginally affirmed using Bayesian analysis ( $BF_{10} = 1.303$ , error =  $1.641e^{-4}$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., Welsh/Bilingual participants' scores exceed English participants' scores. Prior/posterior analysis provides borderline evidence in support of  $H_1$  (95% CI [ $0.024, 0.284$ ]) with the CI not bisected by zero:

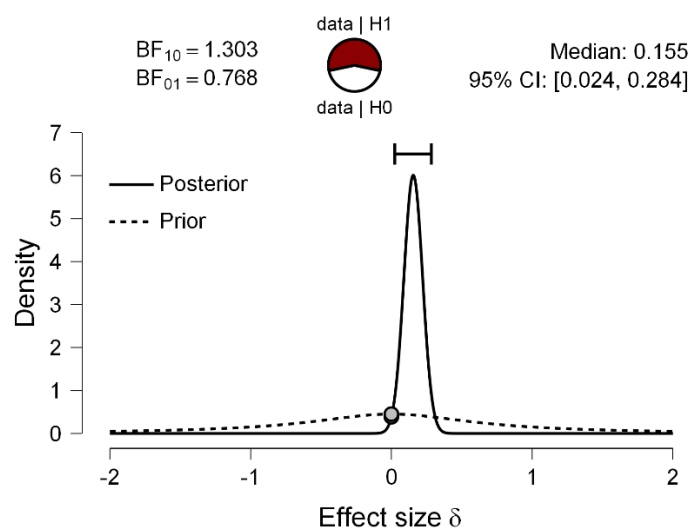


Figure 14. Snapchat Dependency - Prior/Posterior Graph - Welsh/Bilingual and English-Medium Schools

Although marginal, consensus supports the alternative ( $H_1$ ) hypothesis, i.e., the mean Snapchat dependency scores between Welsh/Bilingual- and English-medium schools are statistically significantly different from one another, with participants attending Welsh/Bilingual-medium schools recording the higher mean Snapchat dependency score.

Attention was then directed to a specific linguistic comparative context whereby FLW and FLE participants' scores were compared with one another. Data was extracted from the Welsh/Bilingual data cohort *only* due to the low number of FLWs attending English-medium schools. Data was subjected to a t-test.

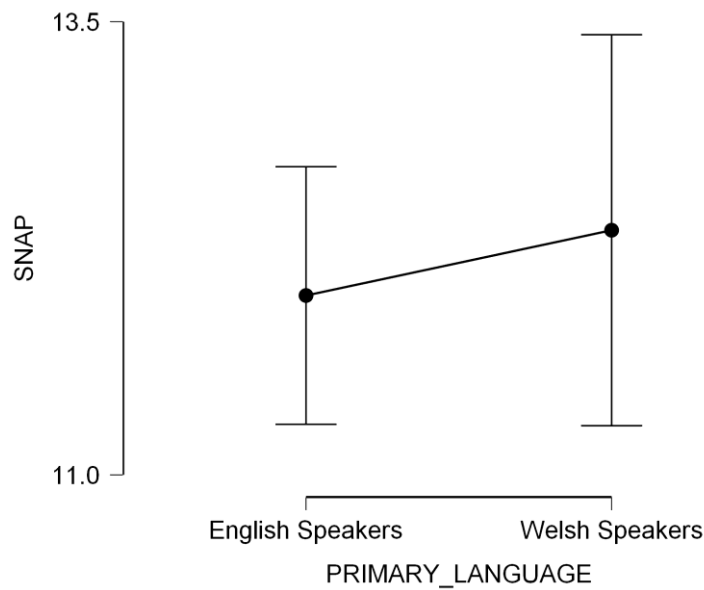


Figure 15. Snapchat Dependency Scores – First Language Welsh and English Speakers

Figure 15 above depicts the mean Snapchat dependency scores (FLWs = 12.350; FLEs = 11.989). There was no statistically significant difference in mean Snapchat dependency score between FLWs and FLEs,  $-0.360$ , 95% CI  $[-1.662, .927]$ ,  $t(362) = -0.544$ ,  $p > .30$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.146$ , error =  $8.113e-6$ ), thereby supporting the null ( $H_0$ ) hypothesis, i.e., there was no difference in mean scores between the populations. Prior/posterior analysis provides evidence in support of  $H_0$  (95% CI  $[-0.275, 0.159]$ ) with the CI bisected by zero.

Combined, frequential and inferential analyses support the null ( $H_0$ ) hypothesis, i.e., the mean Snapchat dependency scores between first language FLWs and FLEs are not statistically different from one another.

#### 4.3.6. Keeping-in-Touch with Existing Friends

The first aim was to decide whether there were differences regarding usage rates for the activity keeping-in-touch with existing friends between Welsh/Bilingual- and English-medium school participants. Table 8 below supplies a breakdown of self-reported usage rates for the activity.



Table 8. Keeping-in-Touch with Existing Friends Usage Rates Per Day - Welsh/Bilingual and English-Medium Schools

	I don't like this activity	<1 hour per day	1-2 hours per day	2-3 hours per day	3-4 hours per day	>4 hours per day
Welsh/Bilingual Schools [n = 771]	60 (7.8%)	205 (26.6%)	202 (26.2%)	126 (16.3%)	51 (6.6%)	127 (16.5%)
English Schools [n = 801]	39 (4.9%)	184 (23.0%)	204 (25.5%)	151 (18.9%)	78 (9.7%)	145 (18.1%)

The above data were subjected to a  $\chi^2$  test of independence to determine whether there was a difference between the groups – there was statistical significance with a greater proportion of English-medium school participants engaging in the activity keeping-in-touch with existing friends for 3-4 hours per day and >4 hours per day,  $\chi^2(5) = 14.13, p = .015$ , Cramer's V = .095.

Employing a t-test, Welsh/Bilingual- and English-medium school participants' dependency scores for the social media function keeping-in-touch with existing friends were compared for statistical significance.

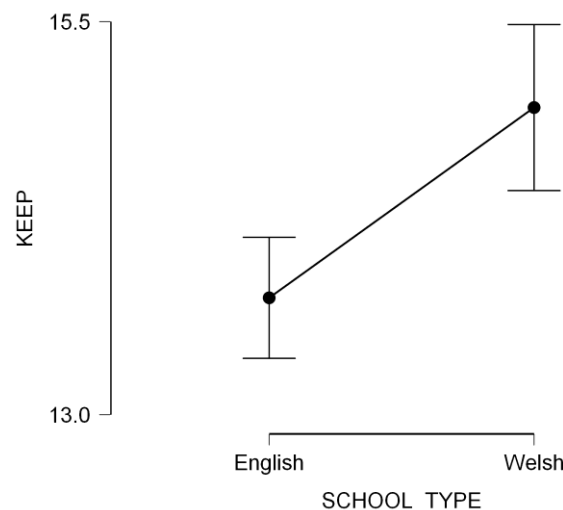


Figure 16. Keeping-in-Touch with Existing Friends Dependency Scores - Welsh/Bilingual and English-Medium Schools

Figure 16 above depicts the mean keeping-in-touch with existing friends dependency scores (Welsh/Bilingual = 14.954; English = 13.743). There was a statistically significant

difference in the mean keeping-in-touch with existing friends dependency score between Welsh/Bilingual- and English-medium participants, 1.210, 95% CI [.567, 1.854],  $t(972) = 3.690$ ,  $p < .001$ ,  $d = .24$  (small effect size according to Cohen, 1988). Statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 57.761$ , error =  $2.083e^{-6}$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., Welsh/Bilingual participants posted the higher mean score. Prior/posterior analysis provides evidence in support of  $H_1$  (95% CI [0.113, 0.369]) with the CI not bisected by zero:

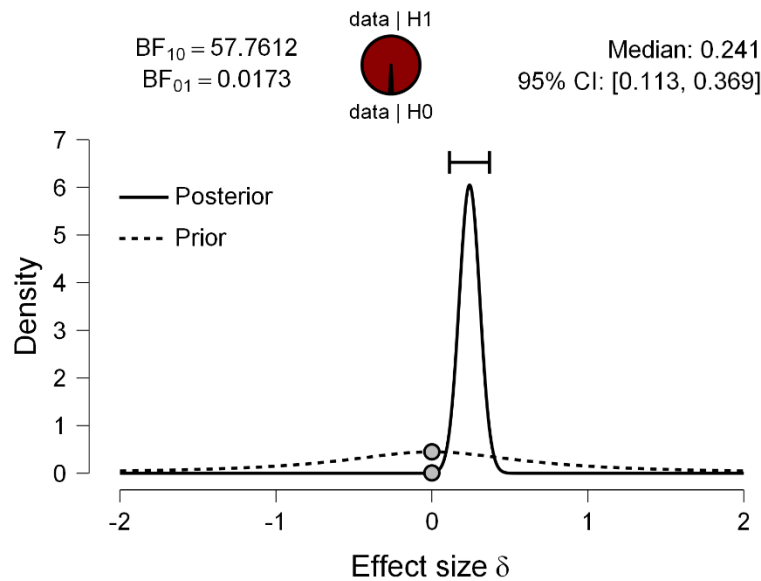


Figure 17. Keeping-in-Touch with Existing Friends Dependency - Prior/Posterior - Welsh/Bilingual and English-Medium Schools

Combined, frequential and inferential analyses support the alternative ( $H_1$ ) hypothesis, i.e., the mean keeping-in-touch with existing friends dependency scores between Welsh/Bilingual- and English-medium schools are statistically significantly different from one another, with participants attending Welsh/Bilingual-medium schools recording the higher mean dependency score.

Attention was then directed to a specific linguistic comparative context whereby FLW and FLE participants' scores were compared with one another. Data was extracted from the Welsh/Bilingual cohort *only* due to the low number of FLWs attending English-medium schools. Data was subjected to a t-test.

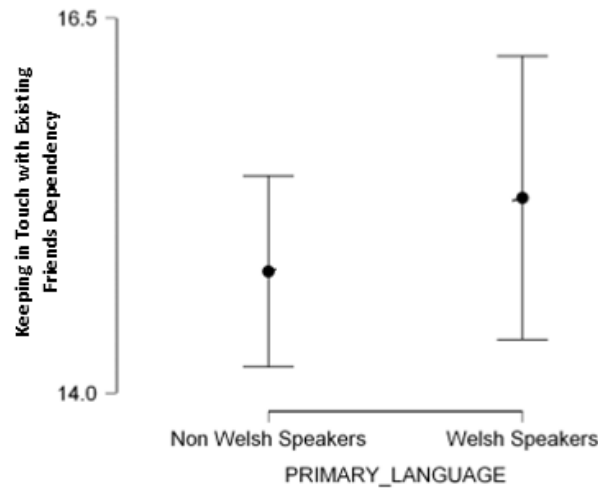


Figure 18. Keeping-in-Touch with Existing Friends Dependency Scores – First Language Welsh and English Speakers

Figure 18 above depicts the mean keeping-in-touch with existing friends dependency scores (FLWs = 15.302; FLEs = 14.811). There was no statistically significant difference in mean score between FLWs and FLEs, .49, 95% CI [-1.646, .664],  $t(357) = -.836$ ,  $p > .30$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.178$ , error =  $8.254e-6$ ), thereby supporting the null ( $H_0$ ) hypothesis, i.e., there was no difference in mean scores between the populations. Prior/posterior analysis provides evidence in support of  $H_0$  (95% CI [-0.317, 0.134]) with the CI bisected by zero.

Combined, frequential and inferential analyses support the null ( $H_0$ ) hypothesis, i.e., the mean scores are not statistically different from one another.

#### 4.4. Discussion

Combining data for Welsh/Bilingual- and English-medium schools, the data suggest that 28.7% and 61.0% of the participants recorded low and medium levels of SMD, respectively, with 10.3% of the participants registering high levels of SMD. Similar percentages were recorded for FLWs and FLEs, also. A comparison with other studies would suggest 10.3% of the participants registering high SMD exceeds some of the estimates suggested within Germany and Hungary (Wartberg, Kriston, & Thomasius, 2020; Banyai *et al.*, 2017), but parallels the Netherlands-based 7.3% to 11.6% range suggested by van den Eijnden, Lemmens, and Valkenburg (2017), and was only marginally greater than the 9.1% estimate provided by Merelle *et al.* (2017), which was

also conducted within the Netherlands. Obtaining robust estimations of SMD prevalence rates, though, is challenging since most studies use small, non-representative samples of college students (Moreno *et al.*, 2022). Alimoradi *et al.*'s (2022) meta-analysis covering 94 studies and including 237,657 participants from 40 different countries obtained a 15.1% SMD prevalence rate, which exceeds the 10.3% estimate obtained in this study. In another meta-analysis, which included 495 articles with 504 studies accommodating 2,123,762 participants from 64 countries, Meng *et al.* (2022) obtained a global pooled prevalence estimate of 17.42% for SMD. Despite recognizing the difficulties associated with obtaining robust prevalence rate data for SMD, it can be seen how the figure of 10.3% for the present study complies with recent analyses in that it does not appear to be an outlier in terms of estimation.

Before examining the SMD results, it is necessary to consider the language used by participants within the face-to-face and social media contexts. Unsurprisingly, using data from Welsh/Bilingual-medium schools, a greater proportion of FLWs used Welsh more face-to-face and on social media compared with FLEs, and a greater proportion of FLEs used English face-to-face and on social media compared with FLWs. Any other outcome would have made little sense given participants' stated first languages. In terms of FLWs, an interesting finding was obtained in that 35.9% and 52.5% indicated they 'Always' used Welsh on social media and face-to-face, respectively. Reflecting upon the on- and off-line difference, research suggests an array of factors might encourage FLWs to use English on-line such as the language primarily spoken by the target audience (Cunliffe, Morris, & Prys, 2013a), which likely explains why fewer FLWs used English on social media compared with face-to-face.

Summarizing the main headlines, data suggested differences between Welsh/Bilingual- and English-medium schools with the former registering the *higher* SMD scores, but there was *no* difference between Welsh/Bilingual-medium school attending FLWs and FLEs. Thus, a difference in SMD scores was found at the whole-school comparative level, but *not* at the purely linguistic comparative level. The same trends were identified with regard to Instagram dependency, Snapchat dependency, and a dependency upon the activity keeping-in-touch with friends. In terms of the hypothesis **H1**, which stated that Welsh/Bilingual-medium and FLWs' SMD scores would be higher than English-medium and FLEs' scores, contrasting conclusions might be suggested: at

the whole-school comparative level, data suggest support for **H1**, which is *not* the case at the linguistic comparative level. The remainder of the discussion explores these findings in greater detail.

Thus, we are presented with an apparent dichotomy where contrasting results were obtained at the whole-school and linguistic comparative levels. Conceivably, the difference in SMD scores between Welsh/Bilingual- and English-medium schools *might* be attributed – or partially attributed – to a language-based explanation that impacts Welsh/Bilingual-medium FLWs and FLEs, but *not* the majority of the participants attending English-medium schools for whom English is their first language. The language-based explanation for Welsh/Bilingual-medium FLWs and FLEs is explained below.

Focusing upon Welsh/Bilingual-medium FLWs first, as indicated within the hypotheses above, five reasons were outlined suggesting why FLWs might use social media to a greater extent. The first reason references SIT processes. Providing greater detail, the key point is that a FLW identifying him or herself as a FLW might incorporate the Welsh language within his or her sense of ‘Self’ (Tajfel & Turner, 1979; Trepte & Loy, 2017; Hendry, Mayer, & Kloep, 2007; Jones, 2002) with the Welsh language considered an important part of a FLW’s Welsh identity (Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Crucially, it is shown that societal recognition of an individual’s minority language such as Welsh increases self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022), and this has been shown within the social media context (Odulaja, 2021). Recognizing how English is one of the more dominant languages used on the Internet and social media (Statista, 2022d; Visual Capitalist, 2021; Language Solutions, 2022), it is possible a FLW perceiving *fewer* opportunities of using Welsh on social media (due to a number of reasons such as language of target audience, a lack of FLWs, etc.) might conclude that the Welsh language has *not* been fully recognized by society, thereby reducing level of self-esteem (e.g., Baker, 2003). As indicated previously, a FLW perceiving *fewer* opportunities of using Welsh on social media would logically use social media *less* and not *more*. However, a contrary argument would suggest *greater* social media usage out of a desire to achieve linguistic equality (e.g., Yusupova, 2022), to attain a higher level of self-esteem, which is a basic human need (Odulaja, 2021; Maslow, 1943), to bridge the

geographic divide whereby FLWs might be located within non-Welsh-speaking areas of Wales (Welsh Government, 2021e), and/or to receive the benefits of group affiliation with other FLWs and thereby enhance Welsh-language skills and self-esteem (e.g., Kabilan, Ahmad, & Abidin, 2010). These reasons suggesting why a FLW might engage with social media more rather than less, though, would *not* apply to the *entire* Welsh/Bilingual-medium school population for whom two-thirds indicated English was their first language. Possible reasons for Welsh/Bilingual-medium FLEs' greater social media usage are outlined in the below passage.

In the above passage, the suggestion was that FLWs' first language might not be fully recognized within the *social media* domain. There is, however, the *school* environment, which might impact Welsh/Bilingual-medium FLEs. Acknowledging that Welsh/Bilingual-medium schools place a strong emphasis upon the Welsh language (Welsh Government, 2007), a plausible suggestion might indicate that FLEs attending Welsh/Bilingual-medium schools might also experience a sense of linguistic marginalization in that *their* first language has effectively taken second place within an overtly Welsh language-based educational environment. Referencing empirical analysis, the suggestion is that a perceived marginalization of one's first language initiates a low level of self-esteem (Wei, Wang, & Ku, 2012; Wright & Bougie, 2007; Ekwere, 2022), with reduced self-esteem associated with elevated SMD (e.g., Sam *et al.*, 2022). The negative association between self-esteem and SMD with respect to FLEs attending Welsh/Bilingual-medium schools would unlikely attract the noted paradox identified for Welsh/Bilingual-medium FLWs since FLEs' perceived language marginalization has conceivably occurred *outside* the social media domain. Thesis data would suggest support for this assertion since ANOVA analysis demonstrated that FLEs attending Welsh/Bilingual-medium schools recorded a higher SMD score than FLEs attending English-medium schools. Augmenting the within-school language marginalization argument, Chapter Six (Depression, Loneliness, and Social Anxiety) shows a statistically significant difference in the proportion of Welsh/Bilingual-medium school FLWs and FLEs indicating higher and lower Welsh language ability levels with a greater number of FLWs indicating a higher ability level. Data showed that 6.91% and 93.09% of FLWs ( $n = 275$ ) indicated that they retained lower and higher ability levels in Welsh, respectively. In comparison with the FLWs, data showed that 29.30% and 70.70% of FLEs ( $n = 471$ ) stated that they had a lower and higher Welsh language ability, respectively. Accordingly,

if an individual believed that his or her language ability in the school's first language was below the level of many of his or her peers, it would not seem too unreasonable an assumption to suggest the individual might feel marginalized – even by a modest degree.

Thus, we are potentially witnessing two contrasting reasons why FLWs and FLEs attending Welsh/Bilingual-medium schools might be encouraged to use social media more and not less. Another potential reason why FLWs and FLEs attending Welsh/Bilingual-medium schools might use social media to a greater extent relates to how important they feel in others' eyes; in this regard, Watson, Prosek, and Giordano (2022) suggested individuals feeling less important to other people might use social media in a compulsive manner in an attempt to feel more significant within the social media domain. Acknowledging the potential impact upon self-esteem of feeling linguistically marginalized, this could be important for Welsh/Bilingual-medium school FLWs and FLEs. Watson, Prosek, and Giordano (2022) note how the link between feeling less important and SMD might be associated with decreased self-esteem arising from a perception of feeling less significant. Application of Watson, Prosek, and Giordano's (2022) theory to Welsh/Bilingual-medium FLWs and FLEs might suggest their elevated use of social media is due to a perception of feeling less significant as a result of considering themselves linguistically marginalized within the social media and school environments, respectively. The latter authors concluded that individuals believing they *mattered* were *less* likely to be addicted to social media.

Taken together, the above passages suggest why Welsh/Bilingual-medium FLWs and FLEs might use social media to a greater extent. The above reasons might also explain why there was no difference between Welsh/Bilingual-medium FLWs' and FLEs' SMD scores and, also, why the SMD scores between Welsh/Bilingual- and English-medium schools were different. Taking the Welsh/Bilingual-medium FLWs' and FLEs' statistically similar SMD scores first, as we have seen in the above passages, there are possible reasons why FLWs and FLEs might use social media to a greater extent. Thus, within the Welsh/Bilingual-medium schools we are potentially seeing a situation where FLWs' and FLEs' higher SMD scores are effectively cancelling one another out; hence, no difference between FLWs' and FLEs' SMD scores. By way of contrast, the very reasons driving up Welsh/Bilingual-medium FLWs' and FLEs' SMD scores are possibly the same reasons for the difference in SMD score between Welsh/Bilingual- and English-

medium schools, with the former scoring more highly. Having outlined some of the possible reasons why Welsh/Bilingual-medium schools might post *higher* SMD scores, it is noted how these reasons would almost certainly *not* apply to the English-medium schools. Acknowledging that 95.3% of the participants attending English-medium schools ( $n = 855$ ) spoke English as their first language compared to 61.5% of the Welsh/Bilingual-medium school participants ( $n = 836$ ) (see Chapter Five for the statistical analysis), it is unlikely the 95.3% of FLEs attending English-medium schools would be impacted regarding perceptions of Welsh language usage on social media and their first language – English - *not* being used within English-medium schools. It should be noted, though, that 2.1% of the participants attending English-medium schools were self-reported FLWs. Accordingly, English-medium FLWs might be impacted regarding perceptions of Welsh language opportunities on social media, but unlikely to be affected by the use of English within English-medium schools as their English language ability would be sufficiently high so as not to feel linguistically marginalized within the school environment – and the literature would support this as almost all FLWs are Welsh-English bilingual or even multilingual (Jones, 2015b; Cooledge & Murphy, 2017; Roberts *et al.*, 2003; Jones-Evans, Thompson, & Kwong, 2011; Roberts *et al.*, 2009; Mennen *et al.*, 2020; Higham, 2020). Accepting the possibility that English-medium FLWs are impacted by perceptions of Welsh language opportunities on social media in the same way that Welsh/Bilingual-medium FLWs might be, given the very small number of FLWs within English-medium schools (i.e., 2.1% of the English-medium population), it seems improbable that the low number of FLWs would meaningfully impact the statistical difference in SMD scores between Welsh/Bilingual- and English-medium schools, and this is borne out by the data that revealed a statistical difference in SMD scores between the two school types.

In terms of the potential implications of these results, it is important to note two key aspects: first, an estimated 10.3% of the overall cohort indicated having a high level of SMD; and second, a greater proportion of Welsh/Bilingual-medium school participants registered a higher mean SMD score relative to English-medium participants. Regarding the higher mean SMD score posted by Welsh/Bilingual-medium schools, it is important to note that whilst the mean SMD score exceeded the mean SMD score for English-medium schools (13.727 versus 13.107), the Welsh/Bilingual-medium mean remains below the cut-off point for high SMD scores, which has been set at  $\geq 20$ . Concomitantly,



whilst there are clear and empirically supported implications associated with high SMD scores, it is important to note that these primarily apply to the 10.3% of participants indicating a high SMD score. Exercising a degree of caution, though, participants attending Welsh/Bilingual-medium schools should not be summarily dismissed regarding the potential consequence of holding a higher mean SMD score – likewise English-medium participants.

The literature provides a myriad of potentially negative outcomes regarding SMD; for instance, SMD has been associated with decreased life satisfaction (Buda *et al.*, 2020). Acknowledging that this part of the discussion is not intended to be a meta-analysis, the reviewed literature, nonetheless, covers SMD's broad relationship with key aspects affecting the adolescent population and, crucially, its potential impact upon academic achievement, which is directly applicable to the surveyed age group.

A growing number of studies have suggested SMD is associated with a host of negative affective feelings such as a low level of self-esteem, and elevated levels of depression, anxiety, poorer parental relationships, poorer general mental health and sense of well-being, cyberbullying, self-harm, and a heightened sense regarding a fear of missing out (Watson, Prosek, & Giordano, 2022; Gomathi & Veeramani, 2022; Moreno *et al.*, 2022; Muzaffar, 2021; Khan & Singh, 2022; White-Gosselin & Poulin, 2022; Kamaruddin, Haris, & Nurlina, 2022; Papat & Tarrant, 2022; Shannon *et al.*, 2022). One of the more widely reported consequences of excessive social media usage and SMD is poorer sleep outcomes (e.g., Khan, Sajjad, & Iqbal, 2022). The sleep issue is of particular relevance to the adolescent cohort whose propensity to social media usage and SMD is a direct causal factor in delayed and disturbed sleep patterns, which has been termed 'sleep displacement' (Buda *et al.*, 2020; Azhari *et al.*, 2022). In their review, Azhari *et al.* (2022) observed that about 25% of 14- to 15-year-olds experience sleep disturbance due to waking up during the night to check their social media platforms, with the problem being more acute during weekdays. Amplifying the sleep issue, de Doncker and McLean (2022) suggested adolescents' disturbed sleep was due in part to the light emitted from digital display screens that actively suppresses the sleep promoting hormone melatonin. The latter authors observed how sleep disturbance equated to poorer sleep quality and negative effects the following day.

In their analysis of student nurses, Akalin (2022) observed a negative correlation between SMD and academic achievement, which is a finding suggested by Busalim, Masrom, and Zakaria (2019) and Kobimdi (2022), also. Akalin (2022) reasoned that time spent using social media was time not spent studying. A number of reasons have been put forward to explain the negative association; for instance, Akalin (2022) noted how ease of access to mobile networks negatively impacted students' focus, which impeded their academic motivation with a subsequent decrement in academic performance. Üztemur and Dinç (2022) observed a positive correlation between SMD and academic procrastination. The latter authors stated that procrastination is characterized as a deficiency in an individual's self-control, which arises from prioritizing immediate gratification over longer term goals. Accordingly, Üztemur and Dinç (2022) reasoned that when students consider an academic task as difficult, boring, and – in the short-term – non-rewarding, they become motivated by short-term pleasures (for instance, social media) to eradicate negative mood states created by the academic task. In their study, Busalim, Masrom, and Zakaria (2019) indicated that excessive Facebook usage served to distract students' concentration – the students were unable to multitask between academic studying and Facebook usage. The latter authors suggested the increased cognitive load created by Facebook usage resulted in disturbed concentration, which prevented the students from deploying the requisite degree of mental effort required for their academic studies. The multitasking aspect was recognized by Tongkachok *et al.* (2022), too, who also indicated that multitasking between Facebook and academic studies created a cognitive overload that affected students' transactive memory.

#### **4.4.1. Discussion Summary**

Summarizing the analyses, the main headline is that there was no difference between FLWs' and FLEs' SMD scores, but there was a difference between Welsh/Bilingual- and English-medium schools with Welsh/Bilingual-medium schools registering the higher mean SMD score. The main reason put forward for the difference in score between the schools related to a possible marginalization of participants' first language within the social media and school environments for FLWs and FLEs, respectively, where both attended Welsh/Bilingual-medium schools, which might not be the case regarding participants attending English-medium schools for whom the vast majority indicated

English was their first language. Whilst only a fraction over one-tenth of the overall cohort indicated a high level of SMD, contemporary literature demonstrated how excessive social media usage and SMD might negatively impact adolescents' lives in numerous ways, with a particular emphasis placed upon sleep disturbance and a decrement in academic performance.

## **5. CHAPTER FIVE: Empirical Analysis – Self-Esteem: Cross-Sectional**

### **5.1. Introduction and Hypotheses**

The hypothesis (**H2**) states: Welsh/Bilingual-medium and FLW participants' self-esteem scores would be higher than English-medium and FLE participants' scores. Comparative analysis operates from the *social identification* perspective, which is detailed within Chapter Two. Operating on the basis that FLWs retain a closer affiliation with the Welsh language and culture and, also, Welsh/Bilingual-medium schools place a stronger emphasis upon the Welsh language relative to English-medium schools (Welsh Government, 2007; Garcia, 1985; Wright & Taylor, 1995; Baker, 2003; Hendry, Mayer, & Kloep, 2007; Taylor, Bassili, & Aboud, 1973), it is hypothesized that FLWs' self-esteem scores would be greater than FLEs' self-esteem scores. Despite only one-third of Welsh/Bilingual-medium participants indicating their first language was Welsh, comparative analysis operates at the school level, too. It would be expected that the impact of language upon self-esteem would be reduced with respect to the Welsh/Bilingual-medium school population taken as a whole compared to just the FLWs attending Welsh/Bilingual-medium schools.

### **5.2. Method**

#### **5.2.1. Participants**

Participants attended Welsh/Bilingual- and English-medium secondary schools found within Wales. The number of Welsh/Bilingual-medium school participants was 844 (males = 410; females = 434), and the number of English-medium school participants was 865 (males = 418; females = 447).

#### **5.2.2. Procedure**

Consenting participants received questionnaire booklets in-class, and these were completed under the direction of their class teachers. Participants completed the questionnaire between 6<sup>th</sup> June and 20<sup>th</sup> July 2018 (i.e., time wave 1).

### 5.2.3. Material

Participants completed the 10-item self-report Rosenberg Self-Esteem Scale (Rosenberg, 1979). Validity and reliability aspects are addressed within Chapters One and Three. Please refer to **3.5.1** for more information about the material.

## 5.3. Results

Before assessing self-esteem, analysis looked at FLWs' and FLEs' (attending Welsh/Bilingual-medium schools *only*) self-reported ratings regarding English language ability. Data was split into two levels: lower and higher English ability. Data revealed the following response pattern: FLWs ( $n = 268$ ): lower English ability = 35 (13.06%), higher English ability = 233 (86.94%); and FLEs ( $n = 461$ ): lower English ability = 20 (4.34%), higher English ability = 441 (95.66%). Observationally, data suggest a greater proportion of FLWs were represented at the lower English ability level. To confirm/refute the observational pattern, data was subjected to a  $\chi^2$  test, which confirmed differences existed between the groups,  $\chi^2(1) = 18.5, p < .001$ , Cramer's  $V = .159$ . Concluding, data indicated a greater proportion of FLWs were represented within the *lower* English ability level, and a greater proportion of FLEs were represented within the *higher* English ability level.

The main difference between Welsh/Bilingual- and English-medium schools is the language used in the classroom, with Welsh/Bilingual-medium schools using Welsh more often (Welsh Government, 2007). Table 9 below suggests a greater proportion of FLWs attended Welsh/Bilingual-medium schools, which is an entirely expected result; however, the result, nonetheless, provides confirmation. A limitation is that the data does not account for the scenario whereby an individual retains two (or more) primary languages.

Table 9. First Language Spoken

		<b>Welsh/Bilingual Schools [<i>n</i> = 836]</b>	<b>English Schools [<i>n</i> = 855]</b>
First Language	English	514 (61.5%)	815 (95.3%)
	Welsh	317 (37.9%)	18 (2.1%)
	Other	5 (0.6%)	22 (2.6%)

Reflecting upon the above table, the observational pattern suggests a greater proportion of the Welsh/Bilingual-medium school participants spoke Welsh as their first language. To identify the similarities/differences between Welsh/Bilingual- and English-medium schools, the data was subjected to a  $\chi^2$  test of homogeneity ( $R \times 2$  table) analysis, which determines whether there are differences between the two groups regarding the proportion of FLWs and FLEs. The two multinomial probability distributions were not equal in the population,  $\chi^2 (2) = 345.575, p < .001$ . *Post hoc* analysis involved pairwise comparisons using multiple z-tests of two proportions with Holm-Bonferroni  $\alpha$  corrections. With a Holm-Bonferroni corrected  $\alpha$  set at .0045, there were statistically significant differences in the proportion of English participants speaking English as their first language ( $n = 815, 95.3\%$  versus  $n = 514, 61.5\%$ ) and ‘Other’ ( $n = 22, 2.6\%$  versus  $n = 5, 0.6\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .0045, there was a statistically significant difference in the proportion of Welsh/Bilingual participants speaking Welsh as their first language ( $n = 317, 37.9\%$  versus  $n = 18, 2.1\%$ ).

To find a potential difference in self-esteem scores between Welsh/Bilingual-medium school participants versus English-medium school participants, data was subjected to a t-test.

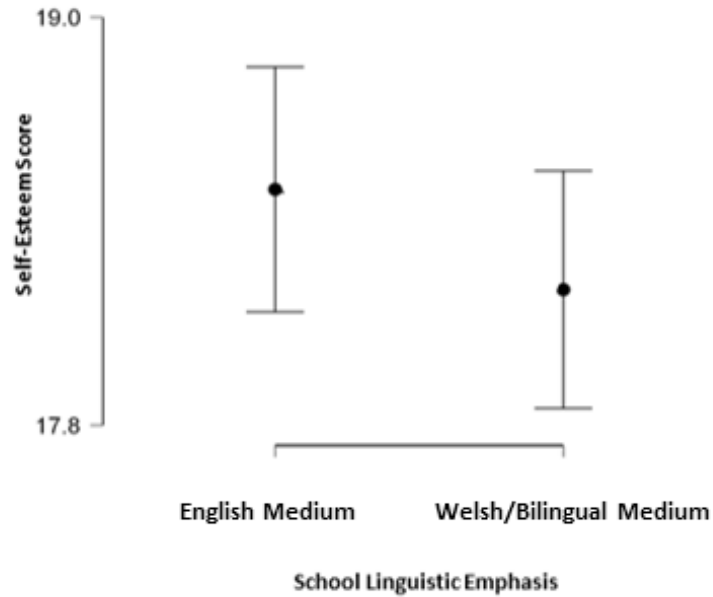


Figure 19. Self-Esteem Scores - Welsh/Bilingual and English-Medium Schools

Figure 19 above depicts the mean self-esteem scores (Welsh/Bilingual = 18.199; English = 18.494). There was no statistically significant difference in the mean self-esteem score between Welsh/Bilingual- and English-medium school participants, 0.30, 95% CI [-.796, .207],  $t(1707) = 1.152$ ,  $p = .249$ . Absence of statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 0.105$ ; error = 0.012%), thereby supporting the null ( $H_0$ ) hypothesis.

Figure 20, below, shows the mean self-esteem scores for FLWs and FLEs attending Welsh/Bilingual- and English-medium schools. Inspection of these data reveal that pupils who identify as FLWs have higher self-esteem scores when placed within Welsh/Bilingual-medium schools as opposed to English-medium schools. Conversely, the data also reveal that FLEs attending English-medium schools registered a higher level of self-esteem than the FLEs attending Welsh/Bilingual-medium schools. The self-esteem data were explored using a two-factor between-subjects analysis of variance [ANOVA] with the first language spoken by participants (i.e., Welsh or English), and type of school attended (i.e., Welsh/Bilingual- or English-medium), as the factors. Eighteen participants failed to indicate their first language and were excluded from the analysis, which produced a final sample of 1,691 participants (Welsh/Bilingual = 836; English = 855).

The ANOVA revealed no main effects of school type ( $F(1, 1687) = .29$ , 95% CI [.000, .003],  $p > .30$ ,  $\eta^2_p < .001$ ), or first language ( $F(1, 1687) = .79$ , 95% CI [.000, .005],  $p > .30$ ,  $\eta^2_p < .001$ ). However, there was a significant interaction between school type and first language ( $F(1, 1687) = 4.73$ , 95% CI [.000, .010],  $p = .03$ ,  $\eta^2_p = .003$ ). Simple effect analyses revealed FLWs have higher self-esteem than FLEs where *both* attended Welsh/Bilingual-medium schools ( $F(1, 1687) = 6.05$ , 95% CI [.001, .014],  $p = .014$ ,  $\eta^2_p = .004$ ), but there was no difference in self-esteem between FLWs and FLEs attending English-medium schools ( $F(1, 1687) = .09$ , 95% CI [.000, .002],  $p > .30$ ,  $\eta^2_p < .001$ ). FLEs attending English-medium schools had higher self-esteem than FLEs attending Welsh/Bilingual-medium schools ( $F(1, 1687) = 13.21$ , 95% CI [.000, .070],  $p < .001$ ,  $\eta^2_p < .019$ ). There was no difference between the self-esteem scores of FLWs attending Welsh/Bilingual- and English-medium schools ( $F(1, 1687) = 1.95$ , 95% CI [.000, .007],  $p = .162$ ,  $\eta^2_p < .001$ ).

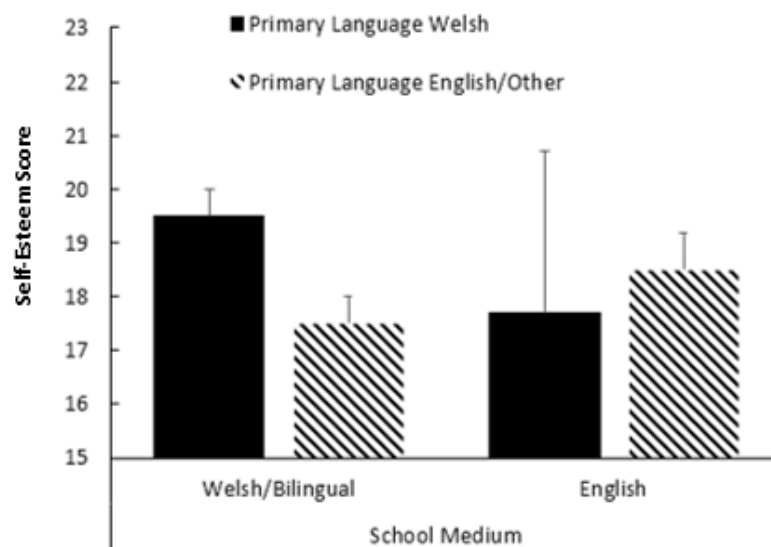


Figure 20. Self-Esteem Score – First Language Welsh and English Speakers Attending Welsh/Bilingual and English Medium Schools

Of particular note was the larger variance in the self-esteem score for FLWs attending English-medium schools (see Figure 20 above). To further explore this variance, the participants within each of the four groups were categorized in terms of their self-esteem using the accepted cut-off points for the RSES questionnaire ( $\leq 15$  = low; 16-19 =



medium, and  $\geq 20$  = high) (Ozkesici, 2021; Terra, Marziale, & Robazzi, 2013). The percentage of participants within each group falling within each self-esteem category are shown in Table 10 below (actual numbers in parentheses). Inspection of these data reveals that the percentages are similar in each self-esteem category for all groups, except for FLWs attending English-medium schools. The latter group of participants show a more marked tendency to score either in the low or the high self-esteem categories. *Caveat*: acknowledging the relatively low number of FLWs attending English-medium schools, differences between the various levels of self-esteem would be accentuated relative to the levels recorded for the remaining three groups, which have larger populations.

Table 10. Percentage First Language Welsh and English Speakers Attending Welsh/Bilingual and English Medium Schools Registering Low, Medium, and High Self-Esteem Scores

	Self Esteem		
	Low	Medium	High
Welsh/Bilingual: FLEs [N = 519]	36% (186)	28% (146)	36% (187)
Welsh/Bilingual: FLWs [N = 317]	20% (62)	32% (101)	49% (154)
English: FLEs [N = 837]	27% (223)	32% (256)	42% (358)
English: FLWs [N = 18]	39% (7)	11% (2)	50% (9)

FLWs' and FLEs' self-esteem scores were additionally subjected to two further tests:  $\chi^2$  test of homogeneity ( $R \times 2$ ) table analysis; and a t-test. In each instance, the data was extracted from the Welsh/Bilingual-medium school cohort *only*.

To find potential differences at low, medium, and high levels of self-esteem between FLWs' and FLEs' scores, data (extracted from the Welsh/Bilingual cohort *only*) was subjected to a  $\chi^2$  test of homogeneity ( $R \times 2$  table), which determines whether there are differences between the two groups at each level of self-esteem. The two multinomial probability distributions were not equal in the population,  $\chi^2 (2) = 26.108, p < .001$ . *Post hoc* analysis involved pairwise comparisons using multiple z-tests of two proportions with Holm-Bonferroni  $\alpha$  corrections. With a Holm-Bonferroni corrected  $\alpha$  set at .003, which was less than the omnibus  $\alpha$  .05, there was a statistically significant difference in the proportion of FLEs and FLWs reporting 'Low' self-esteem scores ( $n = 186, 35.3\%$  versus  $n = 62, 19.6\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .003, there was a statistically significant difference in the proportion of FLWs and FLEs reporting 'High' self-esteem

( $n = 154$ , 48.6% versus  $n = 187$ , 36.0%). With a Holm-Bonferroni corrected alpha set at .251, which was greater than the omnibus  $\alpha .05$ , there was no difference in the proportion of FLWs and FLEs reporting ‘Medium’ self-esteem scores ( $n = 101$ , 31.9% versus  $n = 146$ , 28.1%).

To find a potential difference in self-esteem scores between FLWs and FLEs, data, which was obtained from the Welsh/Bilingual cohort *only*, was subjected to a t-test.

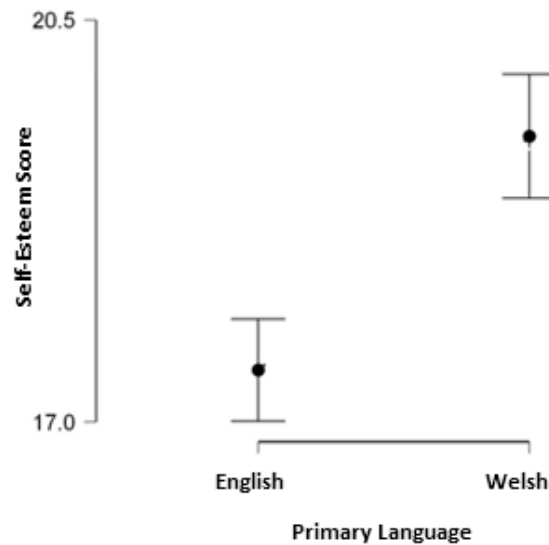


Figure 21. Self-Esteem Scores – First language Welsh and English Speakers

Figure 21, above, depicts the mean self-esteem scores for FLWs and FLEs. There was a statistically significant difference in the mean self-esteem score between both populations, with FLWs registering the higher mean self-esteem score,  $-2.04$ , 95% CI  $[-2.74, -1.33]$ ,  $t(834) = -5.658$ ,  $p < .001$ ,  $d = -.40$ . Statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 387691.319$ , error =  $5.207e-10$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., the population means of the two groups are not equal (i.e.,  $\mu_1 \neq \mu_2$ ). Prior/posterior analysis provides added evidence in support of  $H_1$  (95% CI  $[-0.539, -0.257]$ ) with the 95% CI not being bisected by zero:

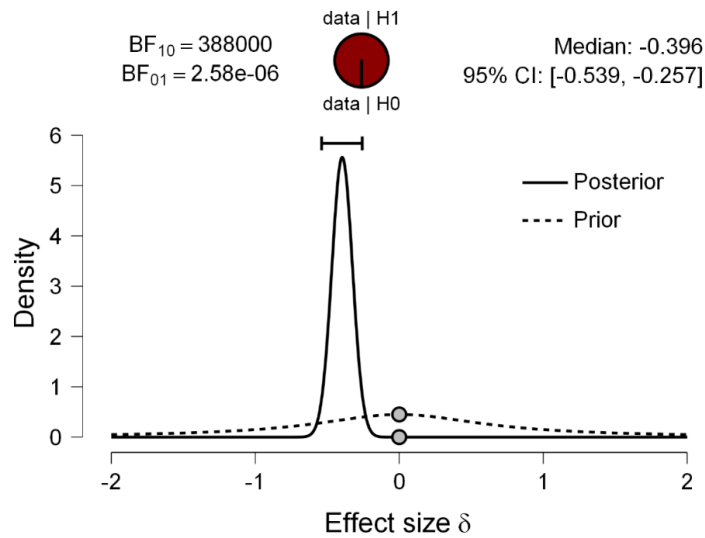


Figure 22. Self-Esteem – First Language Welsh and English Speakers' Prior/Posterior Graph

#### 5.4. Discussion

Combining Welsh/Bilingual- and English-medium school participants into a single data set, the results show 484 (28.3%) of the participants recorded a low level of self-esteem, 511 (29.9%) recorded a medium level of self-esteem, and 714 (41.8%) recorded a high level of self-esteem. Although Naganandini's (2017) adolescent-based study also used the RSES, no reference was made regarding the cut-off points for high, medium, and low self-esteem scores, which makes a direct comparison with the thesis more problematical. Nonetheless, Naganandini's (2017) data showed that 8.33% of the participants had a low level of self-esteem, 55% a medium level, and 36.67% a high level. At face value, considerable variation in the percentages is noted; for instance, whilst thesis results showed 28.3% of participants registering a low self-esteem level, Naganandini's survey provided a much lower estimation of 8.33%. A similar variance prevailed at the medium level, too. Only at the high level were similar estimations obtained (41.8% versus 36.67%). A couple of reasons might be suggested for these differences: first, as previously indicated, the thesis and Naganandini might have used different cut-off points, which would alter the estimations; and second there might be a difference of cultural influence upon participants' responses with Naganandini's survey taking place within Tamil Nadu, India and the thesis surveying Welsh-based participants. Once again using the RSES, Nguyen *et al.*'s (2019) adolescent Vietnam-based survey of 1,260 students indicated that 19.4% of the participants registered a low self-esteem level.

Whilst this estimate is closer to the thesis' estimation (compared with Naganandini), the value remains somewhat short. However, the difference in estimation might be attributed to the thesis and Nguyen *et al.* (2019) using different cut-off points. The problem with acceptable cut-off points for the RSES has been recognized in the literature (e.g., Isomaa *et al.*, 2013), so comparing like-with-like across surveys is challenging. Consensus regarding acceptable cut-off points for the RSES would better facilitate a comparison between surveys.

At face value, results suggested mixed support for the hypothesis **H2**, which stated Welsh/Bilingual-medium and FLW participants' self-esteem scores would be higher than English-medium and FLE participants' scores: from the whole-school perspective, there were no differences between Welsh/Bilingual- and English-medium schools; however, within Welsh/Bilingual-medium schools, there was a difference between FLWs and FLEs with the former scoring more highly. The discussion builds upon these results by looking at some of the possible reasons for these results and, lastly, taking a look at the possible consequences.

The most striking finding was that FLWs attending Welsh/Bilingual-medium schools had higher self-esteem scores than FLEs attending Welsh/Bilingual-medium schools. The association between education in a first language and self-esteem for the minority language group has received empirical backing across a range of cultures (Garcia, 1985; Lee & Suarez, 2009; Yearwood, 2008). Taken in isolation, this result suggests self-esteem was affected according to whether a pupil was educated in his or her first language, which might suggest pupils ought to be educated in their first language. As self-esteem has been associated with subjective well-being and academic achievement (Giofrè *et al.*, 2017; Yang *et al.*, 2019), and in the context of children from minority groups (Cvencek *et al.*, 2018), this finding could be of importance.

Across a range of cultures, a positive association has been noted between self-esteem and cultural identification, cultural orientation, and pride in the heritage culture – all of which positively predict self-esteem (Kaye, Carlisle, & Griffiths, 2019; Schnittker, 2002; Shepherd & Sigg, 2015; Tsai *et al.*, 2001). Within minority groups, the important determinants regarding a group member's level of self-esteem appear to be the perceived salience of belonging to the group, in association with their feelings about the group (Phinney, Cantu, & Kurtz, 1997). For example, Lee (2008) noted that children from a

minority culture who held positive feelings about membership and knowledge regarding their culture, reported greater levels of self-worth than those who did not.

To attain a greater understanding of why FLWs' self-esteem scores were greater than FLEs' scores where both attended Welsh/Bilingual-medium schools, it is necessary to explore the difference between the groups from the perspective of each group. The discussion focuses upon FLWs first, followed by FLEs (where both attended Welsh/Bilingual-medium schools).

Previously, the literature noted a positive association between self-esteem and cultural identification (e.g., Kaye, Carlisle, & Griffiths, 2019), which is conceptually linked with social identification theory processes (Tajfel & Turner, 1979), which – when applied to FLWs attending Welsh/Bilingual-medium schools – would suggest FLWs attending Welsh/Bilingual-medium schools would show elevated self-esteem scores as a result of being positively affected by their closer affiliation to the Welsh language, culture, and national identity (Coupland, Bishop, Evans, & Garrett, 2006; Livingstone, Manstead, Spears, & Bowen, 2011). Emphasizing the importance of language to one's identity, Ekwere (2022) stated that in a society characterized by many different languages, the language spoken becomes an essential criterion for identification of a group's members. Further, Ekwere (2022) stated that language is an important means of identification and classification, with language determining the identity of a person or a group. Relatedly, Wright and Bougie's (2007) analysis of Inuit children in Arctic Quebec strengthened the association between minority language speakers' in-group identification with elevated levels of self-esteem. In their study, the latter authors demonstrated how receipt of education in one's first language can have a positive influence upon an individual's personal and social identity, which manifests a positive impact upon subsequent levels of self-esteem and well-being – a conclusion reached by Wright and Taylor (1995), also. Wright and Bougie (2007) observed that receipt of education in one's first language not only promoted an individual's level of self-esteem, but it also enhanced self-esteem at the collective (i.e., minority group) level, too. Application of this last observation to FLWs attending Welsh/Bilingual-medium schools would suggest education through the medium of Welsh promotes the self-esteem of not just each FLW, but it also enhances the collective self-esteem of the FLW group. In terms of Welsh language maintenance, this last point is important because Wright and Bougie (2007) indicated that whenever the

future survival of a culture is at stake, maintaining a positive collective self-esteem is essential as it likely determines the extent to which minority language group members will speak their language outside school and thereby promote their culture. Whilst it might be difficult to construct an argument suggesting the future of the Welsh language and culture is at stake (please refer to Chapter Two for an in-depth review), encouraging the use of Welsh amongst the youth would, on this basis, hold clear benefits. In this regard, the Welsh Government's (2017) ambition to have one million Welsh-speakers by 2050 constitutes a movement in the right direction. In addition to the social identification processes identified above, FLWs' elevated self-esteem scores might be positively reinforced via the perceived importance and relevance of not just the Welsh language but the FLW collective, also. In this regard, Csata, Hlatky, and Liu (2022) stated that simply being allowed to use one's first language sent a clear message regarding the language's cultural worth. Developing the argument, the latter authors stated that when a ruling government recognized a minority language, the transmitted message is that the minority language speakers hold value – they matter. Application of this observation to the FLWs attending Welsh/Bilingual-medium schools would suggest that receipt of education through the medium of Welsh indicates the Welsh language and its speakers are of importance. As Csata, Hlatky, and Liu (2022) concluded, recognition of a minority language promotes the self-esteem levels of the language's speakers.

Adopting an alternative perspective, conceivably the difference between FLWs' and FLEs' self-esteem scores (where both attended Welsh/Bilingual-medium schools) might also be attributed to FLEs' *diminished* self-esteem levels as opposed to FLWs' *elevated* self-esteem scores, with the latter discussed above. Pragmatically, the difference in self-esteem scores between FLEs and FLWs is probably due to a *combination* of both factors. Having examined some of the reasons potentially driving up FLWs' self-esteem scores, it is equally important to understand the reasons potentially driving down FLEs' self-esteem scores. If FLWs' self-esteem scores might be elevated on account of SIT processes, is it possible that FLEs' self-esteem scores are driven downward through the reverse process. In other words, FLEs do not enjoy the same self-esteem enhancing benefits associated with affiliation to Welsh culture and language enjoyed by FLWs when both attend Welsh/Bilingual-medium schools. Baker (2003) suggested that children's self-esteem levels might be raised through recognition of their first language. Reconsidering Baker's proposition from an opposing angle, might the opposite hold, also? In other words, might

a child receiving educational instruction in a language other than his or her first language suffer a decrement in his or her level of self-esteem? Thus, FLEs educated through the medium of Welsh might experience a decrease in their level of self-esteem. A concern regarding bilingual education is that language learning may end when the child exits the school gates at the end of the day (Baker, 2003). In other words, whilst the minority language such as Welsh might be effectively used within the classroom, once outside the school, a proportion of the children may switch to the dominant language such as English. Application of this observation to the present data might suggest FLEs cease usage of the Welsh language outside school (due to personal choice or a lack of opportunity to use Welsh, or even a combination), which might transmit a message to FLEs suggesting the Welsh language lacks relevance as it is perceived to be the language of the school and not the language of the peer culture (Baker, 2003). Pursuing this line of reasoning, an FLE believing the Welsh language irrelevant might be less inclined to embrace the Welsh language, which might marginalize the FLE within the Welsh/Bilingual-medium school, with empirical analyses showing a negative association between feeling marginalized and level of self-esteem (Lehmiller, 2012; Hall & Wilson, 2021). An additional explanation regarding FLEs' lower self-esteem scores might relate to a perception of the English language being discriminated against within the Welsh/Bilingual-medium environment, which is a concept suggested by Wei, Wang, and Ku (2012). FLEs' perception of discrimination may be because they are required to use Welsh over their first language, English. However, it is noted that the extent to which Welsh is used within Welsh/Bilingual-medium schools is dependent upon the Welsh language emphasis of the school; for instance, Bilingual Category 'A' schools would use a minimum 80% Welsh whereas Bilingual Category 'C' schools would use 50-79% Welsh (Welsh Government, 2021d). Accordingly, a FLE's perception of English language discrimination would likely rise and fall according to the extent Welsh is used in the curriculum. The key point, though, is that a FLE perceiving a degree of linguistic discrimination might feel disrespected or inferior – feelings that are injurious to one's mental health, which includes a decrement in self-esteem level (Wei, Wang, & Ku, 2012). The language discrimination concept was recognized by Wright and Bougie (2007), also. Another factor potentially driving down FLEs' self-esteem levels relative to FLWs', is the degree to which a FLE is fluent in the Welsh language. In this regard, Wright and Bougie (2007) showed how a child's self-esteem might be negatively impacted on account of his or her limited ability in the language of instruction, which triggered feelings of frustration and – potentially – a

perception of detachment or exclusion. Given that FLEs attending Welsh/Bilingual-medium schools would likely retain varying abilities in Welsh proficiency, it is possible that FLEs of a lower proficiency might feel more isolated and marginalized with subsequent decrements in self-esteem. Over time, though, the immersive approach of Welsh/Bilingual-medium schools would likely enhance FLEs' Welsh language proficiency with subsequent decreases in feelings of isolation and marginalization. Another, yet related issue to the last point, would be the scenario whereby FLEs transition to Welsh/Bilingual-medium schools from, say, non-Welsh-speaking geographic regions. Clearly, placing a FLE within, say, a Bilingual Category 'A' school may prove demanding since the Welsh language learning curve might prove rather steep, which potentially exposes the FLE to feelings of isolation and marginalization. There exists the possibility of a FLE with limited Welsh language proficiency being exposed to ridicule from FLWs (Ekwere, 2022).

Summarizing the last couple of paragraphs, various suggestions were put forward explaining why FLWs and FLEs attending Welsh/Bilingual-medium schools registered significantly different self-esteem scores, some of which pertained to SIT mechanisms and others not. Data, though, has identified a seemingly paradoxical finding, which requires resolution. Reflecting upon FLWs' higher self-esteem scores, ANOVA analysis failed to find a difference between FLWs' self-esteem scores when they attended Welsh/Bilingual- and English-medium schools. At face value, this might discourage some of the suggestions why FLWs might enjoy higher self-esteem scores. An explanation for the similarity of FLWs' scores (where they attend Welsh-Bilingual- and English-medium schools) may now be suggested. Acknowledging that FLWs attending English-medium schools would almost certainly be fluent in English (data supported this assertion where 86.94% of FLWs indicated they had a higher ability level in English), it is likely the impact of receiving educational instruction in English would have limited impact upon their self-esteem as they would not feel linguistically marginalized, whereas FLEs attending Welsh/Bilingual-medium schools with limited Welsh language proficiency might feel linguistically marginalized.

The final part of the statistical discussion considers the similarity of self-esteem scores between the Welsh/Bilingual- and English-medium schools. Taking the Welsh/Bilingual-medium schools first, data suggests approximately two-thirds of the



participants were FLEs, and one-third FLWs. As previously indicated, it is possible that at the overall school level a levelling out process has occurred whereby the impact of FLWs' elevated self-esteem scores have been reduced on account of FLEs' decreased self-esteem scores. Acknowledging that the majority of English-medium school participants (95.3%) were FLEs, there was no such levelling out process. Given the relative imbalance of FLEs to FLWs within the Welsh/Bilingual-medium schools, a case might be put forward suggesting that perhaps the overall self-esteem score for Welsh/Bilingual-medium schools ought to reflect a more negative self-esteem estimate, which might have triggered a statistical difference between Welsh/Bilingual- and English-medium schools. Such an assumption, though, would be based on a premise that all (or the vast majority) of the FLEs attending Welsh/Bilingual-medium schools posted lower self-esteem scores, whereas the pragmatic response might suggest a proportion of the FLEs recorded lower scores with others posting higher scores. A similar argument might be constructed for each school. The data, though, would suggest the levelling out argument for Welsh/Bilingual-medium schools is not too unreasonable.

Having compared and discussed the results from the linguistic and whole-school perspectives, the final part considers the potential implications of the results in terms of adolescence and, also, academic achievement, since both are directly relevant to the studied cohort's age composition. Whilst the literature is awash with studies associating lower levels of self-esteem with a host of negative consequences, a few are noted here for purposes of identification; for instance, an adolescent with a low level of self-esteem would likely demonstrate a negative attitude and evaluation towards him or herself, with a greater possibility of developing eating disorders (Suarez-Albor, Galletta, & Gómez-Bustamante, 2022). A lower level of self-esteem has also been associated with diminished life satisfaction, and various internalizing problems such as depression, anxiety, social anxiety, and perceptions of loneliness, (Berg *et al.*, 2022; Geukens *et al.*, 2022; Fares *et al.*, 2022; Orth & Robins, 2022). Disturbingly, a negative relationship between self-esteem and suicidal behaviour has also been suggested (de la Barrera *et al.*, 2020). In another adolescent-based study, Rithaudin, Ahmad, and Bakar (2022) showed that one client's symptoms of low self-esteem included decreased self-confidence, downplaying or dismissing positive qualities, an inclination toward self-blame, utilization of negative words to describe himself, a feeling of inferiority that acts as a deterrent to engage in activities, and feelings of embarrassment. Application of the above correlates to the data

would suggest FLEs attending Welsh/Bilingual-medium schools might be a group at a greater risk compared to FLWs attending Welsh/Bilingual-medium schools. However, despite data indicating the lower overall self-esteem scores were registered by FLEs compared to FLWs (where both groups attended Welsh/Bilingual-medium schools), to assume all FLEs would be a group at greater risk might be overstating things since not all FLEs would have posted low self-esteem scores, and this interpretation is borne out by the data whereby the mean self-esteem scores for FLWs and FLEs attending Welsh/Bilingual-medium schools are above the cut-off point for low self-esteem scores ( $\leq 15$ ) (see Figure 20, above). The greater concern, though, would be for the participants specifically registering low self-esteem scores, which covers a range of 20-39% of the FLWs and FLEs attending Welsh/Bilingual- and English-medium schools. Taking the collective data for the overall cohort (that is, Welsh/Bilingual- and English-medium school participants combined into a single data set), the results indicate that out of the 1,709 participants completing the time wave one questionnaire, 484 indicated they had a low level of self-esteem, which equates to 28.3% of the overall sample. Thus, a significant proportion of the overall cohort – over one-quarter – might be at greater risk to some of the identified negative outcomes such as internalizing problems including depression, loneliness, and social anxiety. Given the sampled cohort's age group, in addition to referencing some of the potentially negative consequences associated with low self-esteem levels upon adolescents' everyday existence, it is important to reflect upon the potential academic consequences of having low self-esteem levels (discussed below), also, since the referenced at-risk groups might be particularly vulnerable.

Retaining a healthy self-esteem level is vital for psychological well-being, relationship satisfaction, and the pursuit and attainment of academic success (Benli & Bulut, 2022), with self-esteem positively associated with academic achievement (Britwum *et al.*, 2022; Luo, Gao, & Liu, 2022; Pelagio *et al.*, 2022; Maina *et al.*, 2021). Expanding upon the academic aspect, Benli and Bulut (2022) noted how self-esteem might be defined as a collection of one's thoughts, beliefs, and values that guide an individual's behaviour when confronted by moments of adversity, with higher levels of self-esteem associated with stronger academic determination and resilience (Jumareng & Setiawan, 2022; Chen *et al.*, 2022a; Fathalla, 2018; Buckner, Mezzacappa, & Beardslee, 2003) and general psychological resilience (Karababa, 2021b). Succinctly stated, individuals with high self-esteem are more likely to persevere in the face of difficulties

(Britwum *et al.*, 2022). A person defined by low self-esteem would be less motivated to tackle academic difficulties as he or she lacks the self-confidence required to overcome the presented challenge and would likely exaggerate the degree of difficulty involved (Jumareng & Setiawan, 2022). Illustrating the importance of academic resilience, Mirza and Arif's (2018) review indicated that resilient students obtained higher academic scores compared to less resilient students. Not surprisingly, therefore, Britwum *et al.* (2022) concluded that high self-esteem students demonstrate an array of pro-academic achievement characteristics (approach situations positively and confidently, are able to tolerate frustration, accept personal responsibility, believe the results are due to their behaviour and actions, etc.), whereas low self-esteem students demonstrate an array of characteristics that negatively impact academic achievement (feel worthless, inadequate, and emotionally unstable, all of which contribute to a belief that difficult problems cannot be overcome). Suggesting a more helpless disposition, Maina *et al.* (2021) stated that low self-esteem individuals demonstrated a dependent approach, which negatively contributed to their academic results. Contrasting the academic fortunes of low and high self-esteem individuals, Rithaudin, Ahmad, and Bakar's (2022) concluding remark holds significance; in their view, increasing an individual's level of self-esteem is critical to academic performance as it provides a stable basis to knowledge.

Regarding the little over one-quarter of the participants posting low self-esteem scores, enhancing self-esteem would appear to hold distinct life and academic benefits. With respect to FLEs attending Welsh/Bilingual-medium schools, whilst a case could not be made suggesting the entirety of FLEs are a group at significant risk of self-esteem's negative associations, their lower scores compared to FLWs' scores would indicate FLEs' self-esteem levels would clearly benefit from enhancement. Whilst various reasons have been put forward suggesting why FLEs' scores were lower than FLWs' scores, it is possible that initiatives designed to improve FLEs' scores might be based upon some – or a combination – of the suggested explanations.

#### **5.4.1. Discussion Summary**

With respect to **H2**, which stated Welsh/Bilingual-medium and FLW participants' self-esteem scores would be higher than English-medium and FLE participants' scores, the results might be interpreted in contrasting ways. Adopting a holistic perspective wherein the entirety of Welsh/Bilingual- and English-medium school participants' self-

esteem scores are contrasted with one another, analyses suggest there were no differences. On this basis, **H2** could not be supported. Conversely, following a comparison of FLWs' and FLEs' self-esteem scores (where both groups attended Welsh/Bilingual-medium schools), data showed that FLWs registered the higher mean score. Accordingly, the latter set of analyses suggest support for **H2**. Discussion presented a number of different reasons explaining the results; for instance, regarding the difference in self-esteem scores between FLWs and FLEs attending Welsh/Bilingual- medium schools, the suggestion is that the difference is due to a combination of FLWs' and FLEs' increased and decreased self-esteem scores, respectively. At the whole-school level, the similarity of self-esteem score was attributed to a levelling out effect within the Welsh/Bilingual-medium schools whereby FLWs' and FLEs' higher and lower self-esteem scores, respectively, cancelled one another out, thereby meaning no statistically significant difference between Welsh/Bilingual- and English-medium participants' self-esteem scores.

## 6. CHAPTER SIX: Empirical Analysis – Depression, Loneliness, and Social Anxiety

### 6.1. Introduction and Hypotheses

The objective of this chapter is to compare FLWs versus FLEs, and Welsh/Bilingual-versus English-medium school participants' depression, loneliness, and social anxiety scores. Hypotheses for depression, loneliness, and social anxiety are based upon the *social identification* perspective, which is discussed in Chapter Two.

Referencing SIT (Tajfel & Turner, 1979), in terms of depression, loneliness, and social anxiety, it would be anticipated that FLWs' and Welsh/Bilingual-medium participants' scores would be *lower* than the scores posted by FLEs and English-medium participants. Summarizing the supportive rationale: FLWs' affiliation to Welsh culture and the community has been empirically suggested as strong (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006); further, Welsh/Bilingual-medium schools place a stronger emphasis upon the Welsh language (Welsh Government, 2007) compared to English-medium schools, which strengthens Welsh language affinity. Concomitantly, the literature has shown that social identification with the group provides protection against depression (Postmes, Wichmann, van Valkengoed, & van der Hoef, 2018; Cruwys *et al.*, 2014), loneliness (Wann, 2006; Russell & Russell, 2018; Travaglino *et al.*, 2020), and social anxiety (Carron *et al.*, 1999; Haslam *et al.*, 2019). SIT also predicts a significant positive correlation between group identification and an individual's self-esteem level (e.g., Kaye, Carlisle, & Griffiths, 2019; Hoffmann *et al.*, 2020), with higher levels of self-esteem associated with lower levels of depression (e.g., Babore *et al.*, 2016; Zhou, Tian, & Huebner, 2020), loneliness (e.g., McWhirter, Besett-Alesch, Horibata, & Gat, 2002; Karababa, 2021a), and social anxiety (e.g., Murad, 2020; Jiang & Ngien, 2020). Hypotheses with regard to depression, loneliness, and social anxiety from the *social identification* perspective state: **H3** – depression scores for FLWs and Welsh/Bilingual-medium participants would be *lower* than FLEs and English-medium participants; **H4** – loneliness scores for FLWs and Welsh/Bilingual-medium participants would be *lower* than FLEs and English-medium

participants; and **H5** – social anxiety scores for FLWs and Welsh/Bilingual-medium participants would be *lower* than FLEs and English-medium participants.

## **6.2. Method**

### **6.2.1. Participants**

Participants attended Welsh/Bilingual- and English-medium secondary schools found within Wales. The number of Welsh/Bilingual-medium school participants was 844 (males = 410; females = 434), and the number of English-medium school participants was 865 (males = 418; females = 447).

### **6.2.2. Procedure**

Consenting participants received questionnaire booklets in-class, and these were completed under the direction of their class teachers. Participants completed the questionnaire between 6<sup>th</sup> June and 20<sup>th</sup> July 2018 (i.e., time wave one).

### **6.2.3. Material**

Participants completed 5 scales: the 10-item Rosenberg Self-Esteem Scale [RSES] (Rosenberg, 1979), which has showed acceptable levels of validity and reliability (e.g., Vasconcelos-Raposo *et al.*, 2012); the 6-item Bergen Social Media Addiction Scale [BSMAS] (Andreassen, Pallesen, & Griffiths, 2017), which has showed acceptable levels of validity and reliability (e.g., Monacis, de Palo, Griffiths, & Sinatra, 2017); the 20-item Center for Epidemiologic Studies Depression Scale [CES-DC – ‘DC’ denotes the children’s version], which has showed acceptable levels of validity and reliability (e.g., Fendrich, Weisman, & Warner, 1990); the 24-item Children’s Loneliness Scale [CLS], which has showed acceptable levels of validity and reliability (e.g., Asher, Hymel, & Renshaw, 1984); and the 48-item Liebowitz Social Anxiety Scale for Children and Adolescents self-report scale [LSAS-CA-SR], which has showed acceptable levels of validity and reliability (e.g., Schmits, Heeren, & Quertemont, 2014).

The provenance of each scale in addition to validity and reliability aspects have been extensively discussed within Chapters One and Three, above. Please refer to **3.5.1** (self-

esteem), 3.5.2 (SMD), 3.5.3 (depression), 3.5.4 (loneliness), and 3.5.5 (social anxiety) for information about each scale.

### 6.3. Results

Prior to assessing depression, loneliness, and social anxiety, Welsh/Bilingual-medium school attending FLWs' and FLEs' self-reported Welsh ability levels were compared with one another. Data was split into two levels: lower and higher Welsh ability. Data revealed the following response pattern: FLWs ( $n = 275$ ): lower Welsh ability = 19 (6.91%), higher Welsh ability = 256 (93.09%); and FLEs ( $n = 471$ ): lower Welsh Ability = 138 (29.30%), higher Welsh ability = 333 (70.70%). Observationally, data suggest apparent differences between the groups with a greater proportion of FLWs represented within the higher Welsh ability level, and a greater proportion of FLEs represented within the lower Welsh ability level. To confirm/refute the observational pattern, data was subjected to a  $\chi^2$  test, which confirmed differences existed between the groups,  $\chi^2 (1) = 52.4, p < .001$ , Cramer's  $V = .265$ . Concluding, data indicates that a greater proportion of FLWs were represented within the *higher* Welsh ability level, and a greater proportion of FLEs were represented within the *lower* Welsh ability level.

#### 6.3.1. Depression

To find a potential difference in depression scores between Welsh/Bilingual- and English-medium school participants, data was subjected to a t-test.

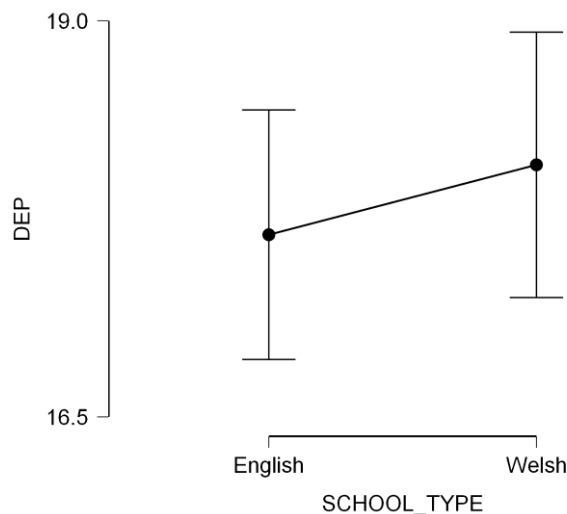


Figure 23. Depression Scores - Welsh/Bilingual and English-Medium Schools

Figure 23 depicts the mean depression scores (mean scores: Welsh/Bilingual = 18.091; English = 17.650). There was no statistically significant difference in mean depression score between Welsh/Bilingual- and English-medium participants, 0.441, 95% CI [-.707, 1.589],  $t(1707) = .754$ ,  $p > .30$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.072$ , error = 0.018), thereby supporting the null ( $H_0$ ) hypothesis, i.e., the population means of both groups are equal (i.e.,  $\mu_1 = \mu_2$ ). Prior/posterior analysis provides added evidence in support of  $H_0$  (95% CI [-0.057, 0.130]).

Combined, frequential and inferential analyses support the null ( $H_0$ ) hypothesis, i.e., the mean depression scores between the Welsh/Bilingual- and English-medium schools were not statistically significantly different from one another.

Directing attention toward specific linguistic comparative analyses whereby FLWs' and FLEs' depression scores were compared with one another (data was extracted from the Welsh/Bilingual cohort *only*), data was subjected to a t-test.

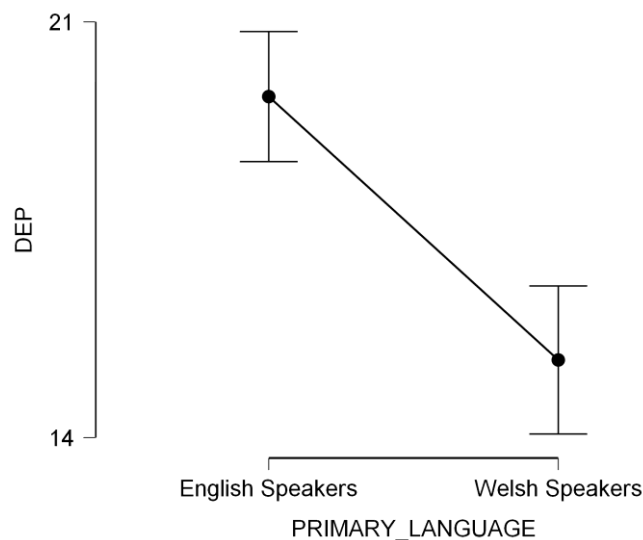


Figure 24. Depression Scores – First Language Welsh and English Speakers

Figure 24 depicts the mean depression scores. There was a statistically significant difference in the mean depression score between FLW and FLE participants, 4.433, 95% CI [2.729, 6.136],  $t(834) = 5.107$ ,  $p < .001$ ,  $d = 0.36$  (small-medium effect size according



to Cohen, 1988). Statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 24343.029$ , error =  $8.114e-9$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., the population means of both groups were not equal. Prior/posterior analysis provides added evidence in support of  $H_1$  (95% CI [0.221, 0.496]) with the 95% CI not bisected by zero:

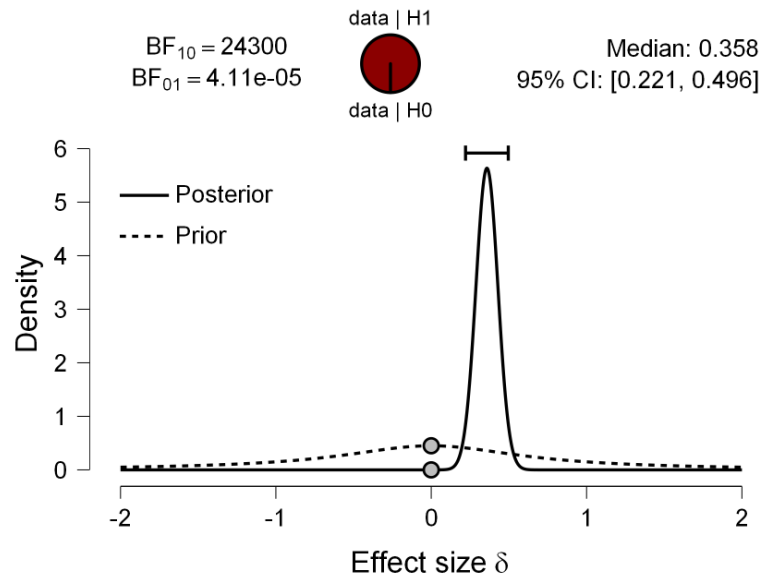


Figure 25. Depression - Prior/Posterior Graph – First Language Welsh and English Speakers

Combined, frequential and inferential analyses support the alternative ( $H_1$ ) hypothesis, i.e., the mean depression scores between FLWs and FLEs are statistically significantly different with the FLEs recording the higher mean score (FLWs = 15.308; FLEs = 19.741).

Utilizing data extracted from the Welsh/Bilingual-medium schools *only*, data was subjected to a  $\chi^2$  test of homogeneity ( $R \times 2$  table), which facilitates discrimination at low, medium, and high levels of depression. There was a statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 13.607$ ,  $p < .001$ . *Post hoc* analysis involved pairwise comparisons using multiple z-tests of two proportions with a Holm-Bonferroni correction. With a Holm-Bonferroni corrected  $\alpha$  set at .003, there was a statistically significant difference in the proportion of FLWs reporting low depression scores ( $n = 182$ , 57.4% versus  $n = 235$ , 45.3%). With a Holm-Bonferroni corrected  $\alpha$  set at .036, there were statistically significant differences in the proportion of FLEs reporting elevated depression scores ( $n = 232$ , 44.7% versus  $n = 118$ , 37.2%), and higher elevation depression scores ( $n = 52$ , 10.0% versus  $n = 17$ , 5.4%).

Analyses suggest mixed support for **H3**, which stated that depression scores for FLW and Welsh/Bilingual-medium participants would be *lower* than FLE and English-medium participants' scores. Support for **H3** materialized following a comparison of FLW and FLE participants' depression scores when the data was extracted from the Welsh/Bilingual cohort *only*. Conversely, there were no differences in Welsh/Bilingual- and English-medium school participants' depression scores. **H3** is discussed further within the 'Discussion' sub-section, below.

### 6.3.2. Loneliness

To find a potential difference in loneliness scores between Welsh/Bilingual- and English-medium school participants, data was subjected to a t-test.

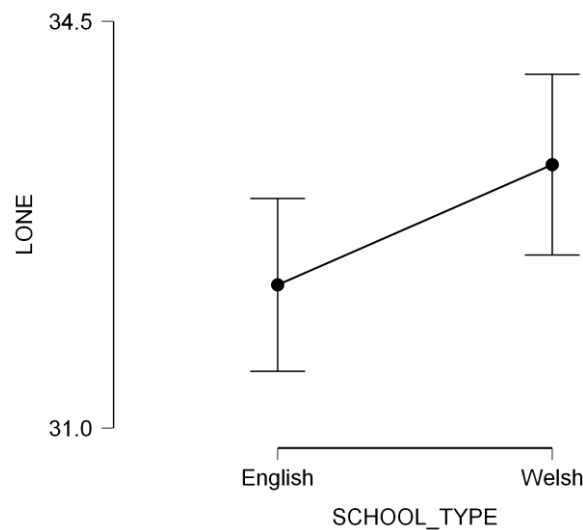


Figure 26. Loneliness Scores - Welsh/Bilingual and English-Medium Schools

Figure 26 depicts the mean loneliness scores (Welsh/Bilingual = 33.267; English = 32.232). There was no statistically significant difference in mean loneliness score between Welsh/Bilingual- and English-medium participants, 1.034, 95% CI [-.040, 2.109],  $t(1707) = 1.888$ ,  $p = .059$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.318$ , error = 0.024) thereby supporting the null ( $H_0$ ) hypothesis, i.e., the population means of both groups are equal (i.e.,  $\mu_1 = \mu_2$ ). Prior/posterior analysis provides added evidence in support of  $H_0$  (95% CI [-0.003, 0.185]) with the 95% CI bisected by a zero.

Combined, frequential and inferential analyses support the null ( $H_0$ ) hypothesis, i.e., the mean loneliness scores between the Welsh/Bilingual- and English-medium schools were not statistically significantly different from one another.

Directing attention toward specific linguistic comparative analyses whereby FLWs' and FLEs' loneliness scores were compared with one another (data was extracted from the Welsh/Bilingual cohort *only*), data was subjected to a t-test.

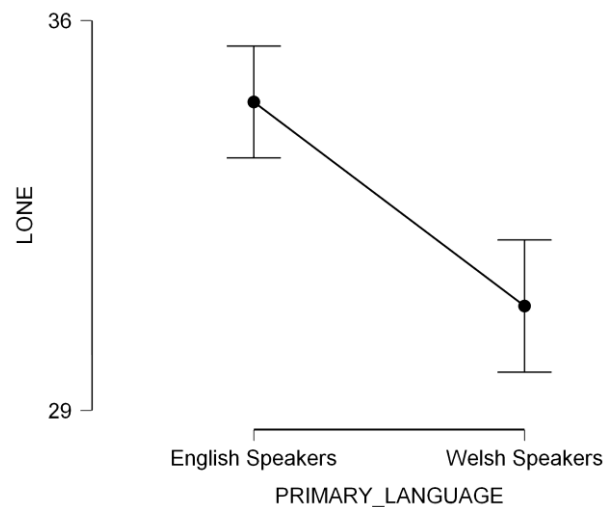


Figure 27. Loneliness Scores – First Language Welsh and English Speakers

Figure 27 depicts the mean loneliness scores. There was a statistically significant difference in the mean loneliness score between FLWs and FLEs, 3.663, 95% CI [2.081, 5.244],  $t(834) = 4.545$ ,  $p < .001$ ,  $d = .32$  (small-medium effect size according to Cohen, 1988). Statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 1813.022$ , error =  $1.060e-7$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., the population means of both groups were not equal. Prior/posterior analysis provides added evidence in support of  $H_1$  (95% CI [0.176, 0.457]) with the 95% CI not bisected by a zero:

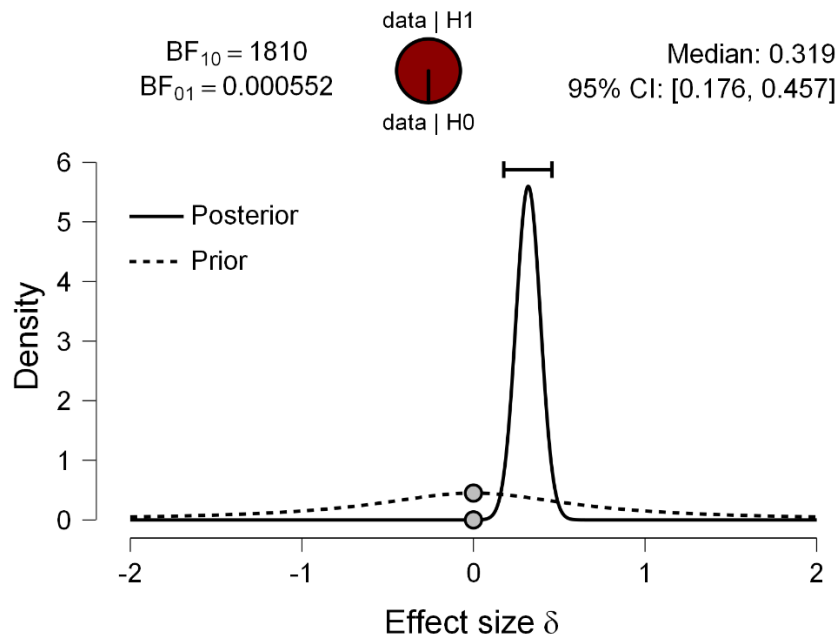


Figure 28. Loneliness - Prior/Posterior Graph – First Language Welsh and English Speakers

Combined, frequential and inferential analyses support the alternative ( $H_1$ ) hypothesis, i.e., the mean loneliness scores between FLWs and FLEs are statistically significantly different with the FLEs recording the higher mean score (FLWs = 30.875; FLEs = 34.538).

Utilizing data extracted from the Welsh/Bilingual-medium schools *only*, data was subjected to a  $\chi^2$  test of homogeneity ( $R \times 2$  table), which facilitates discrimination at low, medium, and high levels of loneliness. It was concluded that there was a statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 15.016, p < .001$ . With a Holm-Bonferroni corrected  $\alpha$  set at 0.003, there was a statistically significant difference in the proportion of FLWs and FLEs reporting low loneliness scores ( $n = 177, 55.8\%$  versus  $n = 220, 42.4\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at 0.036, there was a statistically significant difference in the proportion of FLEs and FLWs reporting medium ( $n = 203, 39.1\%$  versus  $n = 101, 31.9\%$ ) and high ( $n = 96, 18.5\%$  versus  $n = 39, 12.3\%$ ) loneliness scores.

Analyses suggest mixed support for **H4**, which stated that loneliness scores for FLW and Welsh/Bilingual-medium participants would be *lower* than FLE and English-medium participants' scores. Support for **H4** materialized following a comparison of FLWs' and FLEs' loneliness scores when the data was extracted from the Welsh/Bilingual cohort

only. Operating at the whole-school level there were no differences in Welsh/Bilingual- and English-medium school participants' loneliness scores. **H4** is discussed further within the 'Discussion' sub-section, below.

### 6.3.3. Social Anxiety

To find a potential difference in social anxiety scores between Welsh/Bilingual- and English-medium school participants, data was subjected to a t-test.

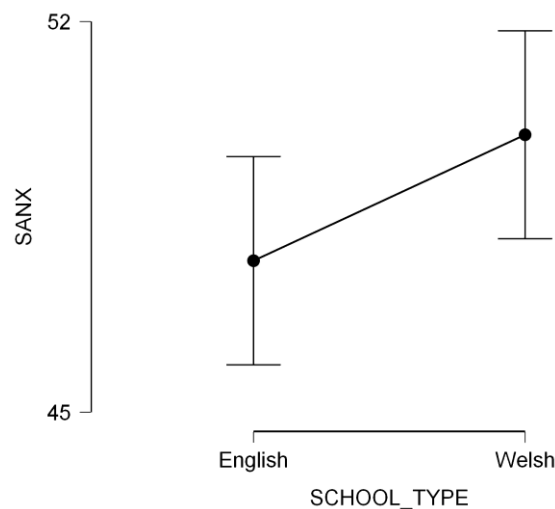


Figure 29. Social Anxiety Scores - Welsh/Bilingual and English-Medium Schools

Figure 29 depicts the mean social anxiety scores (Welsh/Bilingual = 49.972; English = 47.715). There was no statistically significant difference in mean social anxiety score between Welsh/Bilingual- and English-medium participants, 2.256, 95% CI [-.378, 4.891],  $t(1707) = 1.680$ ,  $p > .30$ . Statistical non-significance was affirmed using Bayesian analysis ( $BF_{10} = 0.220$ , error = 0.028) thereby supporting the null ( $H_0$ ) hypothesis, i.e., the population means of both groups are equal (i.e.,  $\mu_1 = \mu_2$ ). Prior/posterior analysis provides added evidence in support of  $H_0$  (95% CI [-0.014, 0.174]) with the 95% CI bisected by a zero.

Combined, frequential and inferential analyses support the null ( $H_0$ ) hypothesis, i.e., the mean social anxiety scores between Welsh/Bilingual- and English-medium schools were not statistically significantly different from one another.

Directing attention toward specific linguistic comparative analyses whereby FLW and FLEs' social anxiety scores were compared with one another (data was extracted from the Welsh/Bilingual cohort *only*), data was subjected to a t-test.

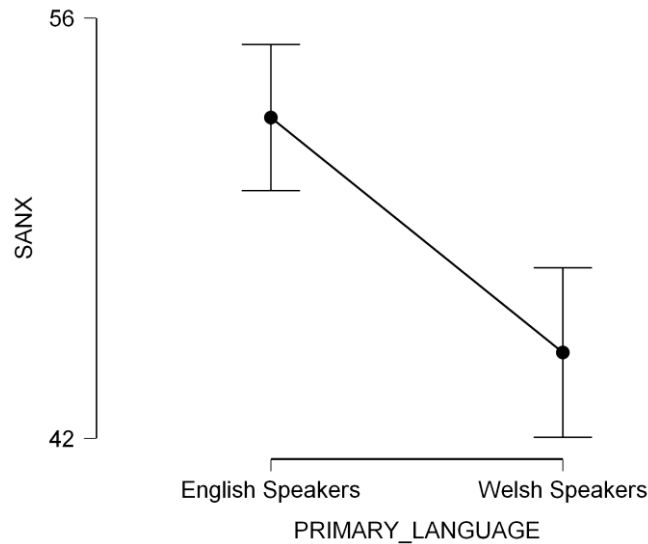


Figure 30. Social Anxiety Scores – First Language Welsh and English Speakers

Figure 30 depicts the mean social anxiety scores. There was a statistically significant difference in the mean social anxiety score between FLWs and FLEs, 7.822, 95% CI [4.012, 11.632],  $t(834) = 4.030$ ,  $p < .001$ ,  $d = .29$  (small effect size according to Cohen, 1988). Statistical significance was affirmed using Bayesian analysis ( $BF_{10} = 215.895$ , error =  $8.654e-7$ ), thereby supporting the alternative ( $H_1$ ) hypothesis, i.e., the population means of both groups were not equal. Prior/posterior analysis provides added evidence in support of  $H_1$  (95% CI [0.143, 0.424]) with the 95% CI not bisected by a zero:

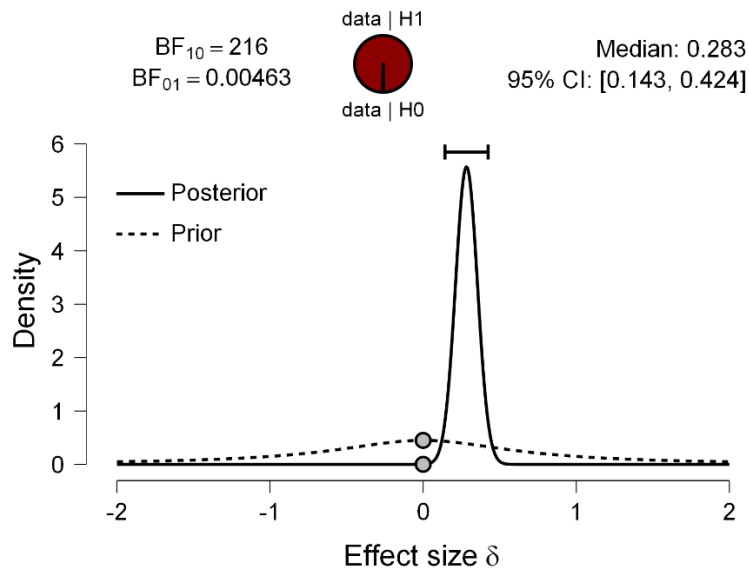


Figure 31. Social Anxiety - Prior/Posterior Graph – First Language Welsh and English Speakers

Combined, frequential and inferential analyses support the alternative ( $H_1$ ) hypothesis, i.e., the mean social anxiety scores between FLWs and FLEs are statistically significantly different with the FLEs recording the higher mean score (FLWs = 44.863; FLEs = 52.686).

Utilizing data extracted from the Welsh/Bilingual-medium schools *only*, data was subjected to a  $\chi^2$  test of homogeneity ( $R \times 2$  table), which facilitates discrimination at no social anxiety, social anxiety, and elevated social anxiety. It was concluded that there was a statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 12.970, p = .002$ , i.e., there were differences between FLWs and FLEs at each level of social anxiety. *Post hoc* analysis involved pairwise comparisons using multiple z-tests of two proportions with a Holm-Bonferroni correction. With a Holm-Bonferroni corrected  $\alpha$  set at .046, there was a statistically significant difference in the proportion of FLWs showing no level of social anxiety ( $n = 72, 22.7\%$  versus  $n = 85, 16.4\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .996, there was no statistically significant difference in the proportion of FLWs and FLEs showing social anxiety ( $n = 229, 72.2\%$  versus  $n = 375, 72.3\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at .006, there was a statistically significant difference in the proportion of FLEs reporting elevated social anxiety scores ( $n = 59, 11.4\%$  versus  $n = 16, 5.0\%$ ).

Analyses suggest mixed support for **H5**, which stated that social anxiety scores for FLW and Welsh/Bilingual-medium participants would be *lower* than FLE and English-medium participants' scores. Support for **H5** materialized following a comparison of FLWs' and FLEs' social anxiety scores when the data was extracted from the Welsh/Bilingual cohort only. Operating at the whole-school level there were no differences in Welsh/Bilingual- and English-medium school participants' social anxiety scores. **H5** is discussed further within the 'Discussion' sub-section, below.

#### 6.4.Discussion

The headline findings revealed a clear difference between comparison of participants' depression, loneliness, and social anxiety scores at the linguistic and whole-school levels. Following a comparison of Welsh/Bilingual-medium school attending FLWs' and FLEs' responses, data showed that FLEs posted the *higher* mean score for each variable, which is a trend that failed to occur following a comparison of Welsh/Bilingual- versus English-medium school participants' responses where there were no differences. In terms of the hypotheses, the results suggest mixed support for **H3** (depression scores for FLWs and Welsh/Bilingual-medium schools would be *lower* than FLEs and English-medium schools), **H4** (loneliness scores for FLWs and Welsh/Bilingual-medium schools would be *lower* than FLEs and English-medium schools), and **H5** (social anxiety scores for FLWs and Welsh/Bilingual-medium schools would be *lower* than FLEs and English-medium schools). The following discussion focuses firstly upon the differences between FLWs and FLEs attending Welsh/Bilingual-medium schools. Second, the discussion examines why there were no differences between Welsh/Bilingual- and English-medium schools. Finally, the focus looks at how these results might impact Welsh/Bilingual-medium school attending FLWs' and FLEs' academic prospects.

Previously, studies have shown that FLWs enjoy a close affiliation to Welsh culture and the community (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006), with the Welsh language considered an important part of a FLW's identity (Tajfel & Turner, 1979; Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Amplifying the association between Welsh language and identity, Harries, Byren, and Lymperopoulou (2014) stated that Welsh-speakers were more likely to report only a Welsh national identity compared to non-Welsh-speakers. In terms of the



present analysis, the link between Welsh language *ability* and Welsh national identity would appear to hold value in that data demonstrated that a greater proportion of FLWs indicated a higher level of self-reported Welsh language ability (i.e., speaking, reading, and writing Welsh) compared to FLEs where both groups attended Welsh/Bilingual-medium schools. In terms of FLWs' and FLEs' depression, loneliness, and social anxiety scores, the difference in perceived Welsh language ability provides a degree of explanatory guidance following Arms, Keilman, and Peraza-Smith's (2022) assertion that groups might become marginalized according to language. Whilst the data does not suggest FLEs' Welsh language ability is *low*, the data does, nonetheless, indicate FLEs' Welsh language ability is *lower* than FLWs' self-reported Welsh language ability, and this might be important when one acknowledges that children with a lower language ability are more likely to show internalizing mental health indicators such as depression and withdrawal (Manning *et al.*, 2019). Expanding upon the internalizing aspect, St. Clair *et al.* (2019) indicated that children who experience chronic difficulties in expressing themselves or understanding others are more likely to struggle developing proficient socialization skills and emotional development. Given the self-reported Welsh language ability difference between FLWs and FLEs, application of Carson *et al.* (1998) suggests FLEs' *lower* Welsh language ability (for instance, comprehension) might encourage the belief within these individuals' minds that they have become marginalized. Amplifying the marginalization argument, Thornhill *et al.* (2021) stated that individuals perceiving a sense of marginalization often feel pressure to conform. This, the latter authors show, may result in these marginalized individuals feeling unable to match the required standards, which triggers the belief that they have not been fully accepted and integrated within the community leading to poorer mental health outcomes. Application of Thornhill *et al.* (2021) to the present study might indicate the 29.30% of FLEs with a *lower* ability in the Welsh language would feel unable to meet the Welsh language standard of the 93.09% of FLWs and 70.70% of FLEs reporting a *higher* Welsh language ability. The perceptual difference in Welsh language ability might offer an avenue through which differences between FLWs' and FLEs' depression, loneliness, and social anxiety scores might be explained, and these are discussed below. However, as a *caveat*, whilst participants' self-reported Welsh language ability estimations are cross-sectional in nature and, therefore, only represent participants' self-reported valuations at a specific moment in time, in the long-term, with continued exposure to the Welsh language during school lessons and daily social interaction with FLWs and FLEs reporting higher Welsh

language ability, it is not inconceivable that FLEs indicating a lower ability in Welsh might realize an improvement in their Welsh language ability, which would likely reduce perceptions of being marginalized. In support of this last point, studies have suggested that children acquire second languages relatively quickly (Akhter *et al.*, 2016; Abdullah & Akhter, 2015; Latimer, Robertiello, & Squires, 2019). Qualifying children's second language acquisition efficiency, Lightbrown (2008: 25) stated: "In foreign language settings, research evidence suggests... that children who are past early childhood – age 10 or 11 – are more efficient school learners, having a good understanding of what language is, what school is, and how to learn at school. If they have been schooled in their first language, they bring their knowledge of concepts and the L1 [first language] vocabulary that goes with this knowledge. Literacy and an academic vocabulary in L1 are powerful platforms on which to build L2 [second language] abilities and academic learning through L2."

Indicating that perceptions of social exclusion might be encountered in an array of environments such as the workplace, on social media, and school (Niu *et al.*, 2022), numerous studies have suggested an association between elevated perceptions of marginalization, peer isolation, and feeling left out with higher levels of depression (Thornhill *et al.*, 2021; Ahn, Kivlighan, & Hill, 2021; Chen *et al.*, 2022b; Anjum *et al.*, 2022; Evans & Fisher, 2022; Handing *et al.*, 2022). Amplifying the social disconnection, Forrest *et al.* (2018) suggested poor language skills inhibit social functioning, which increases the possibility of emotional problems. The latter authors note that language plays a central role in an individual's social functioning as the social skills needed for effective inter-personal interactions are dependent upon strong verbal skills. Accordingly, the authors reason, individuals experiencing language problems (for instance, FLEs with a lower ability in the Welsh language) may withdraw from social interactions with subsequent elevations in depression. Indeed, adolescents with low language abilities have demonstrated elevated levels of depression (St. Clair *et al.*, 2019). Relatedly, Carson *et al.* (1998) suggested that where an individual struggled to make him or herself understood, the subsequent feeling of frustration would trigger depression and a desire to withdraw from others. The latter authors suggested, also, that participants with a higher language ability might consider peers with a lower language ability less interesting leading to fewer social interactions. A perception of being marginalized might trigger a belief that one has become devalued, dehumanized, and rejected – all of which initiate depressive

symptomology (Arms, Keilman, & Peraza-Smith, 2022). The association between peer isolation and depression has received attention from Jiang, Ji, and Sun (2022), also, who indicated that adolescents' developmental characteristics rendered them a group particularly susceptible to feelings of isolation. Thus, lower Welsh language ability FLEs' perception of isolation may be due to a combination of a perceived difference in Welsh language ability relative to higher Welsh language ability FLWs and FLEs, plus adolescent-specific developmental experiences. Expanding upon adolescents' developmental characteristics with regards perceptions of being socially isolated, Jiang, Ji, and Sun (2022) indicated that adolescents tend to be egocentric, over-thinking, and desirous of others' attention. Combined, these characteristics contribute to adolescents' vulnerability to feelings of isolation. Potentially exacerbating the situation, the latter authors note that at the very time when adolescents' sensitivity to perceptions of being isolated grows, they become less reliant upon family and more reliant upon their peers regarding emotional dependence and social connectedness. Thus, lower Welsh ability FLEs are potentially suffering a double hit in terms of their sensitivity to social isolation: one due to adolescent developmental characteristics; the other due to an imbalance in perceived linguistic ability. Suggesting a potential catch-22 situation for lower Welsh language ability FLEs, Niu *et al.* (2022) indicated that repeated and frequent experiences of being socially excluded would likely confirm the individual's negative expectation and perceptions thereby rendering him or herself more sensitive to being socially excluded. In essence, once set in motion, it would likely become a self-fulfilling prophesy. Ultimately, Niu *et al.* (2022) concluded experiences of social exclusion would elevate individuals' sensitivity to rejection and reduce their social self-efficacy with concomitant elevations in depression. Expanding upon the internalizing impact, Chen *et al.* (2022b) indicated that children with poor social skills experienced peer rejection leading to internalizing problems such as depression. Chen *et al.* (2022b) suggested the reason for this was due to the individual considering him or herself socially incompetent, which set in motion a self-defeating attribution whereby they attribute their social failures to stable and internal causes, and any social successes to unstable and external causes. Left to endure into the long-term, perceptions of social exclusion would likely result in feelings of resignation, alienation, helplessness, feeling unworthy – and depression (Williams & Nida, 2022).

Conceivably, application of the above to *lower* Welsh language ability FLEs attending Welsh/Bilingual-medium schools would potentially suggest that the difference in Welsh

language ability triggered a form of social isolation or disconnection that led to elevated depression. In contrast, FLWs' stronger Welsh language and cultural attachment (e.g., Jones, 2002; Dabrowska, 2017) would strengthen feelings of cultural integration and lower feelings of depression (El-Awad *et al.*, 2022). Thus, the data suggest the difference in depression scores between FLWs and FLEs is due to an array of different reasons. Broadly-speaking, it might be suggested that higher Welsh language ability FLWs' *lower* depressive scores is attributed to social inclusion and a sense of belonging, whereas lower Welsh language ability FLEs' *higher* depressive scores are due to feelings of social exclusion. Although the suggestion for lower Welsh language ability FLEs' elevated depressive scores has been attributed to social exclusion, it should be noted that perceptions of being marginalized may be either explicit and obvious where an individual might be relegated to an unimportant or powerless position within the social group, or implicit where the micro-aggressions appear less obvious (Arms, Keilman, & Peraza-Smith, 2022).

Loneliness is an unpleasant emotional state that arises whenever an individual feels rejected; it may be considered the affective response to a perceived imbalance between the individual's actual and desired quantity and quality of interpersonal relationships (Šolak & Dragičević, 2021). The issue of loneliness is of especial importance to adolescents since adolescence is a critical period when social interaction and peer relationships play a central role in the formulation of an adolescent's social identity and evolving sense of autonomy from the family (Hards *et al.*, 2021). The issue of loneliness with respect to *lower* ability Welsh language FLEs attending Welsh/Bilingual-medium schools would appear to be no less important, and this is discussed below.

By nature, humans are social animals with an in-built need to belong (Huxhold, Suanet, & Wetzel, 2022). The latter authors note that for an individual to prosper within contemporary society, he/she must form and maintain attachments. Perceived social exclusion and loneliness are related because both occur when basic social needs have not been satisfied (Huxhold, Suanet, & Wetzel, 2022). This last point may be of especial relevance to *lower* Welsh ability FLEs attending Welsh/Bilingual-medium schools since we have already noted how they might become marginalized on grounds of their lower Welsh language ability. Indeed, the positive association between perceptions of social exclusion and unmet interpersonal needs with loneliness have been suggested in previous

studies (Gong *et al.*, 2022; Neto, Quintana-Orts, & Neto, 2022; Niu *et al.*, 2022). Numerous studies undertaken within an array of different contexts (e.g., deaf community, international students exposed to host alien languages, and refugees) have each demonstrated a positive association between communication problems and perceptions of isolation and loneliness (Canizales & O'Connor, 2022; Silvestri & Hartman, 2022; Alazzi & Al-Jarrah, 2016; Wang *et al.*, 2022a; Bulford *et al.*, 2022; Ives *et al.*, 2022; Casimiro, Hancock, & Northcote, 2007). Taken together, these studies show that whenever an individual experiences a communication barrier, perceptions of social isolation and loneliness can occur. Accordingly, it is not inconceivable that a FLE with a lower Welsh language ability attending a Welsh/Bilingual-medium school might encounter a similar scenario. Logically, one would anticipate that individuals' perceptions of isolation and loneliness would rise and fall according to the height of the communication barrier. Thus, a FLE with very limited Welsh language ability would likely encounter a greater communication barrier compared to a FLE with a moderately improved – yet lower than a fluent FLW – Welsh language ability. The concept of communication barriers equating with greater loneliness, though, holds – based upon extant research.

Reflecting upon the scenario whereby a lower Welsh language ability FLE struggled to communicate fluently in Welsh with more fluent Welsh-speakers within school, a form of linguistic separation might arise, which - according to the *Interactionist Model* – would imply the FLE would experience a degree of non-involvement amidst the more fluent Welsh-speaking collective (Šolak & Dragičević, 2021). Such a scenario, the authors reasoned, would likely trigger the belief within the lower language ability individual's mind that he/she was somehow distinct and marginalized from the more fluent speakers. Given the importance of the peer group compared to family for adolescents' social identity development (Hards *et al.*, 2021), this explanation might prove of significance for lower Welsh ability FLEs; that is, if their social identity developmental needs are not fully met by the peer group, then there would conceivably be a knock-on effect in terms of their social identity formation. Expanding upon the last point, Afonso, Barros, and Albert's (2022) review indicated that several studies hypothesized that an individual's sense of belonging had a direct impact on mental health and well-being; if the individual believed he/she did not fully belong this would encourage the perception of loneliness. With degree of Welsh language fluency potentially marginalizing FLEs, the sense of a lack of belonging might prove of significance. Developing the argument, if FLEs' *lower*

Welsh language ability equates to a sense of separation, the contrary perspective might suggest FLWs' *higher* Welsh language ability and *lower* loneliness scores imply a closer sense of belonging to the FLW collective. This last point was observed by Afonso, Barros, and Albert (2022) who indicated that a perception of belongingness equated to enhanced psychological well-being and functioning, subjective well-being, happiness, and, also, elevated self-esteem. Thus, we are seeing a polar opposite movement for FLEs and FLWs, with FLWs appearing to enjoy the benefits associated with closer belongingness. Afonso, Barros, and Albert (2022) emphasized that sense of belongingness refers to the feeling of being part of a social group that shares specific characteristics or values – including language. Amplifying the social cohesion aspect, Neto, Quintana-Orts, and Neto (2022) showed that greater levels of integration and lower perceived discrimination related to lower levels of loneliness – an association that would appear to hold for higher Welsh language ability FLWs.

Viewed from the FLE perspective, there would appear to be a catch-22 scenario. Huxhold, Suanet, and Wetzel (2022) noted that holding a belief that one might not fully belong to a peer group might encourage withdrawal behaviour, which would cement the sensation of loneliness. In terms of a longer-term consequence, the authors concluded that perceptions of loneliness may encourage individuals to doubt their worth to society. Acknowledging the catch-22 scenario, application of Huxhold, Suanet, and Wetzel's (2022) hypothesis to FLEs would suggest withdrawal behaviour would provide fewer social interaction opportunities with concomitantly fewer opportunities to receive self-worth enhancing accolades from their peers. Developing the social interaction theme, Forrest *et al.* (2018) noted that poor language skills inhibit social functioning, which increases the risk of developing emotional problems. With language playing a central role in effective social functioning, the latter authors indicated that individuals experiencing language difficulties would likely experience difficulties during social interactions with subsequent increases in loneliness. With FLEs recording higher loneliness scores, they would appear to be a group at greater risk of experiencing the negative implications associated with loneliness.

We have already seen how self-reported differences in terms of Welsh language ability might be associated with perceptions of being marginalized. Reflecting upon FLWs with a higher Welsh language ability, the literature suggests that FLWs' affinity to

the Welsh language, culture, and associated Welsh-speaking community is strong (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006), with the Welsh language considered an important component of a FLW's identity (e.g., Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Application of Tajfel and Turner's (1979: 40) SIT mechanism to FLWs would further suggest a close affiliation between the FLW collective via a shared "common definition of themselves", i.e., they speak the same first language and share the associated culture. In terms of social anxiety, La Greca and Harrison (2005) suggested affiliation with the peer group conferred protection against feelings of social anxiety through closer friendships, peer group support, and companionship opportunities. The latter authors observed also that adolescents affiliated to the peer group may be highly regarded by the peer group, which facilitated social interaction. Application of La Greca and Harrison's (2005) above observations to the present study would suggest constituent members of the FLW collective would enjoy these social anxiety reducing benefits. In contrast, lower ability Welsh language FLEs might feel somewhat isolated from the FLW collective and accordingly be denied the benefits associated with close peer group connection. Considering themselves somewhat distinct from the FLW collective, FLEs might feel rejected, isolated or even victimized on grounds of self-reported Welsh language ability, which might elevate FLEs' social anxiety (Leary, 2015; Flick *et al.*, 2022; Ettekal *et al.*, 2022; La Greca & Harrison, 2005). Further, lower Welsh language ability FLEs might conclude that within the Welsh/Bilingual-medium school context they do not matter – they subsequently become more vulnerable and hypersensitive to others' negative responses and reactions, which is symptomatic of elevated levels of social anxiety (Flett *et al.*, 2022). In contrast, having identified FLWs' closer affiliation to one another, FLWs' lower social anxiety scores might be attributed to the belief that they *do* matter – they are important (Flett *et al.*, 2022). As the latter authors indicated, an individual who consistently believes that he or she matters to others should have a strong sense of self-worth; but an individual believing that he or she does not matter would endure negative self-worth, which would encourage internalized thoughts suggesting he or she is not worth listening to.

One area that might cause a problem for lower Welsh language ability FLEs is speaking the Welsh language in front of more fluent peers and teachers. In this regard, language anxiety and speaking ability – particularly with regard to vocabulary and

comprehension – are significantly correlated with one another (Daymiel *et al.*, 2022). In essence, lower language ability students’ fears occur whenever they are required to speak in front of their peers, with their fear attributed to feelings of linguistic incompetence (Daymiel *et al.*, 2022). In this context, the fear of speaking in public is an expression of social anxiety (Alamer & Almulhim, 2021). Elaborating upon the last point, Alamer and Almulhim (2021) indicated that language learners’ pressure might be attributed to them comparing their language performance with other students. In this regard it is readily apparent how a lower ability Welsh language speaker might feel apprehensive and self-critical when comparing his or her Welsh language ability with a fluent Welsh-speaker – especially when the comparison is made before his or her peer group. Emphasizing the potentially damaging impact of less fluent language speakers addressing more fluent classmates and teachers, ‘speaking anxiety’ has been significantly correlated with the fear of being negatively assessed by peers and teachers (Al Mamun, 2021). One of the knock-on problems lower Welsh language ability FLEs might face was recognized by Daymiel *et al.* (2022) who identified a potential catch-22 scenario: if language learners are genuinely anxious in class, they are less likely to become engaged with the language. In terms of the linguistically anxious FLEs, apprehensions regarding their Welsh language ability – according to Daymiel *et al.* (2022), would result in the FLE engaging *less* with the Welsh language. However, it is possible that Daymiel *et al.*’s (2022) assertion is not absolute since lower Welsh language ability FLEs’ Welsh/Bilingual-medium school attendance is a mandatory requirement. Over time and through enforced experience, FLEs’ daily exposure to the Welsh language would likely realize an improvement in their Welsh language ability with associated elevations in confidence and reductions in social anxiety as they become more connected with the FLW collective. Thus, Turco’s (2021) fear that lower language ability students would actively disengage and psychologically withdraw from language learning might not hold with regard to lower Welsh language ability FLEs due to their mandated daily exposure to the Welsh language.

In contrast to the above where differences were found between Welsh/Bilingual-medium school attending FLWs and FLEs, there were no such differences between Welsh/Bilingual- and English-medium schools. Within the self-esteem chapter (Chapter 5) where similarity of score at the whole-school level was also shown, the suggestion was that a levelling out process within the Welsh/Bilingual-medium schools contributed to the similarity in self-esteem score between both school types. The same explanation would



likely apply with respect to Welsh/Bilingual- and English-medium school participants' similar depression, loneliness, and social anxiety scores, also; that is, within the Welsh/Bilingual-medium schools, FLWs' *lower* depression, loneliness, and social anxiety scores were effectively cancelled out by FLEs' *higher* scores for each variable.

Having compared and discussed the results from the linguistic and whole-school perspectives, the final part considers the potential implications of the results in terms of academic achievement, as this is directly applicable to the studied cohort's age group. Although FLEs' *higher* depressive, loneliness, and social anxiety scores are clearly not a good outcome, it should be noted that their *higher* scores for each variable do not automatically equate to a *high* score for each variable. Indeed, data shows that FLEs' mean score for each of the three variables is *lower* than the high-score cut-off point for each variable; FLEs' mean: depression score = 19.741 (the cut-off points for elevated and higher elevated depression were 15-37 and 38-60, respectively); loneliness score = 34.538 (the cut-off points for increased and risk of severe loneliness were 31-45 and  $\geq 46$ , respectively); and social anxiety score = 52.686 (the cut-off points for social anxiety and elevated social anxiety were 23-83 and 84-144, respectively). Despite data indicating the higher depression, loneliness, and social anxiety scores were registered by FLEs compared to FLWs, to assume all FLEs would be a group at greater risk would be overstating things since not all FLEs posted high scores for each variable. That said, FLEs' higher scores on each variable would place this group at slightly greater risk of experiencing the negative educational consequences associated with higher levels of depression, loneliness, and social anxiety. The remainder of the discussion identifies some of the more prominent academic consequences associated with higher levels of depression, loneliness, and social anxiety. Given FLEs' higher depression, loneliness, and social anxiety scores relative to FLWs' lower scores, the potential negative academic consequences suggested in the literature would appear to hold greater significance for FLEs.

Numerous studies have suggested a negative association between depression and academic achievement (Banihani, 2022; Efosa-Ehioghiren & Iwenanogie, 2022; Cárdenas *et al.*, 2022; Jiang *et al.*, 2022; Ujuagu *et al.*, 2021; Ramachadran, Jeyalakshmi, & Jebakumar, 2021; Tindle *et al.*, 2022). The various explanations for the negative association would appear to hold greater relevance for FLEs who demonstrated higher

levels of depression compared to FLWs, and these are outlined accordingly. Depression within secondary school students has been associated with higher rates of self-criticism, cognitive disturbance, sleep disruption, etc., which have all been shown to undermine academic performance (Ujuagu *et al.*, 2021). Research has also demonstrated that depression negatively impacts an individual's working memory (Almarzouki *et al.*, 2022). Cárdenas *et al.* (2022) showed, also, that depression retains an association with reductions in academic motivation and increased rates of distraction – both of which negatively impact academic attainment. The latter authors noted that there appears to be no critical level of depression to impede academic achievement; in other words, school performance would be negatively affected irrespective of the level of depression endured by an individual. Viewed from the FLW perspective, their closer sense of belonging to the FLW collective within Welsh/Bilingual-medium schools would likely explain their lower level of depression relative to FLEs, which would promote higher rates of academic achievement (Cárdenas *et al.*, 2022). This would suggest that a sense of belonging and connection with peers would be beneficial in terms of school grades. Since depression has been associated with lower grades, it has been suggested that academic performance might mediate the relationship between depression and later school dropout (Askeland *et al.*, 2022). Taken collectively, application of the literature to FLEs would suggest they would be at greater risk of experiencing some of the negative academic consequences associated with higher rates of depression. Application of Cárdenas *et al.* (2022) to the present study would suggest initiatives designed to promote FLE whole-school inclusion would likely realize a benefit in terms of their sense of belonging with concomitant reductions in depression. Since this chapter has argued that the salient difference between FLEs and FLWs is their perceived Welsh language ability, any enhancement in FLEs' actual and/or perceived Welsh language ability would appear to hold distinct benefits in terms of depression. However, as a *caveat*, whilst statistical significance was obtained regarding FLEs' and FLWs' self-rated Welsh language ability and depression levels, it should be noted that FLEs' self-rated Welsh language ability was not poor and their mean depression score remained below the cut-off for very high levels of depression. That said, there were differences between the groups. The same *caveat* holds with respect to loneliness and social anxiety, too, with their respective academic consequences outlined below.

There appears to be rather more ambiguity regarding the association between loneliness and academic achievement with some studies suggesting no association (So & Fiori, 2022; Dodeen & Hassan, 2021) with Neto, Golz, and Polega's (2015) meta-analytic review appearing to cement the mixed sequence of results. In their subsequent study, however, Neto, Golz, and Polega (2015) showed a significant negative association between loneliness and academic achievement, which is an outcome demonstrated in other studies, also (Islam & Kumar, 2019; Mo, 2019; Alinejad *et al.*, 2022). Suggesting the possible consequence of the difference in FLEs' and FLWs' self-rated Welsh language ability is marginalization, one of the primary explanations for the association between loneliness and academic achievement references the concept of peer engagement (Islam & Kumar, 2019). In their study, Islam and Kumar (2019) stated that students who are more engaged with their social network feel relaxed and less lonely, which enables them to focus and perform well on their studies. The latter authors suggest that perceptions of loneliness impact concentration with associative decrements in scholastic performance. Alinejad *et al.* (2022) proposed a sequence of connected events whereby perceptions of loneliness impacted academic achievement via lonely people's negative attitude towards others, diminished self-esteem, poorer social skills, heightened perceptions of social rejection, avoidance of social interaction, and academic procrastination. The association between loneliness and academic procrastination was recognized by Anam and Hitipeuw (2021), also, who indicated that lonely people's diminished self-esteem led to social rejection with fewer social interactions resulting in less peer support to ensure the lonely person keeps on track with his or her studies. The academic procrastination aspect was developed by Andangsari, Djunaidi, and Harding (2018) who indicated that individuals experiencing perceptions of loneliness would use the Internet as an escape mechanism from their inadequate social interactions, which might result in an Internet dependency that promotes academic procrastination. Adopting a contrary perspective, if FLEs' unmet social interactional needs negatively impacts their academic outcome, then FLWs' close affiliation to the Welsh-speaking collective and associated SIT processes (e.g., Coupland, Bishop, Evans, & Garrett, 2006; Jones, 2002; Hendry, Mayer, & Kloep, 2007; Tajfel & Turner, 1979) ought to promote elevated academic outcomes, and this was recognized by Eccles *et al.* (2021). Developing their assertion, Eccles *et al.* (2021) stated that an individual's peers can foster and encourage pro-academic sentiment with the presence of meaningful and fulfilling social connections positively impacting the individual's academic results, with the opposite scenario holding,

also. Suggesting a form of distraction from academic studies – and an argument that might apply to FLEs, Eccles *et al.* (2021) indicated that a perception of being lonely ensured the individual's attention remained focused on his or her negative social interaction experiences at the expense of his or her academic studies. Application of Eccles *et al.* (2021) might suggest FLWs' greater peer support would promote positive academic outcomes, whereas FLEs' diminished peer support would likely serve as a distraction to academic study.

Social anxiety is related to a variety of negative student outcomes within the educational context, including its negative association with academic achievement (Majeed, Munir, & Malik, 2022; Lin & Fan, 2021; Zukerman, Yahaz, & Ben-Itzhak, 2019; Archbell & Coplan, 2022; Brook & Willoughby, 2015). One explanation for the negative association suggests socially anxious individuals avoid situations where they are required to interact with their peers within the academic context (Mou *et al.*, 2022). Application of Mou *et al.* (2022) to lower Welsh language ability FLEs would suggest they might shy away from interacting with more proficient Welsh language peers within school contexts such as collaborative group work. Perceiving his or her Welsh language ability inferior relative to his or her more proficient Welsh language-speaking peers, the FLE's avoidance behaviour might be driven by a desire to avoid negative criticism and embarrassment, or simply being the centre of others' attention (Majeed, Munir, & Malik, 2022). Proposing a chain reaction, the latter authors suggested the prospect of engaging in social interactions created feelings of distress and anxiety, which ultimately contributed to lower academic achievement. In terms of the negative impact upon academic performance, Zukerman, Yahaz, and Ben-Itzhak (2019) indicated that a socially anxious individual's reduced access to peers equated to a reduction in pro-academic experiences such as collaborative learning. Application of the latter authors' assertion to FLWs would suggest their recourse to a larger pool of peer support would enhance their learning opportunities via shared knowledge and skills. Studies have also suggested that socially anxious people's academic results might be negatively impacted on account of their poorer concentration, self-consciousness, rumination, and perceived lower performance (Archbell & Coplan, 2022; Leigh, Chiu, & Clark, 2021; Alsudais *et al.*, 2022).

#### 6.4.1. Discussion Summary

Concluding, the difference in depression, loneliness, and social anxiety scores between FLWs and FLEs attending Welsh/Bilingual-medium schools would appear to be attributed to a simultaneous *elevation* in FLE participants' scores (due to social interaction issues) and FLW participants' *decreased* scores (due to SIT processes relating to Welsh language and cultural identity). The discussion has proposed that the main reason driving the difference in scores between FLEs and FLWs is the potential marginalization of lower Welsh ability language speakers from those with a higher self-rated linguistic ability in the Welsh language. At the whole-school level, the similarity of scores for each variable would suggest a levelling out of the scores between FLWs' lower scores and FLEs' higher scores within the Welsh/Bilingual-medium schools. Due to the large number of FLEs attending English-medium schools, there was no levelling out of participants' scores.

## 7. CHAPTER SEVEN: Empirical Analysis – Structural Equation Modelling

### 7.1. Introduction and Hypotheses

The objective of this chapter is to compare FLWs and FLEs where both groups attended Welsh/Bilingual-medium schools. The groups were compared using the structural equation modelling technique [SEM]. With SMD acting as the *predictor* variable, self-esteem the *outcome* variable, and each of depression, loneliness, and social anxiety adopting the independent variable roles, the hypotheses pursued first the *linguistic devaluation* approach followed by the *social identification* approach. Both approaches have been described within Chapter Two.

Summarizing the *linguistic devaluation* approach, hypotheses whereby SMD assumes the *predictor* variable role proceeds from the basis that FLWs would use social media to a greater extent compared to FLEs. There are five reasons suggesting why FLWs might use social media more than FLEs. The *first* reason is based upon minority language representation on social media. The extent to which languages are represented on social media is, for the most part, determined by the dominance of a given language relative to other languages, which might lead to minority language speakers using the majority language – a process known as language shift (Fishman, 1964; Sofi & Amin, 2021). Previous studies have suggested that not all FLWs use Welsh on social media (Cunliffe, Morris, & Prys, 2013a; McAllister, Blunt, & Prys, 2013), which would appear to reflect Fishman's (1964) language shift assertion. However, it is important to note that almost all FLWs would be bilingual in that they also communicate using English (Jones, 2015b; Cooledge & Murphy, 2017; Roberts *et al.*, 2003; Jones-Evans, Thompson, & Kwong, 2011; Roberts *et al.*, 2009; Mennen *et al.*, 2020); also, acknowledging the increasingly cosmopolitan composition of Wales' population (Study in Wales, 2022; Lymperopoulou, 2019) – although there is a suggestion the steady increase in Wales' ethnic composition has slowed of late (Welsh Government, 2022d), it would not be unreasonable to accept the possibility of tri- and even multilingual FLWs (Higham, 2020). A key point, though, is that a person identifying him or herself as a FLW might incorporate the Welsh language within his or her sense of 'Self' (Tajfel & Turner, 1979; Trepte & Loy, 2017; Hendry, Mayer, & Kloep, 2007; Jones, 2002) with the Welsh language considered an

important part of an individual's identity (Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Importantly, it has been shown that societal recognition of an individual's minority language *increases* self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022), and this has been demonstrated within the social media environment, also (Odulaja, 2021). Taking the opposite view, if societal recognition of one's minority language equates to an elevation in self-esteem, then the opposite ought to apply. Accordingly, a FLW perceiving *fewer* opportunities to use Welsh on social media might conclude that the Welsh language has not been fully recognized by society, thereby *reducing* self-esteem (e.g., Baker, 2003; Odulaja, 2021). Logically, a FLW perceiving fewer opportunities to use Welsh on social media would likely use social media *less* and not *more*. However, there is an alternative and contrary proposition, which is derived from the basis that perceived societal devaluation, marginalization, and/or discrimination of an individual's first language ultimately *decreases* an individual's self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022; Wei, Wang, & Ku, 2012; Wright & Bougie, 2007; Ekwere, 2022), with a *decreased* level of self-esteem associated with *higher* SMD (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021). Taking the lead from Chebanne and Kewagamang (2020) who showed that exclusion of a minority language encouraged the perception of being marginalized, a FLW perceiving restricted opportunities to use Welsh on social media might also consider him or herself marginalized. The notion of a FLW perceiving fewer opportunities to use Welsh on social media actually using social media *more* rather than *less* might attract a degree of logic when one reflects upon studies demonstrating marginalized groups using social media to fight for equality, and this is recognized within the *second* factor that suggests FLWs' greater usage of social media might arise out of a desire to attain greater language equality within the social media domain (for examples, see Lane, Do, & Moline-Rogers (2022), Yusupova (2022), and Gonzales *et al.* (2021)). As suggested by Greene (2010), reacting against perceived injustice and marginalization might be considered a tactic that protects minority language speakers' self-esteem. *Third*, reflecting upon Odulaja (2021), it is observed how use of one's first language on social media promoted self-esteem, which might be a factor in FLWs' continued – or even excessive – use of social media. This form of reasoning would start to make sense when one acknowledges that the pursuit of self-esteem is a basic human need (Maslow, 1943). Combining Odulaja and Maslow, it might be appreciated how speakers of minority languages such as Welsh might be motivated to use social media more. *Fourth*, another

reason potentially driving FLWs' greater use of social media would be the geographic distribution of FLWs throughout Wales, who are predominantly located within the northern and western regions (ONS, 2011). A FLW living in a geographic region containing fewer FLWs such as Monmouthshire (Welsh Government, 2021e) might be attracted to social media to connect with other FLWs. *Fifth*, the benefits associated with group affiliation within the social media context have been demonstrated with respect to second language students who have benefited in terms of their motivation, improved linguistic skills, confidence, and enhanced self-esteem (Kabilan, Ahmad, & Abidin, 2010; Aziz, Hashim, & Yunus, 2019) – reasons that might also apply to FLWs looking to maintain and develop their Welsh language skills via social media, which might result in greater social media usage.

Having suggested various reasons why FLWs might be inclined to use social media more, in terms of hypotheses construction, it is important to note the empirically supported associations between the variables: SMD is negatively associated with self-esteem (Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021) and positively associated with depression (Kircaburun *et al.*, 2020; Haand & Shuwang, 2020), loneliness (Martila, Koivula, & Rasanen, 2021; Shettar *et al.*, 2017), and social anxiety (Zsido *et al.*, 2021; Lyvers *et al.*, 2022). Thus, proceeding from the basis that FLWs might be drawn to greater social media usage, factoring in the empirically demonstrated associations between the variables, the following hypotheses are tested: **H6** – the positive association between SMD and depression would be stronger for FLWs; **H7** – the positive association between SMD and loneliness would be stronger for FLWs; **H8** – the positive association between SMD and social anxiety would be stronger for FLWs; and **H9** – the negative association between SMD and self-esteem would be stronger for FLWs.

Pursuing the *social identification* perspective, as we have already seen within Chapter Six's 'Hypotheses' sub-section, SIT mechanisms (Taffel & Turner, 1979) would anticipate that the depression, loneliness, and social anxiety scores would be *lower* for FLWs compared to FLEs where both groups attended Welsh/Bilingual-medium schools. Supportive rationale suggests FLWs' affiliation to Welsh culture and the community is strong (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006). The literature shows that social identification with the group provides protection against depression (Postmes, Wichmann, van Valkengoed, & van der Hoef,



2018; Cruwys *et al.*, 2014), loneliness (Wann, 2006; Russell & Russell, 2018; Travaglino *et al.*, 2020), and social anxiety (Carron *et al.*, 1999; Haslam *et al.*, 2019). SIT also predicts a significant positive correlation between group identification and an individual's level of self-esteem (e.g., Kaye, Carlisle, & Griffiths, 2019; Hoffmann *et al.*, 2020), with *higher* levels of self-esteem associated with *lower* levels of depression (e.g., Babore *et al.*, 2016; Zhou, Tian, & Huebner, 2020), loneliness (e.g., Pop, Iorga, & Iurcov, 2022; Karababa, 2021a; Lyyra *et al.*, 2021; Geukens *et al.*, 2022), and social anxiety (e.g., Wu, Qi, & Zhen, 2021; Kong *et al.*, 2021; Seon, 2021; Murad, 2020; Jiang & Ngien, 2020). Thus, proceeding from the basis that FLWs would record *lower* depression, loneliness, and social anxiety scores compared to FLEs, the following hypotheses are tested: **H10** – the negative association between depression and self-esteem would be stronger for FLEs; **H11** – the negative association between loneliness and self-esteem would be stronger for FLEs; and **H12** – the negative association between social anxiety and self-esteem would be stronger for FLEs.

## 7.2. Method

### 7.2.1. Participants

Participants attended Welsh/Bilingual-medium secondary schools found within Wales. Regarding SEM analysis, the number of FLWs was 317, and the number of FLEs was 519. Participant quantities with respect to Pearson correlation analyses are detailed within the Pearson table, below.

### 7.2.2. Procedure

Consenting participants received questionnaire booklets in-class, and these were completed under the direction of their class teachers. Participants completed the questionnaire between 6<sup>th</sup> June and 20<sup>th</sup> July 2018 (i.e., time wave one).

### 7.2.3. Material

Participants completed the following scales: the 10-item Rosenberg Self-Esteem Scale [RSES] (Rosenberg, 1979), which has shown acceptable levels of validity and reliability (e.g., Vasconcelos-Raposo *et al.*, 2012); the 6-item Bergen Social Media Addiction Scale [BSMAS] (Andreassen, Pallesen, & Griffiths, 2017), which has shown acceptable levels

of validity and reliability (e.g., Monacis, de Palo, Griffiths, & Sinatra, 2017); the 20-item Center for Epidemiologic Studies Depression Scale [CES-DC – ‘DC’ denotes the children’s version], which has shown acceptable levels of validity and reliability (e.g., Fendrich, Weisman, & Warner, 1990); the 24-item Children’s Loneliness Scale [CLS], which has shown acceptable levels of validity and reliability (e.g., Asher, Hymel, & Renshaw, 1984); and the 48-item Liebowitz Social Anxiety Scale for Children and Adolescents self-report scale [LSAS-CA-SR], which has shown acceptable levels of validity and reliability (e.g., Schmits, Heeren, & Quertemont, 2014).

The provenance of each scale in addition to validity and reliability aspects were covered within Chapters One and Three. Please refer to **3.5.1** (self-esteem), **3.5.2** (SMD), **3.5.3** (depression), **3.5.4** (loneliness), and **3.5.5** (social anxiety) for more information about each scale.

### 7.3. Results

Table 11 reveals the mean scores for FLWs and FLEs for each variable. Table 11 also supplies t-test results between the groups (including Bayes) for each variable. These analyses showed that FLWs attending Welsh/Bilingual-medium schools had higher self-esteem, and lower depression, loneliness, and social anxiety scores than FLEs attending Welsh/Bilingual-medium schools, but there was no difference in their SMD scores.

*Table 11. Mean Scores, T-tests, and Bayes for First Language Welsh and English Speakers Attending Welsh/Bilingual Medium Schools*

	T-test and Bayesian Values						
	FLWs	FLEs	<i>t</i> (834)	<i>P</i>	<i>d</i>	BF <sub>10</sub>	Error %
Self-Esteem	19.49	17.45	-5.648	<.001	-.40	387691.319	5.207e-10
SMD	13.617	13.802	.542	>.30	.04	.092	.002
Depression	15.308	19.741	5.107	<.001	.36	24343.029	8.114e -9
Loneliness	30.875	34.538	4.545	<.001	.32	1813.033	1.060e -7
Social Anxiety	44.863	52.686	4.030	<.001	.29	215.895	8.654e -7

Pearson correlations were generated for both groups and inter-group comparisons conducted. Inspection of these data shows significant relationships between both SMD and self-esteem and each of depression, loneliness, and social anxiety. Table 12 reveals the Pearson correlation results (including Bayes in parentheses) for FLWs (*n* = 317).

Table 12. Pearson Correlations – First Language Welsh Speakers

	<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1</b>	Self-Esteem	1	-.408* (1.788e+11)	-.716* (4.722e+47)	-.457* (6.314e+14)	-.412* (2.915e+11)
<b>2</b>	SMD	-.408* (1.788e+11)	1	.409* (1.978e+11)	.167** (5.763)	.196* (32.206)
<b>3</b>	Depression	-.716* (4.722e+47)	.409* (1.978e+11)	1	N/A	N/A
<b>4</b>	Loneliness	-.457* (6.314e+14)	.167** (5.763)	N/A	1	N/A
<b>5</b>	Social Anxiety	-.412* (2.915e+11)	.196* (32.206)	N/A	N/A	1

\* Holm-Bonferroni corrected alpha = .0002 <.05 (2-tailed)  
 \*\* Holm-Bonferroni corrected alpha = .006 <.05 (2-tailed)

Table 13 reveals the Pearson correlation results (including Bayes in parentheses) for FLEs ( $n = 519$ ).

Table 13. Pearson Correlations – First Language English Speakers

	<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1</b>	Self-Esteem	1	-.300* (2.071e+9)	-.712* (8.600e+77)	-.529* (2.989e+35)	-.451* (1.293e+24)
<b>2</b>	SMD	-.300* (2.071e+9)	1	.352* (3.152e+13)	.126** (3.456)	.158* (38.400)
<b>3</b>	Depression	-.712* (8.600e+77)	.352* (3.152e+13)	1	N/A	N/A
<b>4</b>	Loneliness	-.529* (2.989e+35)	.126** (3.456)	N/A	1	N/A
<b>5</b>	Social Anxiety	-.451* (1.293e+24)	.158* (38.400)	N/A	N/A	1

\* Holm-Bonferroni corrected alpha = .0002 <.05 (2-tailed)  
 \*\* Holm-Bonferroni corrected alpha = .006 <.05 (2-tailed)

Having proven significant associations between the tested pairings for both groups, the next part of the process was to undertake an inter-group comparison to decide whether differences existed regarding the groups' respective correlation coefficients and slopes, and the comparison results are detailed within the below tables. Table 14 shows the groups' respective coefficient comparisons.

Table 14. Correlation Coefficient Comparisons – First Language Welsh vs. First Language English Speakers

Variable Correlations	Correlation Values for FLWs and FLEs		Comparison of Groups' Correlations	
	FLWs' <i>r</i> Value [ <i>n</i> = 317]	FLEs' <i>r</i> Value [ <i>n</i> = 519]	Z Score	Probability
Self-Esteem ↔ SMD	-.408	-.300	-1.728	0.084
Self-Esteem ↔ Depression	-.716	-.712	-0.114	>.30
Self-Esteem ↔ Loneliness	-.457	-.529	1.331	0.183
Self-Esteem ↔ Social Anxiety	-.412	-.451	0.700	>.30
SMD ↔ Depression	.409	.352	0.932	>.30
SMD ↔ Loneliness	.167	.126	.585	>.30
SMD ↔ Social Anxiety	.196	.158	0.548	>.30

Table 15 references the groups' respective slope and standard error comparisons (within the below table, standard error values are recorded within the parentheses).

Table 15. Slope Comparisons – First language Welsh vs. First Language English Speakers

Variable Correlations	Slope and Standard Error for FLWs and FLEs		Comparison of Groups' Correlations		
	FLWs' Slope (Standard Error) [ <i>n</i> = 317]	FLEs' Slope (Standard Error) [ <i>n</i> = 519]	T-Value	<i>df</i>	Probability
Self-Esteem ↔ SMD	-0.389 (4.380)	-0.280 (4.545)	0.017	832	>.30
Self-Esteem ↔ Depression	-1.564 (7.755)	-1.729 (8.977)	0.014	832	>.30
Self-Esteem ↔ Loneliness	-0.980 (9.435)	-1.188 (9.876)	0.015	832	>.30
Self-Esteem ↔ Social Anxiety	-2.203 (23.263)	-2.513 (25.034)	0.009	832	>.30
SMD ↔ Depression	0.880 (10.324)	0.946 (11.873)	0.004	832	>.30
SMD ↔ Loneliness	0.354 (10.626)	0.320 (11.450)	0.002	832	>.30
SMD ↔ Social Anxiety	1.068 (25.048)	1.009 (27.813)	0.002	832	>.30

Summarising, the above tables reveal two findings: Pearson correlation analyses suggest statistically significant associations between the tested variable pairings for FLWs and FLEs alike; also, following a comparison of both groups' respective coefficients and slopes, there were no statistically significant differences between FLWs and FLEs.

To elicit greater understanding, data was subjected to SEM analysis, which facilitated inter-group path-by-path comparisons. SEM analysis was chosen as it specifically tests

and compares both groups' responses on all paths. All data was extracted from the Welsh/Bilingual-medium schools only as this supplied a direct linguistic comparison. In total, there were 836 subjects (FLWs = 317; FLEs = 519).

The tested model (Figure 32) employed SMD as the *predictor* variable, and self-esteem as the *outcome* variable with depression, loneliness, and social anxiety adopting the independent variable roles:

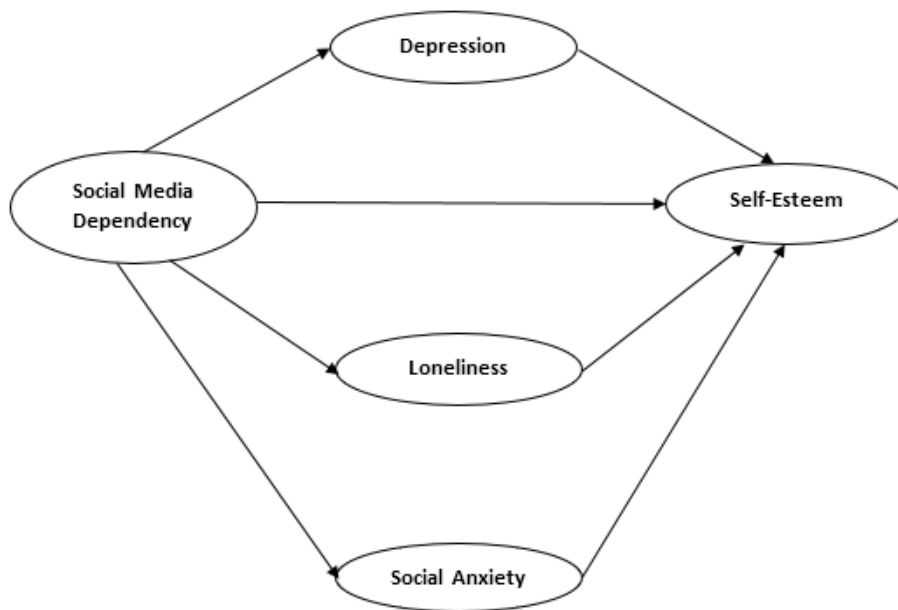


Figure 32. Structural Equation Model: Social Media Dependency (Predictor) and Self-Esteem (Outcome)

The deployed scales have each shown acceptable empirically supported levels of validity and reliability (see Chapter Three). To obtain the most parsimonious model for the data, data was subjected to full SEM analysis incorporating exploratory factor analysis [EFA] followed by confirmatory factor analysis [CFA]. EFA is a statistical method for determining how well the items for a given scale correlate with one another; for instance, application of EFA to RSES identifies which of the ten items best supports the self-esteem concept. The same principle holds with respect to the other scales, also. CFA builds upon EFA by incorporating the retained items from EFA within the tested model. Data were analysed using IBM SPSS Statistics version 26.0 and IBM SPSS Amos Graphics version 25.0. As per Hu and Bentler (1999) and Costa *et al.* (2020), the

model fit criteria recorded in Table 16 were applied to the data (CFI = comparative fit index; GFI = goodness-of-fit; AGFI = adjusted goodness-of-fit; RMSEA = root mean square error of approximation; SRMR = (standardized) root mean square residual; and PCLOSE = *p* close fit):

*Table 16. Confirmatory Factor Analysis Model Fit Parameters*

<b>Indexes</b>	<b>Acceptable Parameters</b>
$\chi^2/df$	< 3 good; < 5 sometimes acceptable
CFI	>.95 excellent; >.90 standard; >.80 tolerated
GFI	>.95
AGFI	>.80
RMSEA	<.05 excellent; .05-.10 standard; >.10 not acceptable
PCLOSE	>.05
SRMR	<.08

To obtain the most parsimonious model for the data, data was subjected to full SEM analysis incorporating EFA followed by CFA. Data was screened using Mahalanobis Distance, Cook’s Distance, and Centred Leverage Value. Winsorization was applied to 7 and 10 FLW and FLE participants, respectively. Data showed acceptable multicollinearity, normality, linearity, homogeneity, and homoscedasticity.

The first step in the process was EFA. Kaiser-Meyer-Olkin [KMO] (.950) exceeded the desired .70 (Kaiser, 1974: 35, suggested KMO values: in the .90s “marvellous”; in the .80s “meritorious”; in the .70s “middling”; in the .60s “mediocre”; in the .50s “miserable”; and below .50 “unacceptable”), and Bartlett’s Test of Sphericity ( $\chi^2 = 49220.339$ ,  $df = 4950$ , Sig. <.001) was significant, which shows the matrix was not an identity matrix, i.e., the variables are sufficiently related to one another to allow execution of EFA. Analysis of the Communalities Table (maximum likelihood method) suggested three items were <.3. Total Variance loaded on 18 factors as opposed to the desired 5 (cumulative value at 5 = 40.1%; cumulative value at 18 = 53.6%), which was not acceptable. Acceptable goodness-of-fit indices were returned ( $\chi^2 = 6681.558$ ,  $df = 3303$ , Sig. <.001).

The initial Pattern Matrix showed significant levels of cross-loading (21 of the 100 items cross-loaded), which required resolution. Following 60 iterations, a clean Pattern Matrix with no cross-loadings was attained. KMO (.941) exceeded the desired .70, and Bartlett’s Test of Sphericity ( $\chi^2 = 29401.296$ ,  $df = 2346$ , Sig. <.001) was significant. The Communalities Table suggested six items were <.3. Total Variance loaded on 12 factors

(cumulative value at 5 = 39.9%; cumulative value at 12 = 50.1%). Acceptable goodness-of-fit indices were returned ( $\chi^2 = 3419.253$ ,  $df = 1584$ , Sig. <.001). The resolved Pattern Matrix showed acceptable convergent validity (all items were >.3) and discriminant validity (there were no cross-loadings). The Factor Correlation Matrix showed that no factor loadings were >.7, which was acceptable. Table 17, which depicts Cronbach's  $\alpha$  values for the EFA-moderated scales – which are all acceptable, indicates that Pattern Matrix resolution necessitated item redundancy for 3 of the 5 deployed scales.

*Table 17. Exploratory Factor Analysis: Revised Cronbach Alphas*

<b>Scale</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Number of Items Retained</b>
Self-Esteem [RSES]	.852	10
Social Media Dependency [BSMAS]	.786	6
Depression [CES-DC]	.908	12
Loneliness [CLS]	.854	12
Social Anxiety [LSAS-CA-SR]	.930	29

The second step in the process was CFA, using the EFA-moderated scales. The following 'Analysis Properties' were selected: minimization history; standardized estimates; modification indices; indirect, direct, and total effects; threshold for modification indices = 20; number of bootstrap samples = 1,000; BC confidence level = 95; and boot factor = 1.

Execution of the initial CFA realised poor model fit criteria, and the values are recorded in Table 18.

*Table 18. Confirmatory Factor Analysis: Model Fit Indices*

<b>Indexes</b>	<b>Model Fit Indices</b>
$\chi^2/df$	4.760
CFI	.695
GFI	.649
AGFI	.626
RMSEA	.067
PCLOSE	.000
SRMR	.069

Application of covariances (as recommended by IBM SPSS Amos Graphics version 25.0) realized an improvement in the model fit indices, and these are recorded in Table 19.

Table 19. Confirmatory Factor Analysis: Model Fit Indices

Indexes	Model Fit Indices
$X^2/df$	2.170
CFI	.914
GFI	.862
AGFI	.838
RMSEA	.037
PCLOSE	1.000
SRMR	.051

Table 20 shows the strength of the linear relationship between the variables. [Note: the displayed ‘Equation’ references the strongest  $F$  statistic.]

Table 20. Confirmatory Factor Analysis: Linearity

Equation	$R^2$	$F$	$df1$	$df2$	Sig.
<b>Relationship: Social Media Dependency → Depression<sup>1</sup></b>					
Logarithmic	.121	114.501	1	834	<.001
<b>Relationship: Social Media Dependency → Loneliness<sup>2</sup></b>					
Compound	.038	32.863	1	834	<.001
<b>Relationship: Social Media Dependency → Social Anxiety</b>					
Linear	.047	41.036	1	834	<.001
<b>Relationship: Social Media Dependency → Self-Esteem<sup>3</sup></b>					
Logarithmic	.127	121.290	1	834	<.001
<b>Relationship: Depression → Self-Esteem</b>					
Linear	.442	660.915	1	834	<.001
<b>Relationship: Loneliness → Self-Esteem</b>					
Linear	.289	339.794	1	834	<.001
<b>Relationship: Social Anxiety → Self-Esteem</b>					
Linear	.250	278.208	1	834	<.001

<sup>1</sup> Linear:  $r^2 = .116$ ;  $F = 109.484$ ;  $df1 = 1$ ;  $df2 = 834$ ; Sig. <.001.

<sup>2</sup> Linear:  $r^2 = .035$ ;  $F = 30.135$ ;  $df1 = 1$ ;  $df2 = 834$ ; Sig. = .001.

<sup>3</sup> Linear:  $r^2 = .122$ ;  $F = 116.415$ ;  $df1 = 1$ ;  $df2 = 834$ ; Sig. <.001.

Acceptable levels of multicollinearity were demonstrated in that the assessed variance inflation factor [VIF] scores were all <3: dependent variable depression VIF = 1.411; dependent variable loneliness VIF = 1.306; and dependent variable social anxiety VIF = 1.559.

The following covaried structural model was assessed:



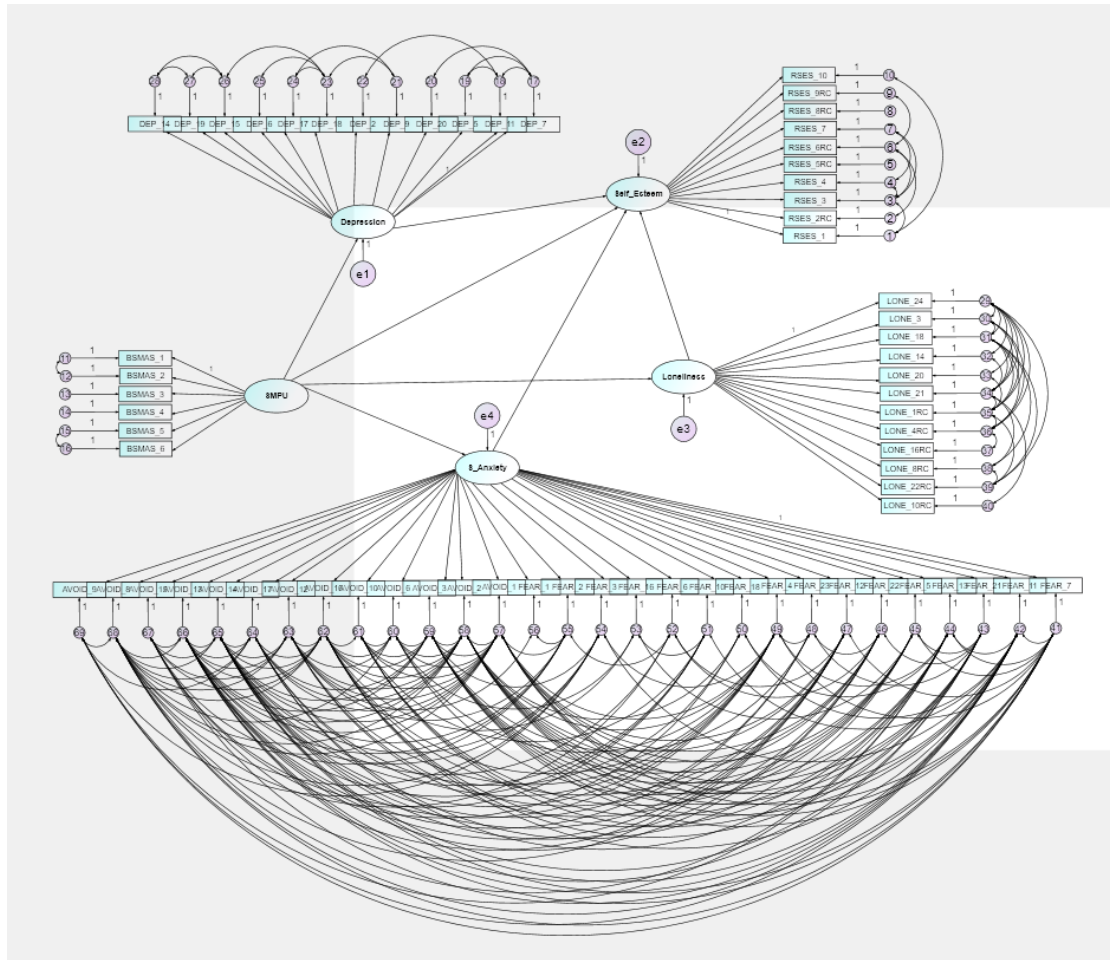


Figure 33. Confirmatory Factor Analysis: Structural Model

The above model showed moderately acceptable model fit indices:

Table 21. Confirmatory Factor Analysis: Model Fit Indices

Indexes	Model Fit Indices
$\chi^2/df$	2.438
CFI	.894
GFI	.842
AGFI	.815
RMSEA	.041
PCLOSE	1.000
SRMR	.058

The next stage in the process compared FLWs and FLEs on the following paths to find differences/similarities:

- [H6] SMD → Depression
- [H8] SMD → Social anxiety

- [H7] SMD → Loneliness
- [H9] SMD → Self-esteem
- [H10] Depression → Self-esteem
- [H12] Social anxiety → Self-esteem
- [H11] Loneliness → Self-esteem

Inter-group comparison at the overall model level using structural weights showed a difference on one or more of the tested paths, which are outlined above ( $df = 71$ ,  $CMIN = 157.078$ ,  $p < .001$ ). Accordingly, significance calls for comparative inter-group analysis on a path-by-path level.

Employing structural weights, Table 22 shows: (1) whether the paths were statistically significant for each group, i.e., ‘Intra-Group Path Significance’ column; and (2) whether statistically significant differences existed between the groups for each path, i.e., ‘Inter-Group Path Comparison’ column. [Note: AMOS’ ‘Multi-group Comparison’ function determined inter-group significance.]

Table 22. Confirmatory Factor Analysis: Path-by-Path Comparison

Group	Intra-Group Path Significance		Inter-Group Path Comparison		
	Structural Weight Estimate	Structural Weight $p$ -value	$df$	CMIN	$p$
<b>Path: Social Media Dependency → Depression</b>					
FLWs	.845	<.001	1	12.978	<.001
FLEs	.501	<.001			
<b>Path: Social Media Dependency → Loneliness</b>					
FLWs	.751	<.001	1	11.836	.001
FLEs	.405	<.001			
<b>Path: Social Media Dependency → Social Anxiety</b>					
FLWs	.747	<.001	1	12.729	<.001
FLEs	.429	<.001			
<b>Path: Depression → Self-Esteem</b>					
FLWs	-.247	.095	1	5.705	.017
FLEs	-.590	<.001			
<b>Path: Social Anxiety → Self-Esteem</b>					
FLWs	.104	.277	1	9.494	.002
FLEs	-.216	<.001			
<b>Path: Loneliness → Self-Esteem</b>					
FLWs	-.093	.022	1	1.822	.177
FLEs	-.094	.022			
<b>Path: Social Media Dependency → Self-Esteem</b>					
FLWs	-.654	.007	1	9.804	.002
FLEs	-.133	.031			

Inter-group statistical significance was obtained with respect to all paths with the exception of loneliness → self-esteem. With the exception of the associations between depression → self-esteem, and social anxiety → self-esteem – for FLWs only, statistically significant associations were obtained for both groups for each variable pairing. Figures 34 (FLWs) and 35 (FLEs) depict the groups' respective structural weights, as shown within Table 22.

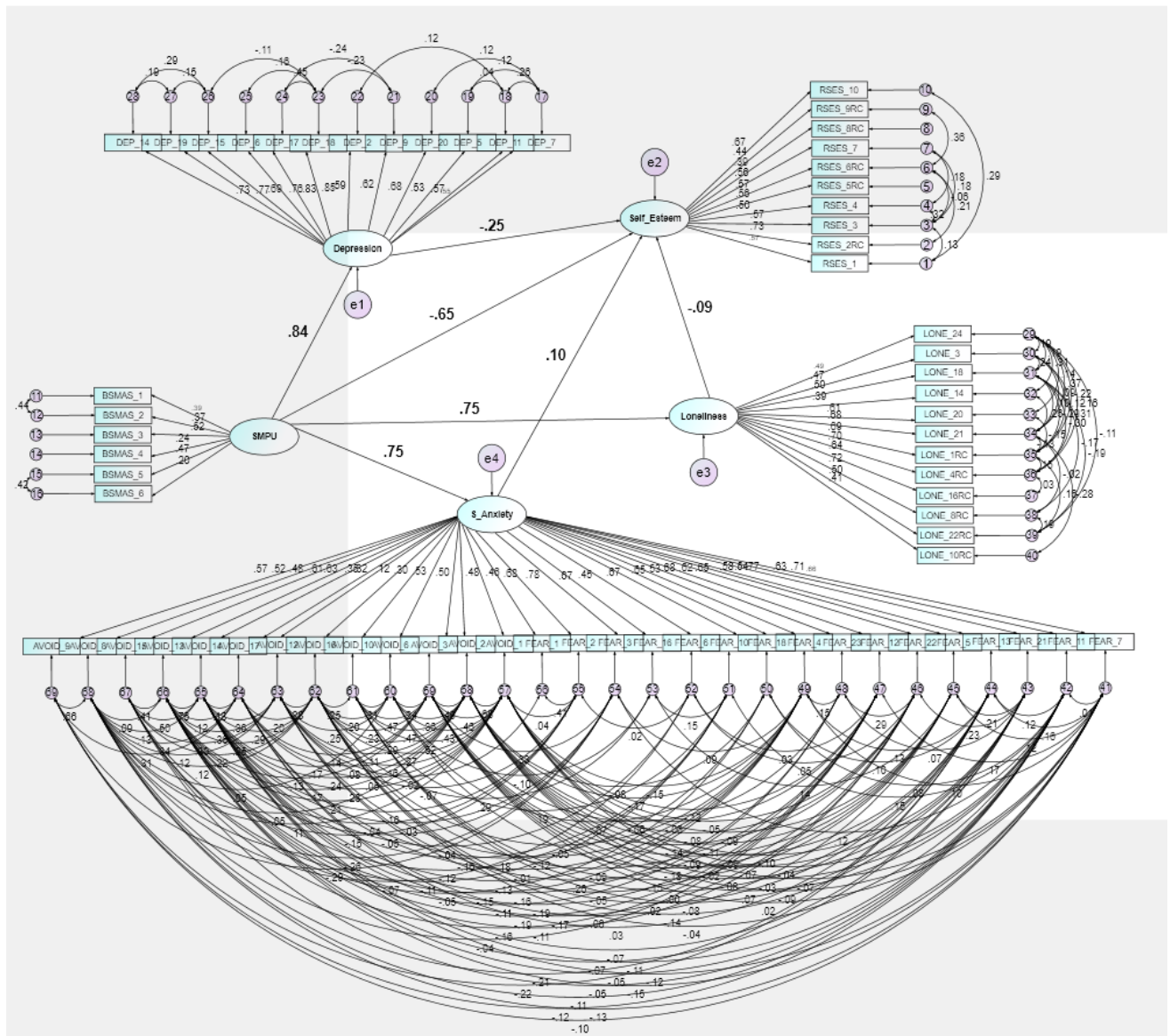


Figure 34. Structural Weights: First Language Welsh Speakers

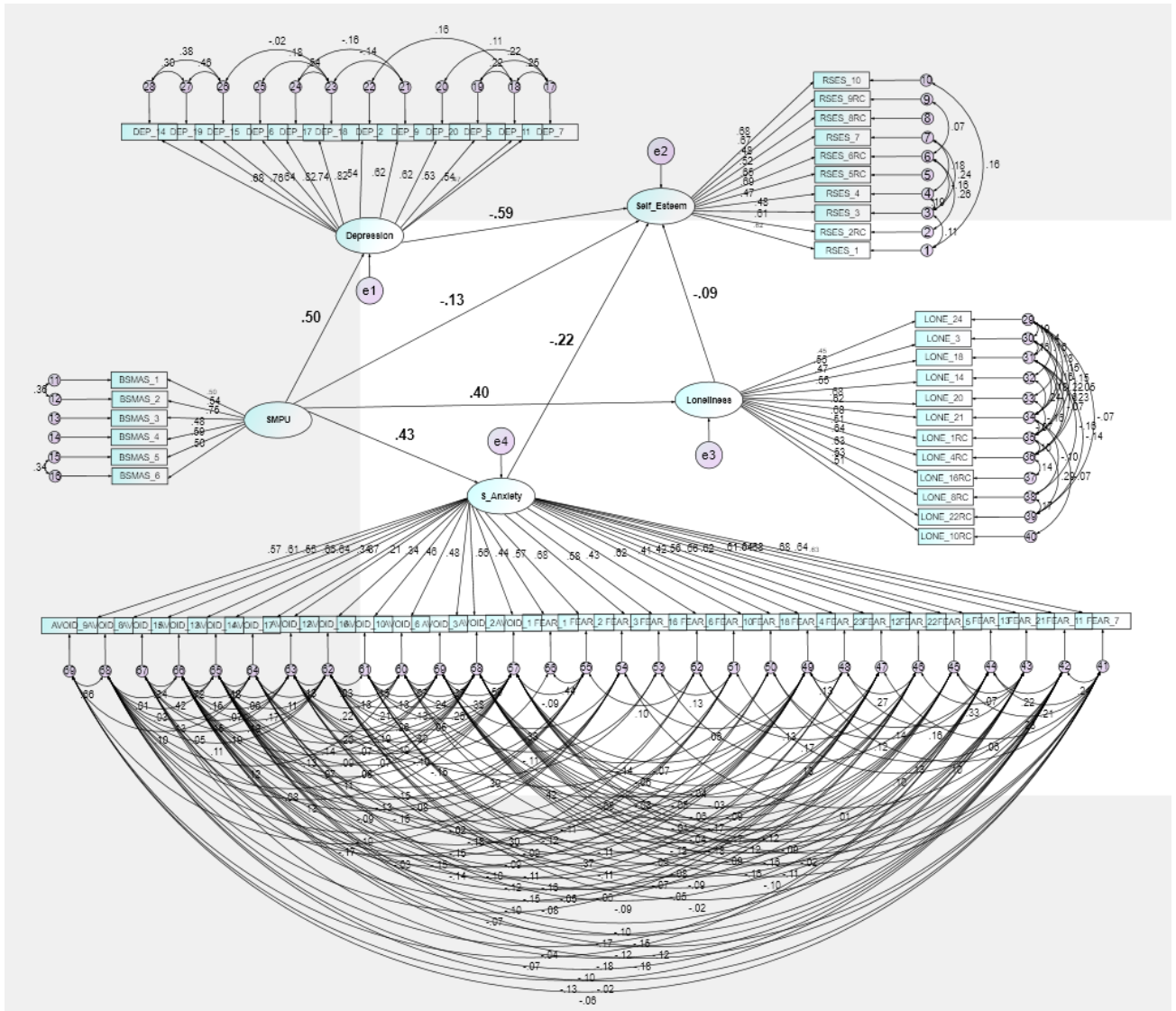


Figure 35. Structural Weights: First Language English Speakers

Suggesting support for six of the seven hypotheses, FLWs retained the stronger association for the following paths: **[H9]** SMD → self-esteem ( $-.654, p = .007$  versus  $-.133, p = .031$ ); **[H6]** SMD → depression ( $.845, p < .001$  versus  $.501, p < .001$ ); **[H7]** SMD → loneliness ( $.751, p < .001$  versus  $.405, p < .001$ ); and **[H8]** SMD → social anxiety ( $.747, p < .001$  versus  $.429, p < .001$ ). FLEs showed the stronger association for the following paths: **[H10]** depression → self-esteem ( $-.590, p < .001$  versus  $-.247, p = .095$ ); and **[H12]** social anxiety → self-esteem ( $-.216, p < .001$  versus  $.104, p = .277$ ). Statistical significance did not materialize with respect to **H11** (i.e., loneliness → self-esteem).

## 7.4. Discussion

Summarizing the overall results, data suggest support for six of the seven hypotheses. The ‘Discussion’ is essentially divided into two parts: the first part explores FLW and FLE participants’ responses whereby SMD assumes the *predictor* variable role; and the second part explores FLW and FLE participants’ responses whereby each of depression, loneliness, and social anxiety *predict* self-esteem. Within both parts, the discussion assumes the same pattern whereby each hypothesis is discussed in turn. Further, each hypothesis is explored using empirically supported reasons for the specific one-way associations; for instance, when discussing the association between SMD and self-esteem, the discussion is restricted to the one-way path moving *from* SMD *to* self-esteem only, which assures strict conformity to the tested SEM model depicted within Figure 37, above. The same principle applies in respect to the remainder of the paths, also. In each instance, the group demonstrating the *stronger* association on a given path (e.g., SMD → Self-esteem) would be more susceptible to the empirically demonstrated reasons explaining the association between two variables; for instance, FLWs would be more susceptible to the reasons explaining the association between SMD → Self-esteem because SEM analysis determined that FLWs retained the stronger association between the two variables compared to FLEs. Concomitantly, implications arising from the association between two variables would suggest a greater impact upon the group demonstrating the stronger association on a given path. The remainder of the ‘Discussion’ focuses upon each hypothesis achieving statistical significance.

**H9** stated the negative association between SMD → Self-esteem would be stronger for FLWs, which was supported. Self-esteem refers to an individual’s integral summation of his or her level of self-confidence and self-respect, which might be obtained through socialization processes such as Cooley’s (1902) looking-glass principle. Accordingly, the way in which an individual evaluates his or her abilities and capabilities determines the level of self-esteem perceived (Köse & Doğan, 2019). The latter authors noted how the traditional means of estimating one’s self-esteem level (for instance, face-to-face interaction) has expanded to incorporate social media, which suggests an on-line social interactional process. Expanding upon the last point, Acar *et al.* (2022) stated that social media platforms allow individuals to undertake social comparisons with others and that the social comparison process might negatively impact the individual’s level of self-

esteem, which in terms of the data would suggest FLWs might be a group at greater risk given their stronger association between SMD → Self-esteem. Studies have suggested various explanations for the negative relationship between SMD → Self-esteem; for instance, several studies focused upon the social comparison aspect whereby an individual compares his or her life with other social media users' on-line portrayals (e.g., Pawar & Shah, 2019; Hassan & Afzal, 2022). Social comparison might operate in one of two ways (Acar *et al.*, 2022): upward social comparison occurs when an individual compares him or herself with 'superior' others; and downward social comparison occurs when an individual compares him or herself with 'inferior' others. Upward social comparison via social media has been shown to trigger a lower level of self-esteem (Kavakli & Ünal, 2021). Amplifying the impact of on-line social comparisons upon an individual, Koçak, Ilme, and Younis (2021) indicated that users tend to portray a 'perfect' existence on social media, which might send a message to the viewer that his or her life in comparison is less rewarding and satisfactory – an interpretation that might cause the individual to feel weaker and less adequate with a knock-on consequence in terms of a diminished level of self-esteem. Studies have also explained the negative association between SMD → self-esteem through users' desire to enhance their level of self-esteem or to escape feelings of diminished self-esteem (Hawi & Samaha, 2016; Xuan, 2021).

**H6** stated the positive association between SMD → Depression would be stronger for FLWs, which was supported. In recent times, with the increasing popularity of social media, the empirically supported positive relationship between SMD → Depression has attracted the attention of numerous researchers (e.g., Mou *et al.*, 2020; White-Gosselin & Poulin, 2022; Balakrishnan & Lajuma, 2021); however, it should be observed that support for the positive association is not unanimous (Karakose, Yirci, & Papadakis, 2022). In support of the positive association, studies have suggested numerous explanations, which would appear to hold greater applicability for FLWs given their demonstrated stronger positive association between SMD → Depression. Paralleling one of the suggested causal explanations for SMD → Self-esteem, studies have shown how social comparison on social media triggered elevated depression with upward social comparative processes proving more problematical (Kavakli & Ünal, 2021; Hassan & Afzal, 2022). Extending the social comparison argument, Balakrishnan and Lajuma (2021) suggested seeing others' 'faked' on-line lives as being happier and more productive triggered a depression in that the user concluded his or her life somewhat less satisfactory and rewarding in

comparison, which is an argument suggested by Lin *et al.* (2016). Referencing *Social Comparison Theory*, White-Gosselin and Poulin (2022) stated humans have an intrinsic tendency to compare themselves with other people, and users afflicted with SMD would likely compare themselves more often with a positive correlation holding between volume of social comparisons undertaken and psychological distress endured such as internalizing symptoms. Research has also suggested the positive association between SMD → Depression might be mediated by fatigue arising through excessive social media usage (Dhir *et al.*, 2018). Explaining the association, Dhir *et al.* (2018) suggested social media fatigue occurred as a result of technological, informative, and communicative overloads due to participation and interaction on social media platforms. As a result of social media overuse, the latter authors indicated that social media fatigue resulted in a deterioration in the user's mental and physiological strengths whereby the user would likely develop unhealthy behaviours. Establishing a positive association between SMD → Depression, Balakrishnan and Lajuma (2021) referenced three theories potentially explaining the association: *Sedentary Behaviour Theory* suggests social media usage promotes a sedentary lifestyle with sedentary behaviours associated with mental health problems such as depression; *Displacement Theory* also references the sedentary lifestyle arising from greater social media usage and suggests that users' diminished energy for intimate and social interaction triggers mental health problems such as depression; and *Social Withdrawal Theory* that suggests a negative correlation between social media usage and interaction with people, i.e., social isolation. The suggestion has been made that SMD users are more aware and sensitive to emotional stimuli with users' sensitivity playing a mediating role between SMD and elevated levels of depression (Xiao, Peng, & Liao, 2022). The suggestion is that SMD afflicted adolescents are more likely to engage in attention-seeking social media behaviour (e.g., posting pictures of oneself), and if the hoped-for feedback does not materialise (e.g., receipt of 'likes') the user might develop anxiety and depression (White-Gosselin & Poulin, 2022). The positive association between SMD → Depression might also be triggered by experience of cyberbullying, receipt of negative comments, and – established during the COVID-19 pandemic – exposure to negative on-line emotions, rumours and fake news (Lopes *et al.*, 2022; Karmokar *et al.*, 2021). However, despite portraying negative outcomes for the empirically evidenced positive association between SMD → Depression, research has suggested that social media usage might manifest a *reduction* in depression as a result of users' enhanced social capital as they might enjoy greater perceived peer support and life

satisfaction through social media interaction (Primack *et al.*, 2017; Lin *et al.*, 2016) – potential outcomes that might prove beneficial to FLWs given their stronger association between SMD → Depression. For the most part, though, the positive association between SMD → Depression offers a cautionary note with respect to FLWs based upon SEM analysis.

**H7** stated the positive association between SMD → Loneliness would be stronger for FLWs, which was supported. The *Displacement Hypothesis* suggests that time spent on social media replaces direct face-to-face interaction with friends, which reduces the quality of relationships and promotes the feeling of loneliness (Youssef *et al.*, 2020). Youssef *et al.*'s (2020) assertion emphasizes the influence of social interaction upon people's perceptions of loneliness. Numerous studies have explored the association between social interaction and loneliness within the social media context (e.g., Bozkurt, Keser, & Zülfikar, 2020; Sujarwoto, Tampubolon, & Pierewan, 2019). Acknowledging FLWs' stronger association between SMD → Loneliness, the association between social interaction and loneliness within the social media context may be important. Developing the discussion, Kavakli and Ünal (2021) stated that whilst an SMD afflicted user would wish to establish a social connection that satisfies his or her need for belongingness, SMD might actually block meaningful off-line relationships, which would diminish the user's general sense of belongingness. In essence, SMD results in elevated feelings of loneliness and social isolation arising from fewer off-line interactions with friends and family (Joo & Teng, 2017; Silmi *et al.*, 2020; Daracho, 2020; Savci & Aysan, 2016; Bakry *et al.*, 2022; Marttila, Koivula, & Räsänen, 2021). Bozkurt, Keser, and Zülfikar (2020) developed the association between loneliness and social interaction by suggesting the longer a person spends on-line the more his or her social life breaks down, which intensifies the perception of loneliness due to a weakening of the social connection with others. The concept loneliness has been explored from the *emotional* and *social* perspectives, also, with SMD being positively associated with *emotional* loneliness (e.g., Youssef *et al.*, 2020; Logrosan *et al.*, 2021). Rajeh *et al.* (2022) stated that an individual experiencing *social* loneliness lacks social interactions with friends and family, whereas *emotional* loneliness is a psychological condition that focuses upon the individual's feelings of attachment and intimacy. Lin *et al.* (2016) suggested that passive use of social media – as opposed to active participation – has been associated with a decrease in bonding and bridging social capital with a subsequent elevation in loneliness. Sujarwoto,



Tampubolon, and Pierewan's (2019) review suggested that only face-to-face social interaction with friends and family has a positive effect upon an individual's perceived quality of life, which cannot be attained through on-line social interactional processes alone. Previously we have seen that viewing others' 'perfect' on-line lives triggered a depression in the observer who felt his or her life was inadequate in comparison – the same concept has been shown with regard to loneliness whereby others' unrealistic portrayals on social media created a perception that they enjoyed a more socially inclusive and connected existence, which triggered the belief of being socially isolated in the observer's mind (Primack *et al.*, 2017). Astuti *et al.* (2022) observed that people have become constantly attached to their mobile phones and have become dependent upon the receipt of notifications and updates; however, if the social media user believes his or her on-line friends are engaging in activities in his or her absence, a perception of being ostracized materializes. A contrary perspective to the above negative outcomes should also be recognized since research has shown that people with low levels of self-esteem used social media to modify their mood, interact with new people, and decrease their perception of loneliness (Köse & Doğan, 2019). Thus, a FLW with a low level of self-esteem might accrue a benefit from increased social media usage in terms of a reduced perception of loneliness.

**H8** stated the positive association between SMD → Social Anxiety would be stronger for FLWs, which was supported. Most studies examining the relationship between SMD and social anxiety examined the path Social Anxiety → SMD as opposed to SMD → Social Anxiety, with studies generally suggesting that socially anxious individuals prefer on-line social interaction over face-to-face as they consider on-line interaction easier, less threatening, relationship inducing, and anxiety reducing (Baltaci, 2019; Zhang, 2022; Ozturan *et al.*, 2022; Özsat, Işıktas, & Şenol, 2022; Lee-Won, Herzog, & Park, 2015; Barbar *et al.*, 2020). However, studies have shown a positive association between SMD → Social Anxiety (e.g., Soraci *et al.*, 2022; Silmi *et al.*, 2020; Jia *et al.*, 2022), which would suggest – based on SEM analysis – a greater applicability to FLWs given their stronger SMD → Social Anxiety association compared to FLEs. Various explanations have been given regarding the positive association between SMD → Social Anxiety; for instance, Jia *et al.* (2022) suggested a catch-22 scenario whereby introverted socially anxious individuals preferred socializing via social media to alleviate physiological and psychological distress experienced during face-to-face social interaction. However, Jia *et*

*al.* (2022) noted the avoidance of face-to-face interaction negatively impacted the individual's self-regulatory behaviour thereby triggering SMD and social media-specific social anxiety. Indeed, the social interaction concept appears to be of great significance regarding the association between SMD → Social Anxiety. Ruggieri *et al.* (2020) showed that a high level of SMD can trigger elevated social anxiety. The latter authors stated that people compensate for their poor off-line social relationships by using social media, where the constraints that normally interfere with their social interactions are reduced. To compensate for their unsatisfactory off-line social interactional experiences, Ruggieri *et al.* (2020) noted that individuals turn to social media to compensate for what they cannot obtain during their off-line social interaction. However, Ruggieri *et al.* (2020) observed that the individual turning to social media to compensate for unsatisfactory off-line social interactions might experience social media-oriented social anxiety as he or she now becomes apprehensive as to whether he or she would be positively or negatively evaluated by other social media users, which is an aspect recognized by Duan, He, and Tang (2020) when they showed how a fear of missing out on social media triggered apprehension as to whether they would be accepted by on-line peers. Following on from Duan, He, and Tang's (2020) on-line acceptance-based anxiety, Shaw *et al.* (2015) suggested passive social media use may increase social anxiety symptoms by encouraging users to ruminate about personal concerns such as being socially included or excluded by others or comparing themselves with others. Developing the argument, Shaw *et al.* (2015) suggested passive use of social media may trigger negative self-beliefs, which may generate distress and negative rumination resulting in increased social anxiety symptoms. Recognizing that peer acceptance is an important part of adolescence, Kazan, Karaman, and Okdemir (2019) suggested that off-line peer group rejection prompted on-line peer group interaction; however, the authors noted that virtual forms of communication weaken an individual's ability to communicate and detaches the individual from social life, which triggers social anxiety.

Summarizing the first part of the discussion, data has demonstrated that whenever SMD acted as the *predictor* variable, FLWs showed the stronger association with each of the outcome variables self-esteem, depression, loneliness, and social anxiety. Although the rationale behind the SMD *predictor*-oriented hypotheses goes into greater detail, for purposes of clarity, it is suggested that FLWs' social media usage might be prompted by an array of factors such as a desire for higher self-esteem or as an expression of defiance

against perceived linguistic inequality. SEM analysis would suggest support for the hypotheses. In terms of potential implications arising from the discussion, data would suggest the impact of the association between SMD with each of depression, loneliness, and social anxiety would be greater for FLWs compared to FLEs; for instance, the recurring concept of social comparison might prove more problematic for FLWs in terms of SMD's positive association with depression and loneliness. Indeed, a recurring theme was the negative impact of SMD's positive association with depression, loneliness, and social anxiety in terms of adolescents' social interaction experiences, which is critical when one considers how adolescence is a key time in an individual's life regarding identity formation and reliance upon peer acceptance. Acknowledging how FLWs might be a group at greater risk of experiencing some of the articulated negative connotations associated with SMD → Depression, Loneliness, and Social Anxiety, it would make sense to devise initiatives intended to help mitigate some of the negative effects such as negative comparisons with other on-line users.

The second part of the discussion focuses upon the negative association between depression, loneliness, and social anxiety with self-esteem. Data showed that FLEs demonstrated the stronger association between Depression → Self-esteem and Social Anxiety → Self-esteem. There was no difference regarding FLWs' and FLEs' association between Loneliness → Self-esteem. There are two possible reasons for the statistically significant differences: the first reason – and the one put forward within the 'Introduction and Hypotheses' sub-section, above - suggests SIT processes and close affiliation to Welsh culture and the community (Tajfel & Turner, 1979; Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006) provided protection for FLWs against depression (e.g., Postmes, Wichmann, van Valkengoed, & van der Hoef, 2018), loneliness (e.g., Travaglino *et al.*, 2020), and social anxiety (Haslam *et al.*, 2019); conversely, a second reason would suggest FLEs with a lower Welsh language ability are disadvantaged in terms of feeling potentially marginalized within Welsh/Bilingual-medium schools (e.g., Šolak & Dragičević, 2021). Although Chapter Six goes into greater detail, for the purposes of reinforcement, it is worth recalling how perceptions of marginalization, peer isolation, and feeling left out correlate to higher levels of depression, loneliness, and social anxiety (Thornhill *et al.*, 2021; Ahn, Kivlighan, & Hill, 2021; Chen *et al.*, 2022b; Anjum *et al.*, 2022; Evans & Fisher, 2022; Handing *et al.*, 2022; Gong *et al.*, 2022; Neto, Quintana-Orts, & Neto, 2022; Niu *et al.*, 2022; Leary,

2015; Flick *et al.*, 2022; Ettekal *et al.*, 2022; La Greca & Harrison, 2005). For contrasting reasons, the referenced literature has suggested differences in FLWs' and FLEs' depression, loneliness, and social anxiety scores with FLEs recording the higher values. Accordingly, the expectation was that FLEs would show the stronger association between depression, loneliness, and social anxiety with self-esteem, and these are discussed below.

**H10** stated the negative association between Depression → Self-esteem would be stronger for FLEs, which was supported. SEM analysis revealed the negative association was only shown for FLEs since  $p = .095$  for FLWs indicating a non-significant association between the variables. Accordingly, empirically informed reasons supporting the negative association between Depression → Self-esteem would appear to hold greater applicability to FLEs. As for why FLWs showed non-significance, reflecting upon SIT processes, and cultural and FLW community affiliation (Tajfel & Turner, 1979; Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006), it might be suggested that FLWs enjoyed a degree of protection against depression (e.g., Postmes, Wichmann, van Valkengoed, & van der Hoef, 2018), which resulted in non-significance with self-esteem. In other words, FLWs' lower depression scores failed to predict self-esteem scores. The literature suggests the empirically supported association between depression and self-esteem might be explained by two contrasting models: the *Vulnerability Model* and the *Scar Model*. Studies generally favour the *Vulnerability Model*, which suggests lower self-esteem *predicts* higher depression (Šare *et al.*, 2021; Xia, 2022; Sorjonen *et al.*, 2022; Tran, Liu, & Cole, 2022; Zhou *et al.*, 2018; Saint-Georges & Vaillancourt, 2019). Explaining the *Vulnerability Model*, Xia (2022) referenced interpersonal mechanisms (Xia, 2022); for instance, low self-esteem individuals tend to seek excessive support from friends, which triggers elevated depression when the support is not forthcoming. Another causal explanation put forward by Xia (2022) suggests low self-esteem negatively impacts an individual's social skills, which results in less social support and greater depression. Although fewer in number, studies have supported the *Scar Model*, also, which predicts that depression influences self-esteem, i.e., Depression → Self-esteem (Tran, Liu, & Cole, 2022; Shahar & Davidson, 2003; Ledrich & Gana, 2013). Acknowledging that FLEs showed the stronger association between Depression → Self-esteem, the various causal explanations for this relationship would appear to hold greater relevance for FLEs compared to FLWs. Studies suggest depression may leave scars upon a person's self-concept, which slowly erodes the

person's self-esteem (Tran, Liu, & Cole, 2022; Xia, 2022). Developing the self-concept theme, Reed-Fitzke, Withers, and Watters' (2021) review observed how depression effectively reduced an individual's self-concept by altering the way an individual processes information about the 'Self', which results in a negative self-perception (that is, diminished self-worth). The impact of depression upon an early adolescent's self-concept has been demonstrated by Shahar and Henrich (2010), also. The negative association between Depression → Self-esteem has also been explained in terms of people's social interaction; for instance, Xia (2022) noted how depression might hinder social intimacy and social networking, which are important components of an individual's self-esteem. Following on from the last point, Tran, Liu, and Cole (2022) suggested depression might result in dysfunctional social interactions with the depressed person effectively distancing him or herself from close relationships, thereby negatively impacting an important source of an individual's self-esteem (Ledrich and Gana, 2013). Emphasizing the importance of positive social interactions to individuals' self-esteem, Shahar and Davidson (2003) showed how improvement in an individual's social functioning moderated the negative effect of depression upon self-esteem. The suggestion is that depression also distorts the way a person processes self-relevant information so that he or she disproportionately focuses upon his or her more negative aspects, which decreases the level of self-esteem (Tran, Liu, & Cole, 2022; Xia, 2022; Ledrich & Gana, 2013). Indeed, depressed people's tendency to hold negative attitudes toward not only themselves but to the world in general also negatively impacts self-esteem (Shahar & Davidson, 2003). Another way in which depression might negatively impact self-esteem is the way other people treat depressed individuals (Xia, 2022). Developing the argument, Xia (2022) suggested that depressed individuals might be less well received and devalued by other people, which would likely degrade the depressed individual's level of self-esteem.

**H12** stated the negative association between Social Anxiety → Self-esteem would be stronger for FLEs, which was supported. SEM analysis revealed the negative association was only shown for FLEs since  $p = .277$  for FLWs indicating a non-significant association between the variables. Accordingly, empirically informed reasons supporting the negative association between Social Anxiety → Self-esteem would appear to hold greater applicability to FLEs. In seeking a possible explanation for FLWs' non-significant Social Anxiety → Self-esteem association, the argument put forward for FLWs' non-significant Depression → Self-esteem association, above, would appear to hold, i.e.,

FLW's lower social anxiety scores might be attributed to SIT mechanisms and close affiliation to culture and the FLW community. In other words, FLWs' lower social anxiety scores failed to predict self-esteem scores. As was shown with respect to the association between Depression → Self-esteem, above, where empirical analyses predominantly favoured Self-esteem → Depression, a similar literature search outcome was obtained where studies generally favoured the association Self-esteem → Social Anxiety where it is suggested low self-esteem weakens an individual's ability to adapt to the communication environment and heightens sensitivity regards interpersonal rejection resulting in increased social anxiety (Fatima, Niaza, & Ghayas, 2017; Seon, 2021; He, 2022; Roshan *et al.*, 2022). Studies, though, have demonstrated the negative association between Social Anxiety → Self-esteem (e.g., Murad, 2020). Explaining the negative association, Murad's (2020) review indicated that individuals with higher social anxiety demonstrated self-esteem impacting behaviours such as nervousness, apprehension, fear, and concern. Research has also shown how socially anxious individuals' negative self-image creates uncertainty regarding the 'Self' and a fear of being negatively evaluated by others, which damages self-esteem (Obadeji & Kumolalo, 2022). Indeed, that socially anxious people display a tendency toward negative self-evaluation has received support (Călin *et al.*, 2021; El-Nagar *et al.*, 2022; Eryananda & Oriza, 2019; Izgiç *et al.*, 2004). Supporting the negative association between Social Anxiety → Self-esteem, Kong *et al.* (2021) suggested socially anxious individuals' passive and negative engagement in interpersonal communication and accumulation of self-worth impacting experiences weakened their level of self-esteem.

**H11** stated the negative association between Loneliness → Self-esteem would be stronger for FLEs, which was not supported. Path comparison between FLWs and FLEs indicated statistically similar associations between Loneliness → Self-esteem whereby non-significance was established at  $p = .177$ . Despite FLEs recording the higher loneliness score compared to FLWs, inclusion of self-esteem appeared to produce a levelling out effect whereby FLWs' and FLEs' negative association between Loneliness → self-esteem was the same. Accordingly, it might be concluded the hypothesized reasons did not hold in respect to this association, which is a marked contrast to Depression → Self-esteem and Social Anxiety → Self-esteem, which demonstrated FLEs held the stronger association. In terms of implication, data would suggest the impact of loneliness upon self-esteem would be the same for both groups.

Summarizing the second part of the discussion, data demonstrated that FLEs showed the stronger association for Depression → Self-esteem and Social Anxiety → to Self-esteem. The suggested reason for the results is FLWs' close affiliation to culture and the FLW community provided protection against depression and social anxiety, which resulted in weaker inter-variable associations. As indicated by the data, FLEs' higher scores triggered the stronger association with self-esteem. In terms of the negative association between Loneliness → Self-esteem, both groups recorded statistically similar results suggesting no group difference. Referencing the *Scar Model*, the literature explaining the negative association between Depression → Self-esteem suggests depressive symptoms scar a person's self-concept, which results in a slow deterioration in the level of self-esteem. Further, the suggestion is that depression might impede an individual's social interaction, which is an important source of a person's self-esteem. With other causal explanations detailed within the Depression → Self-esteem discussion, above, given FLEs' stronger association for Depression → Self-esteem, it might be appreciated how FLEs might be a group at greater risk of experiencing some of the negative reasons explaining the variables' negative association. Although the causal explanations provided by the literature are different, the same principle holds for the negative association between Social Anxiety → Depression. One of the reasons put forward explaining the variables' negative association is that socially anxious people's negative self-image creates uncertainty and a fear of being negatively judged by others, which undermines self-esteem.

#### **7.4.1. Discussion Summary**

The SEM model assessed two aspects: the first aspect focused upon SMD's predictive relationship with self-esteem, depression, loneliness, and social anxiety; and the second aspect focused upon the scenario whereby depression, loneliness, and social anxiety predicted self-esteem. In both instances, FLWs and FLEs were compared with one another to determine whether inter-variable path differences (e.g., SMD → Self-esteem) materialized. With SMD adopting the predictor variable role, supporting all four hypotheses, data demonstrated that FLWs recorded the stronger association between the variables. Numerous reasons were used to support the hypotheses, e.g., FLWs' social media usage might arise out of a desire to enhance level of self-esteem or as an

expression of Welsh language equality. With depression, loneliness, and social anxiety adopting the predictor variable roles, two of the three hypotheses were supported whereby FLEs demonstrated the stronger inter-variable association where depression and social anxiety were the predictor variables. Regarding the possible explanation, the supportive rationale for the hypotheses suggested FLWs' affiliation to Welsh culture and the community provided protection against depression, loneliness, and social anxiety thereby resulting in a weaker negative association compared to FLEs. There was no difference in the groups' strength of association between Loneliness → Self-esteem. Concluding, demonstrating support for six of the seven hypotheses, the tested SEM model provided a good representation of the data and associated hypotheses.



## 8. CHAPTER EIGHT: Empirical Analysis – Longitudinal

### 8.1. Introduction and Hypotheses

The aim of the present chapter is to compare Welsh/Bilingual-medium FLWs' versus FLEs' SMD and self-esteem scores over a nine-month timeframe. Analysis also incorporates a three-wave cross-lagged model exploring the causal relationship between SMD and self-esteem over a nine-month timeframe.

The longitudinal SMD hypothesis (**H13**) states: FLWs attending Welsh/Bilingual-medium schools would show a higher longitudinal SMD level compared to FLEs attending Welsh/Bilingual-medium schools. The supportive rationale follows the same reasoning that was used for **H1** (SMD) within Chapter Four. For convenience, the rationale is repeated here. The supportive rationale for the hypothesis is based on a number of different reasons why FLWs might engage in greater social media usage. The *first* reason is based on empirical research suggesting a perceived societal devaluation, marginalization, and discrimination (termed *linguistic devaluation*) of one's first language ultimately *decreases* an individual's level of self-esteem (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022; Wei, Wang, & Ku, 2012; Wright & Bougie, 2007; Ekwere, 2022), with a *decreased* level of self-esteem empirically associated with a *higher* level of SMD (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021). Despite enjoying empirical support, the paradoxical nature of this reason is acknowledged, i.e., a perception of one's language being devalued, marginalized, and/or discriminated against within the social media domain would – logically – result in *reduced* social media use and not *more*. *Second*, an additional reason potentially driving FLWs' greater usage of social media might be a desire to attain greater language equality within the social media domain (for examples demonstrating how social media can be used as a force for equality, see Lane, Do, & Molina-Rogers (2022), Yusupova (2022), and Gonzales *et al.* (2021)). Indeed, reacting against perceived injustice and marginalization might be considered a tactic that protects minority language speakers' self-esteem (Greene, 2010). *Third*, reflecting upon Odulaja (2021), it is noted how use of one's native language on social media promoted self-esteem, which might be a reason for FLWs' continued – or even excessive – use of social media despite a possible perception that fewer Welsh language opportunities prevail on social media. As indicated previously,

this would make sense considering that self-esteem is a basic human need (Maslow, 1943). Combining Odulaja and Maslow, it might be appreciated how speakers of native languages such as Welsh might be motivated to use social media more. *Fourth*, another reason potentially driving FLWs' greater use of social media is the geographic distribution of FLWs throughout Wales, who are predominantly located within the northern and western regions (ONS, 2011). A FLW living in a geographic region containing fewer FLWs such as Monmouthshire (Welsh Government, 2021e) might be attracted to social media to connect with other FLWs. *Fifth*, the benefits associated with group affiliation within the social media context have been demonstrated with respect to second language students who have benefited in terms of motivation, improved linguistic skills, confidence, and enhanced self-esteem (Kabilan, Ahmad, & Abidin, 2010; Aziz, Hashim, & Yunus, 2019) – reasons that might also apply to FLWs looking to maintain and develop their Welsh language skills via social media, which might result in greater social media usage.

The longitudinal self-esteem hypothesis (**H14**) states: FLWs attending Welsh/Bilingual-medium schools would show a higher self-esteem level compared to FLEs attending Welsh/Bilingual-medium schools. The supportive rationale follows a similar line of reasoning that was used for **H2** (Self-esteem) within Chapter Five. The supportive rationale states: operating on the basis that FLWs may derive a SIT benefit in terms of their close affiliation with other FLWs and, also, have a close attachment to the Welsh language and culture (Tajfel & Turner, 1979; Garcia, 1985; Wright & Taylor, 1995; Baker, 2003; Hendry, Mayer, & Kloep, 2007; Taylor, Bassili, & Aboud, 1973), it is hypothesized that FLWs would record a higher self-esteem level over the assessed nine-month timeframe.

The final objective was to compare FLWs and FLEs using a cross-lagged bidirectional SMD  $\leftrightarrow$  Self-esteem model accommodating three equally-spaced time points over nine-months. Hypotheses are based on the *linguistic devaluation* and *social identification* perspectives, which have been extensively covered within Chapter Two's 'Hypotheses' sub-section. Wherever SMD assumes the predictor variable role and self-esteem the outcome variable role, the hypothesis (**H15**) is based on the *linguistic devaluation* perspective. Conversely, wherever self-esteem assumes the predictor variable role and SMD the outcome variable role, the hypothesis (**H16**) is based on the *social*

*identification* perspective. The *linguistic devaluation* and *social identification* perspectives are detailed below.

In essence, the supportive rationale for the *linguistic devaluation* hypothesis is the same rationale that was used for **H13**, above. Summarizing, the suggestion is that there are five possible reasons why FLWs might engage in greater social media usage, e.g., to attain greater language equality within social media, to increase self-esteem, to connect with other FLWs who might be geographically separated from other FLWs, etc. Anticipating greater social media usage by FLWs, the hypothesis **H15** states: the negative association between SMD → Self-esteem would be stronger for FLWs at each of the three time points.

The *social identification* hypothesis is based on rationale suggesting FLWs would derive a higher level of self-esteem through SIT mechanisms (Tajfel & Turner, 1979) and closer affiliation to Welsh culture and the community (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garrett, 2006). Anticipating that FLWs would have a higher level of self-esteem, the hypothesis **H16** states: the negative association between Self-esteem → SMD would be stronger for FLEs at each of the three time points.

## **8.2. Method**

### **8.2.1. Participants**

Participants attended Welsh/Bilingual-medium secondary schools located within Wales. To be included in the analysis, each participant must have completed the questionnaire at each of the three time points. The number of participants is as follows: Welsh/Bilingual-medium schools ( $n = 260$ ) (FLWs = 74; FLEs = 186). Please refer to **3.4.1** (Time 1), **3.4.2** (Time 2), and **3.4.3** (Time 3) for more information about the participants.

### **8.2.2. Procedure**

Consenting participants received questionnaire booklets in-class, and these were completed under the direction of their class teachers. Time wave one was conducted

between 6<sup>th</sup> June and 20<sup>th</sup> July 2018. Time wave two was conducted between 28<sup>th</sup> November and 13<sup>th</sup> December 2018. Time wave three was conducted between 5<sup>th</sup> March and 8<sup>th</sup> April 2019. The depression scale was completed at time one. Please refer to **3.6.1** (Time 1), **3.6.2** (Time 2), and **3.6.3** (Time 3) for more information about the procedure.

### **8.2.3. Material**

Participants completed the following scales: the 10-item Rosenberg Self-Esteem Scale [RSES] (Rosenberg, 1979), which has showed acceptable levels of validity and reliability (e.g., Vasconcelos-Raposo *et al.*, 2012); the 6-item Bergen Social Media Addiction Scale [BSMAS] (Andreassen, Pallesen, & Griffiths, 2017), which has showed acceptable levels of validity and reliability (e.g., Monacis, de Palo, Griffiths, & Sinatra, 2017); and the 20-item Center for Epidemiologic Studies Depression Scale [CES-DC] (Fendrich, Weissman, & Warner, 1990), which has showed acceptable levels of validity and reliability (e.g., Ohannessian, 2012).

The provenance of each scale in addition to validity and reliability aspects have been extensively covered within Chapters One and Three. Please refer to **3.5.1** (self-esteem Times 1, 2, and 3), **3.5.2** (SMD Times 1, 2, and 3), and **3.5.3** (depression) for more information about each scale.

## **8.3. Results**

### **8.3.1. Social Media Dependency and Self-Esteem**

Analyses address SMD and self-esteem similarities and differences between FLWs' versus FLEs' responses over a nine-month timeframe.

### **8.3.2. Social Media Dependency**

The objective was to compare FLWs versus FLEs where both attended Welsh/Bilingual-medium schools *only*. The proportion of participants within each group registering low, medium and high SMD scores at T1, T2 and T3 were compared against one another. Table 23 reveals the number and percentage of FLWs and FLEs recording

low, medium and high SMD at each of the three time points. The following SMD cut-offs were applied: 6-12 (low); 13-19 (medium); and  $\geq 20$  (high).

Table 23. Social Media Dependency T1-T3: First Language Welsh and English Speakers Attending Welsh/Bilingual Schools

	T1 SMD			T2 SMD			T3 SMD		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
FLWs [n = 74]	38 (51.4%)	31 (41.9%)	5 (6.8%)	30 (40.5%)	40 (54.1%)	4 (5.4%)	33 (44.6%)	34 (46.0%)	7 (9.5%)
FLEs [n = 186]	78 (41.9%)	80 (43.0%)	28 (15.1%)	74 (39.8%)	97 (52.2%)	15 (8.1%)	82 (44.1%)	79 (42.5%)	25 (13.4%)

Figure 36 provides a graphical representation of the above table. Both groups' respective patterns predominantly mirrored one another: at the lowest and highest levels, there was a marked U-shaped trajectory; however, at the mid-range, the pattern assumes an inverted U-shape.

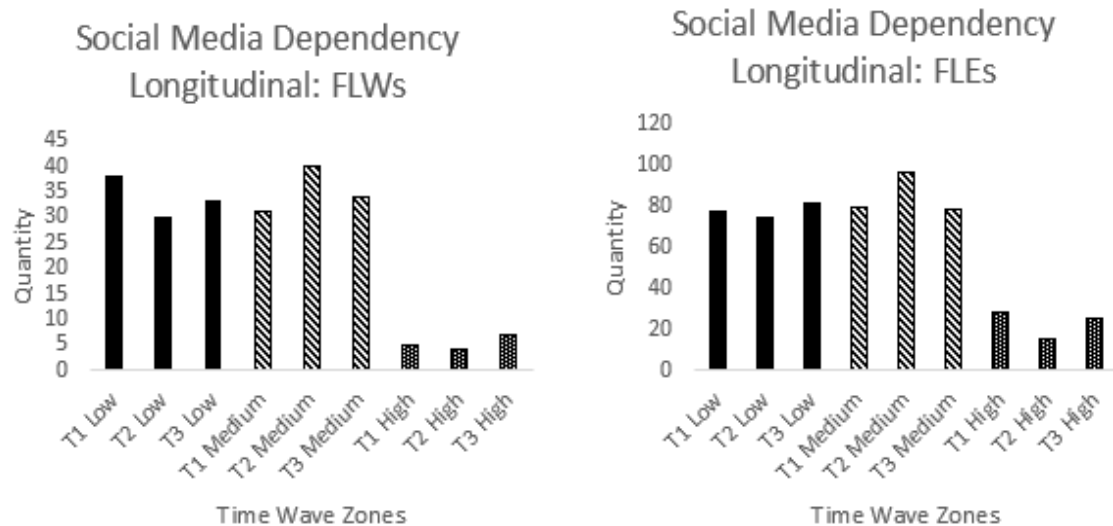


Figure 36. Social Media Dependency T1-T3: First Language Welsh and English Speakers Attending Welsh/Bilingual Schools

SMD (T1, T2 and 3) was subjected to a series of  $\chi^2$  tests of homogeneity ( $R \times 2$  table) analyses, i.e., a separate test was run for each of the three time points separately. At T1, a  $\chi^2$  test of homogeneity was conducted with adequate sample size, and all expected cell

counts were >5 with the lowest cell equal to 9.39. There was no statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 3.939, p = .140$ , i.e., there were no differences between FLWs and FLEs at each level of T1 SMD. At T2, a  $\chi^2$  test of homogeneity was conducted with adequate sample size, and all expected cell counts were >5 with the lowest cell equal to 5.41. There was no statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = .556, p = .757$ , i.e., there were no differences between FLWs and FLEs at each level of T2 SMD. At T3, a  $\chi^2$  test of homogeneity was conducted with adequate sample size, and all expected cell counts were >5 with the lowest cell equal to 9.11. There was no statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = .832, p = .660$ , i.e., there were no differences between FLWs and FLEs at each level of T3 SMD.

### 8.3.3. Self-Esteem

The objective was to compare FLWs versus FLEs where both attended Welsh/Bilingual-medium schools *only*. The proportion of participants within each group registering low, medium and high self-esteem scores at T1, T2 and T3 were compared against one another. Table 24 reveals the number and percentage of FLWs and FLEs recording low, medium and high self-esteem at each of the three time points. The following self-esteem cut-offs were applied:  $\leq 15$  (low); 16-19 (medium); and  $\geq 20$  (high).

Table 24. *Self-Esteem T1-T3: First Language Welsh and English Speakers Attending Welsh/Bilingual Schools*

	T1 S-E			T2 S-E			T3 S-E		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
FLWs [n = 74]	19 (25.7%)	24 (32.4%)	31 (41.9%)	12 (16.2%)	31 (41.9%)	31 (41.9%)	13 (17.6%)	27 (36.5%)	34 (45.9%)
FLEs [n = 186]	73 (39.2%)	47 (25.3%)	66 (35.5%)	64 (34.4%)	67 (36.0%)	55 (29.6%)	67 (36.0%)	58 (31.2%)	61 (32.8%)

Figure 37 provides a graphical representation of the above table. Overall, the profile of FLWs' and FLEs' self-esteem suggests modest fluctuations from one time point to the

next. At low levels of self-esteem, FLWs' trajectory assumed a slight U-shaped pattern, which is similarly repeated for FLEs. Similarity prevails regarding the medium level of self-esteem whereby both groups' trajectories assumed an inverted U-shaped pattern. Minimal change occurred at the high level of self-esteem for FLWs, which contrasts with the U-shaped pattern for FLEs.

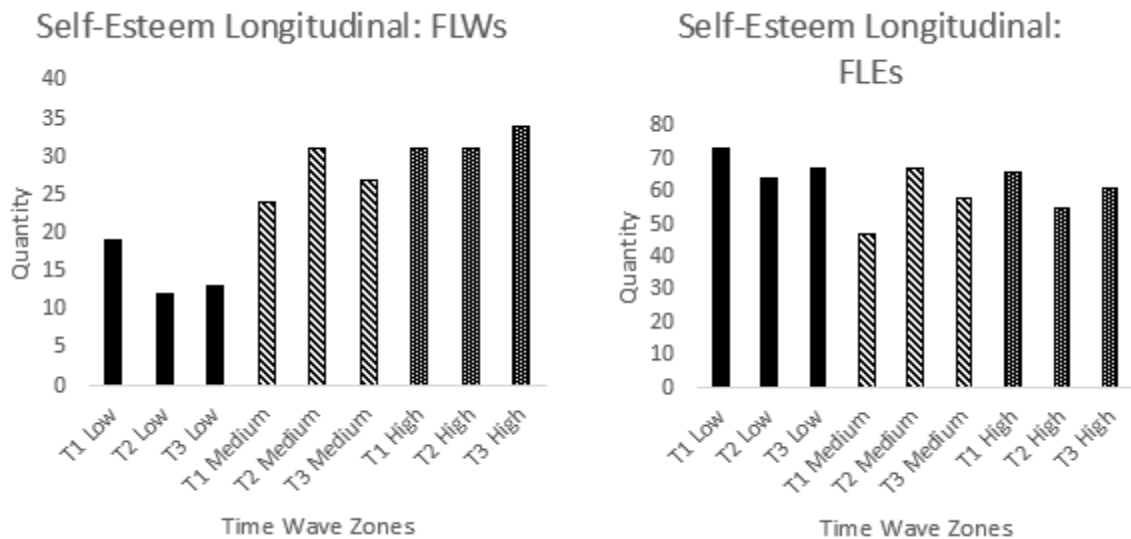


Figure 37. Self-Esteem T1-T3: First Language Welsh and English Speakers Attending Welsh/Bilingual Schools

Self-esteem (time waves 1-3) was subjected to a series of  $\chi^2$  test of homogeneity ( $R \times 2$  table) analyses, i.e., a separate test was run for each time point separately. At T1, a  $\chi^2$  test of homogeneity was conducted with adequate sample size, and all expected cell counts were  $>5$  with the lowest cell equal to 20.21. There was no statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 4.333, p = .115$ , i.e., there were no differences between FLWs and FLEs at each level of T1 self-esteem. At T2, a  $\chi^2$  test of homogeneity was conducted with adequate sample size, and all expected cell counts were  $>5$  with the lowest cell equal to 21.63. There was a statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 8.908, p = .012$ . With a Holm-Bonferroni corrected  $\alpha$  set at 0.012, there was a statistically significant difference between FLEs and FLWs at low levels of self-esteem ( $n = 64, 34.4\%$  versus  $n = 12, 16.2\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at 0.378, there was no difference at medium levels of self-esteem. With a Holm-Bonferroni corrected  $\alpha$  set at 0.114, there was no difference at high levels of self-esteem. At T3, a  $\chi^2$  test of

homogeneity was conducted with adequate sample size, and all expected cell counts were >5 with the lowest cell equal to 22.77. There was a statistically significant difference in the two multinomial probability distributions,  $\chi^2(2) = 8.820, p = .012$ . With a Holm-Bonferroni corrected  $\alpha$  set at 0.012, there was a statistically significant difference between FLEs and FLWs at low levels of self-esteem ( $n = 67, 36.0\%$  versus  $n = 13, 17.6\%$ ). With a Holm-Bonferroni corrected  $\alpha$  set at 0.411, there was no difference at medium levels of self-esteem. With a Holm-Bonferroni corrected  $\alpha$  set at 0.094, there was no difference at high levels of self-esteem.

### 8.3.4. Social Media Dependency and Self-Esteem: Cross-Lagged Model

Utilizing data extracted from the Welsh/Bilingual-medium schools *only*, FLWs ( $n = 74$ ) and FLEs ( $n = 186$ ) were compared with one another using the below three-point cross-lagged model (Figure 41).

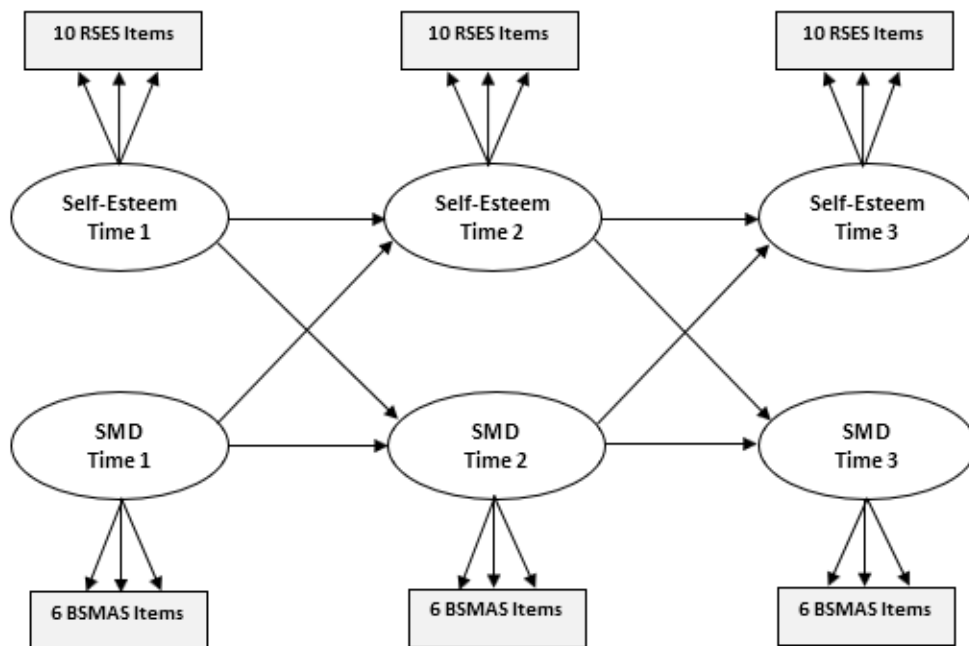


Figure 38. Cross-Lagged SEM Model: Concept Design

To obtain the most parsimonious model for the data, data was subjected to SEM analyses incorporating EFA followed by CFA. Data were analysed using IBM SPSS Statistics version 26.0 and IBM SPSS Amos Graphics version 25.0. As per Hu and Bentler (1999) and Costa *et al.* (2020), the model fit criteria as per 7.3.1, above, were



applied. Prior to SEM analyses, data was screened using Mahalanobis Distance, Cook's Distance, and Centred Leverage Value. Winsorization was applied to 2 subjects within the FLWs and FLEs. Data showed acceptable multicollinearity, normality, linearity, homogeneity, and homoscedasticity.

The first step in the process was EFA. KMO (.894) was  $>.70$  (Kaiser, 1974), and Bartlett's Test of Sphericity ( $\chi^2 = 6458.274$ ,  $df = 1128$ ,  $p <.001$ ) was significant, which shows the matrix was not an identity matrix, i.e., the variables are sufficiently related to one another to permit execution of EFA. Analysis of the Communalities Table (maximum likelihood method) suggested one of the items was  $<.3$ , which suggests this item might struggle to load significantly on any factor. Total Variance loaded on 10 factors as opposed to the desired 6 (cumulative value at 10 = 53.6%; cumulative value at 6 = 47.3%). Acceptable goodness-of-fit indices were returned ( $\chi^2 = 1026.218$ ,  $df = 693$ , Sig.  $<.001$ ).

The initial Pattern Matrix showed significant levels of cross-loading (16 of the 48 items cross-loaded), which required resolution. Following 86 iterations, a clean Pattern Matrix with no cross-loadings was reached. KMO (.869)  $>.70$ , and Bartlett's Test of Sphericity ( $\chi^2 = 3325.362$ ,  $df = 496$ ,  $p <.001$ ) was significant. The Communalities Table suggested one of the items was  $<.3$ . Total Variance loaded on 7 factors (cumulative value at 6 = 46.1%; cumulative value at 7 = 48.1%). Acceptable goodness-of-fit indices were returned ( $\chi^2 = 460.838$ ,  $df = 293$ , Sig.  $<.001$ ). The resolved Pattern Matrix showed acceptable convergent validity (all items were  $>.3$ ) and discriminant validity (there were no cross-loadings). The Factor Correlation Matrix showed that no factor loadings were  $>.7$ , which were acceptable. Table 25, which depicts Cronbach's  $\alpha$  values for the EFA-moderated scales – which are all acceptable, shows that Pattern Matrix resolution necessitated item redundancy for each scale at all three timepoints.

*Table 25. Exploratory Factor Analysis: Revised Cronbach Alphas*

<b>Scale</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Number of Items Retained</b>
T1 Self-Esteem	.767	7
T2 Self-Esteem	.829	7
T3 Self-Esteem	.767	4
T1 SMD	.723	5
T2 SMD	.704	4
T3 SMD	.804	5

The second step in the process was CFA, using the EFA-moderated scales. The following ‘Analysis Properties’ were selected: minimization history; standardized estimates; modification indices; indirect, direct, and total effects; threshold for modification indices = 20; number of bootstrap samples = 1,000; BC confidence level = 95; and boot factor = 1.

Execution of the initial CFA realized a poor model fit; however, following application of recommended covariances (i.e., Modification Indices), a moderate improvement was reached. The pre- and post-covariance model fit indices are recorded within Table 26.

Table 26. Confirmatory Factor Analysis: Model Fit Indices

Indexes	Pre-Covariance Model Fit Indices	Post-Covariance Model Fit Indices
$X^2/df$	2.118	1.931
CFI	.832	.861
GFI	.802	.821
AGFI	.768	.789
RMSEA	.066	.060
PCLOSE	.000	.004
SRMR	.064	.063

Table 27 shows the strength of the linear relationship between the variables. [Note: the displayed ‘Equation’ references the strongest  $F$  statistic.]

Table 27. Confirmatory Factor Analysis: Linearity

Equation	$R^2$	$F$	$df1$	$df2$	Sig.
<b>Relationship: T1 Self-Esteem → T2 Self-Esteem</b>					
Linear	.469	228.137	1	258	<.001
<b>Relationship: T1 Self-Esteem → T2 Social Media Dependency</b>					
Linear	.062	16.958	1	258	<.001
<b>Relationship: T1 Social Media Dependency → T2 Self-Esteem<sup>1</sup></b>					
Logarithmic	.084	23.622	1	258	<.001
<b>Relationship: T1 Social Media Dependency → T2 Social Media Dependency</b>					
Linear	.336	130.271	1	258	<.001
<b>Relationship: T2 Self-Esteem → T3 Self-Esteem</b>					
Linear	.508	266.431	1	258	<.001
<b>Relationship: T2 Self-Esteem → T3 Social Media Dependency<sup>2</sup></b>					
Compound	.076	21.193	1	258	<.001
<b>Relationship: T2 Social Media Dependency → T3 Self-Esteem</b>					
Linear	.038	10.154	1	258	.002
<b>Relationship: T2 Social Media Dependency → T3 Social Media Dependency<sup>3</sup></b>					
S	.104	29.943	1	258	<.001

<sup>1</sup> Linear:  $r^2 = .083$ ;  $F = 23.398$ ;  $df1 = 1$ ;  $df2 = 258$ ; Sig. <.001.

<sup>2</sup> Linear:  $r^2 = .067$ ;  $F = 18.400$ ;  $df1 = 1$ ;  $df2 = 258$ ; Sig. <.001.

<sup>3</sup> Linear:  $r^2 = .057$ ;  $F = 15.500$ ;  $df1 = 1$ ;  $df2 = 258$ ; Sig.  $<.001$ .

The following covaried model was assessed:

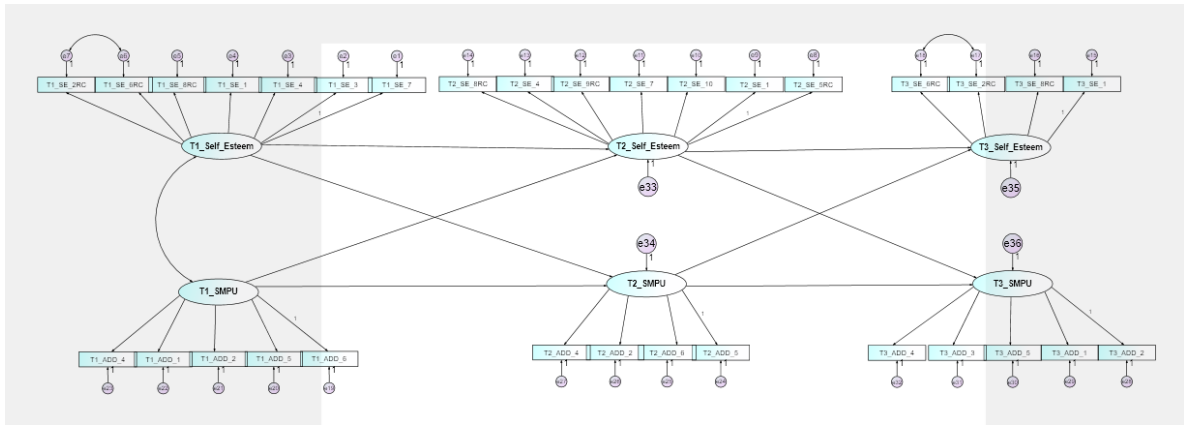


Figure 39. Confirmatory Factor Analysis: Structural Model

The above model showed moderately acceptable model fit indices:

Table 28. Confirmatory Factor Analysis: Model Fit Indices

Indexes	Model Fit Indices
$\chi^2/df$	1.952
CFI	.855
GFI	.818
AGFI	.787
RMSEA	.061
PCLOSE	.002
SRMR	.066

The next stage in the process compared FLWs and FLEs on the following paths to find differences/similarities:

- Time 1 Self-Esteem → Time 2 Self-Esteem
- Time 2 Self-Esteem → Time 3 Self-Esteem
- Time 1 SMD → Time 2 SMD
- Time 2 SMD → Time 3 SMD
- Time 1 SMD → Time 2 Self-Esteem
- Time 1 Self-esteem → Time 2 SMD
- Time 2 SMD → Time 3 Self-Esteem
- Time 2 Self-Esteem → Time 3 SMD

Inter-group comparison at the overall model level using structural weights showed *no* differences on any of the tested paths, which are outlined above ( $df = 34$ ,  $CMIN = 29.888$ ,  $p > .30$ ). Although inter-group analysis on a path-by-path level is normally undertaken following a significant result at the overall model level, to elicit greater cross-lagged understanding of the tested variables at each of the three timepoints, path-by-path analysis was undertaken. Employing structural weights, Table 29 shows: (1) whether the paths were statistically significant for each group, i.e., ‘Intra-Group Significance’ column; and (2) whether statistically significant differences were obtained between the groups for each path, i.e., ‘Inter-Group Path Comparison’ column. [Note: AMOS’ ‘Multi-group Comparison’ function determined inter-group significance.]

Table 29. Confirmatory Factor Analysis: Path-by-Path Comparison

Group	Intra-Group Path Significance		<i>df</i>	Inter-Group Path Comparison	
	Structural Weight Estimate	Structural Weight <i>p</i> -value		CMIN	<i>p</i>
<b>Path: T1 Self-Esteem → T2 Self-Esteem</b>					
FLWs	1.011	<.001	1	.341	>.30
FLEs	.786	<.001			
<b>Path: T2 Self-Esteem → T3 Self-Esteem</b>					
FLWs	.794	<.001	1	.534	>.30
FLEs	1.026	<.001			
<b>Path: T1 SMD → T2 SMD</b>					
FLWs	.874	.001	1	.481	>.30
FLEs	.892	<.001			
<b>Path: T2 SMD → T3 SMD</b>					
FLWs	.235	<.001	1	.424	>.30
FLEs	.338	<.001			
<b>Path: T1 SMD → T2 Self-Esteem</b>					
FLWs	.039	>.30	1	.070	>.30
FLEs	.039	>.30			
<b>Path: T1 Self-Esteem → T2 SMD</b>					
FLWs	.150	.171	1	1.409	.235
FLEs	.117	.171			
<b>Path: T2 SMD → T3 Self-Esteem</b>					
FLWs	.082	.090	1	.876	>.30
FLEs	.106	.090			
<b>Path: T2 Self-Esteem → T3 SMD</b>					
FLWs	-.161	.003	1	.388	>.30
FLEs	-.232	.003			

Affirming non-significance at the overall model level, above, inter-group significance did not materialize following a path-by-path comparison of FLWs versus FLEs. Inter-group comparative aspects aside, an interesting observation relates to the poor cross-

lagged associations between SMD and self-esteem across the three timepoints. As shown within Table 29, the only significant relationship was from T2 Self-esteem to T3 SMD, and this was significant for FLWs and FLEs alike. Reflection might suggest that the relatively small number of participants within both groups equated to an under-powered analysis. Whilst significance was found on only one of the paths, this would suggest that the longitudinal relationship between SMD and self-esteem ought to be subjected to further analysis accommodating a larger pool of participants that would increase the power of the analysis. Consideration of the one significant path conceivably attracts the observation that the empirically supported negative association between the variables (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021) suggests earlier *lower* self-esteem equated to later *higher* SMD and the negative relationship was found for FLWs and FLEs alike; however, subsequent analyses are encouraged to explore further this causal relationship. Data did not support an assertion that longitudinal differences might be attributed to participants' first language.

## 8.4. Discussion

### 8.4.1. Social Media Dependency

Welsh/Bilingual-medium school FLWs' and FLEs' trajectorial patterns regarding the number of participants showing 'Low', 'Medium' and 'High' SMD scores at each of the three time points revealed an observational similarity. Attempting a reconciliation of the findings with previous studies is challenging as there are a limited number of longitudinal SMD studies (e.g., Hussain & Starcevic, 2020). The few longitudinal studies to have appeared in recent times have presented an apparently conflicting set of outcomes, with studies variously suggesting elevations, U-shaped trajectories, and diminutions from one time point to the next (e.g., Raudsepp, 2019; Chen *et al.*, 2020c). Whilst modest fluctuations were detected for FLWs and FLEs alike (for example, at a 'High' level of SMD there was a small drop from T1 to T2, followed by a slight elevation from T2 to T3), the overall trend neither suggests a significant elevation nor diminution regarding the number of FLWs and FLEs falling within each of the three SMD classifications over time. Although Chen *et al.*'s (2020c) U-shaped trajectory related to the overall timeframe (i.e., T1 to T4 inclusive), on a micro level, the U-shaped trajectory held for FLWs and

FLEs at ‘Low’ and ‘High’ levels of SMD. Overall, though, the trajectory for FLWs and FLEs did not mirror the trajectories shown by previous studies.

Paralleling the T1 cross-sectional SMD results shown within Chapter Four (SMD), support for **H13** (FLWs attending Welsh/Bilingual-medium schools would show a higher SMD level compared to FLEs attending Welsh/Bilingual-medium schools) was *not* demonstrated following a comparison of FLWs and FLEs registering ‘Low’, ‘Medium’ and ‘High’ SMD scores at T1, T2 and T3. Although the hypothesis was predicated on the five potential reasons (please refer to the ‘Hypothesis’ sub-section above) suggesting why FLWs would make greater use of social media, the data indicated a similar profile for FLWs and FLEs at each level of SMD at each time point. In terms of an explanation, data encourages support for the notion that the potential reasons driving FLWs’ and FLEs’ ‘High’ SMD are effectively cancelling one another out in that there was no statistical difference between the groups, which was the conclusion reached within Chapter Four’s (SMD) cross-sectional analysis, also.

Examination of the data for both populations shows that approximately 85% of the participants recorded either ‘Low’ or ‘Medium’ levels of SMD. This means that for approximately 15% of the participants social media usage had reached a problematic level and showed little variation over time for both FLWs and FLEs. For those participants registering a ‘High’ level of SMD, it is conceivable that FLWs’ ‘High’ SMD scores are driven in part by a desire to attain greater language equality on social media, to reach a higher level of self-esteem, establish contact with other FLWs, etc. Likewise, ‘High’ SMD scoring FLEs’ social media usage might be motivated by a perception of believing they are linguistically marginalized within the Welsh/Bilingual-medium schools as they are primarily taught in their *non*-first language, which potentially negatively impacts their self-esteem with an empirically demonstrated association with elevated SMD (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021). For a detailed discussion of the reasons why FLWs and FLEs might engage in excessive use of social media, please refer to the ‘Discussion’ sub-section within Chapter Four (SMD). Although FLWs and FLEs registering ‘Low’ and ‘Medium’ SMD scores would suggest a reduced impact of language compared to participants registering a ‘High’ SMD score, the reasons potentially explaining FLWs’ and FLEs’ social media usage might apply to these FLWs and FLEs, also.

Data demonstrates that the percentage of FLWs and FLEs recording a ‘High’ SMD score showed modest deviations from the 10.3% ‘High’ estimation for the whole population (i.e., Welsh/Bilingual- and English-medium participants combined into a single data set;  $n = 1,691$ ) recorded within Chapter Four (SMD). For both FLWs and FLEs, the trajectory for ‘High’ SMD scores reveals a modest U-shaped pattern whereby the number of participants registering ‘High’ SMD scores falls from T1 to T2 but rises from T2 to T3. It is for these participants that the potential implications arising from ‘High’ SMD scores would appear to be more applicable, and these are outlined in the below paragraph.

The literature suggests a myriad of negative outcomes for SMD such as decreased life satisfaction (Buda *et al.*, 2020). An increasing number of recent studies have associated SMD with an array of affective responses such as reduced self-esteem and elevated levels of depression, anxiety, poorer parental relationships, poorer general mental health and sense of well-being, cyberbullying, self-harm, and an increased fear of missing out (Watson, Prosek, & Giordano, 2022; Gomathi & Veeramani, 2022; Moreno *et al.*, 2022; Muzaffar, 2021; Khan & Singh, 2022; White-Gosselin & Poulin, 2022; Kamaruddin, Haris, & Nurlina, 2022; Popat & Tarrant, 2022; Shannon *et al.*, 2022). One of the more concerning correlates with SMD is the impact upon users’ disrupted sleep patterns (Khan, Sajjad, & Iqbal, 2022), which specifically impacts adolescents (Buda *et al.*, 2020; Azhari *et al.*, 2022). SMD has also been shown to negatively impact users’ academic achievement (Akalin, 2022; Busalim, Masrom, & Zakaria, 2019; Kobimdi, 2022) with Üztemur and Dinç (2022) suggesting a positive association between SMD and academic procrastination.

Having outlined some of the potential implications of ‘High’ SMD scores with respect to adolescence and academic achievement, it is important to identify some of the possible reasons why participants’ SMD scores might increase or decrease over time. Although the variation regarding the number of FLWs and FLEs registering ‘Low’, ‘Medium’ and ‘High’ SMD scores assumes modest changes over time, the data, nonetheless, does suggest subtle variation. The language-based reasons suggesting why FLWs and FLEs might engage in excessive social media use have been covered above, e.g., FLWs might use social media in order to connect with other FLWs; lower ability Welsh language

FLEs might use social media as a reaction against perceived linguistic marginalization within Welsh/Bilingual-medium schools.

Whilst the potential impact of language upon FLWs' and FLEs' social media usage has already been covered, it is also important to note how their social media usage might be influenced by *non*-language-based reasons, also. Pragmatically, whilst the impact of language might influence FLWs' and FLEs' social media usage patterns, the impact of *non*-language-based reasons cannot and should not be ignored. Indeed, a pragmatic conclusion would suggest FLWs' and FLEs' SMD scores are variously impacted by a combination of linguistic and *non*-linguistic factors. In essence, the potential influence of language upon FLWs' and FLEs' SMD scores comprises a cog within a wheel where each of the other cogs represent other potential SMD influencers, some of which are outlined within the below paragraph.

Aksoy (2018) suggested SMD comprised two developmental stages: the *beginning* phase related to individuals using social media for no more than six months; the *continuity* phase related to individuals who have used social media for a minimum of six months. Both phases, Aksoy (2018) indicated, were marked by specific criteria; for instance, the *beginning* phase of SMD indicated users' reasons for using social media included finding friends, a lack of socialization, and a persistent feeling that life was monotonous. In contrast, the *continuity* phase of SMD suggested users used social media in order to fulfil a specific objective and to protect their social relations. Aksoy's (2018) analysis is important as it suggests SMD may be triggered by an array of different factors, which is suggested by other studies that have variously shown how SMD may be triggered by the addictive features embedded within social media, social pressure, rewards systems embedded within the applications such as "likes", a desire to escape negative thoughts, gender - with females being more addicted, a need for belongingness, perception of poor social relationships, feelings of isolation, social comparison, having a lack of friends, age, education, etc. (Ramani & Diwanji, 2022; Dailey *et al.*, 2020; Pallathadka, Pallathadka, & Devi, 2022; Savaci, Kutlu, & Özen, 2021; Balci, Karakoç, & Öğüt, 2020; Xuan & Amat, 2020). A repeated theme within the literature is the concept 'fear of missing out' (the literature frequently abbreviates the term to 'FoMo') and its positive association with SMD (Ramani & Diwanji, 2022; Aksoy, 2018; Zahoor, 2022).



Irrespective of whether an FLW or FLE registered a ‘Low’, ‘Medium’ or ‘High’ SMD score, there is a requirement to either *prevent* participants’ ‘Low’ and ‘Medium’ SMD scores rising to a ‘High’ level and, also, a requirement to *treat* ‘High’ SMD scoring participants with a view to decreasing their problematic social media usage. Clinicians attempting to understand and address an individual’s SMD ought to consider the full context of an individual’s circumstances as it is likely the extent to which an individual uses social media would likely be determined by numerous factors as opposed to a single factor. The remainder of the discussion focuses upon the *preventative* and *treatment* options currently available to FLWs and FLEs, and these are discussed below. Please note that the preventative and treatment strategies detailed below are equally applicable to FLWs’ and FLEs’ SMD within both the cross-sectional and longitudinal contexts.

Although the concept SMD has yet to be formally recognized as an addiction (Sahranc & Duc Urhan, 2021), the myriad of initiatives attempting to *prevent* and *treat* the ‘condition’ might be best described as fragmented and disjointed, which is not conducive to helping FLWs and FLEs. Assuming a pincer-like movement, international progress has been evidenced; for instance, whilst the United Kingdom has adopted a more moderate and individual-centred approach, the United States, Canada, and South Australia have approached the issue from a policy- and guidance-driven perspective (Lundahl, 2020; Dubicka & Theodosiou, 2020).

Further complicating the issue, Lundahl (2020) observed that social media companies are not blameless, either; for instance, they utilize algorithms to analyse and identify users’ performances, which results in the delivery of content that is deliberately tailored to increase the end-users’ engagement in the activity. Lundahl’s (2020) review also noted that companies incorporate a ‘game-like’ experience within their technology designs, which provides prompts and rewards such as “likes”. In this regard, social media companies have become complicit by design in the deliberate exploitation of end-users’ experiences that might lead to SMD. The United States’ proposed Social Media Addiction Reduction Technology (SMART) Act would prohibit social media companies from employing practices that deliberately exploit human psychology (Ludahl, 2020). However, there persists an unwelcome paradox: if SMD was classified as a disease, this would implicitly lower the duty of care required by social media companies since they would no longer consider their designs a causal part of SMD (Lundahl, 2020). From a

purely legislative perspective, acknowledging the vagaries of international law, it might be difficult to enforce social media-oriented legislation *equally* within *all* nations. With respect to the United Kingdom, the complexities pertaining to international law are illustrated by the post-Brexit scenario: as of 31<sup>st</sup> January 2020, the European Union (Withdrawal) Act 2018 repealed the European Communities Act 1972, whereby the latter legislation effectively incorporated European Union law within the United Kingdom's domestic law (European Union (Withdrawal) Act, 2018). Accordingly, the legislative approach would appear too piecemeal, disjointed, and – potentially – internationally unenforceable to manifest any meaningful and controllable impact over social media companies.

Having identified the salient points relating to how nations variously approach SMD and the alleged culpability of social media companies, the discussion must out of necessity adopt a FLW and FLE perspective and direct its attention toward initiatives designed to *treat* and *prevent* SMD. Utilizing a two-stage self-help intervention strategy, Hou *et al.* (2019) demonstrated that intervention was effective in reducing participants' levels of SMD whilst simultaneously improving their mental health and academic efficiency. The first stage entailed a cognitive reconstruction exercise wherein laboratory-located university-aged participants were asked questions relating to the amount of time each day they used social media, perceived benefits in using social media, why they used social media, and perceived disbenefits of using social media. Following a period of reflection, participants were asked to record on a card five advantages of reducing social media usage, and five disadvantages of excessive social media use. Participants were requested to photograph the card and use it as a screen lock on their mobile phones. The second stage occurred the following week wherein participants were requested to maintain a diary recording their thoughts, emotions, and behaviours with regard to their social media usage. Before going to sleep each night, participants were further requested to reflect upon their usage of social media that day, which also captured their emotional state and their estimated usage time for the next day. Participants' SMD decreased from T1 to T2. Summarizing, the authors showed that cognitive reconstruction allowed participants to identify the negatives of SMD, whilst the photograph on their screen savers acted as a daily reinforcer.

Despite the positive outcome attained by Hou *et al.* (2019), a sense of caution is required since SMD treatment remains something of a challenge with demonstrated high levels of recidivism (Mahamid & Berte, 2019). Complicating the treatment picture, the latter authors observed the treatment for Internet-based addiction is scarce, lacking in evidence-based models, and the various methodologies lacking in validity and reliability. Rachubinska, Cybulska, and Grochans (2021) concluded there is no “gold standard” for the treatment of SMD. Illustrating the divergence and variety of proposed treatment strategies, in one study, Kocak, Ilme, and Younis (2021) advocated the daily practice of “muraqabah”, which is an Islamic-based mindfulness and self-monitoring technique designed to facilitate self-actualization at the expense of SMD. In another study, Cargill (2019) indicated that via an examination of an individual’s social media usage, the clinician would be better informed when designing the individual’s treatment plan. Approaching SMD from a psychological perspective, Luo, Chen, and Liao’s (2021) analyses suggested individuals experiencing severe stress, depression, and anxiety were particularly susceptible to SMD. Rachubinska *et al.* (2021) observed that the main objective in treating people with SMD should be to exercise control over the activity as opposed to attaining total abstinence. Silomba, Akakandelwa, and Ng’andu (2021) drew a contrast between substance- and technological-based addictions: whereas the treatment objective for substance-based addictions entails total abstinence, the treatment objective for SMD cannot be total abstinence because adolescents’ lives necessarily accommodate social media access. Accordingly, the latter authors suggest the ultimate therapeutic aim is for a controlled use of social media. Acknowledging the disparity and lack of valid and reliable treatment methods, a key objective would be to *prevent* SMD (Kirik *et al.*, 2015), and this would appear to be particularly relevant to FLWs and FLEs that registered ‘Low’ and ‘Medium’ levels of SMD as the objective is to prevent an escalation in their respective SMD levels. In this regard, awareness raising initiatives within, for instance, the school environment is paramount since research suggests that SMD is perceived as less harmful to the individual and associated family compared to substance-based addictions (Kocak, Ilme, & Younis, 2021; Chen *et al.*, 2020c).

A recent report by the Royal College of Psychiatrists (Dubicka & Theodosiou, 2020) identified a number of practical steps that can be taken to safeguard children and young people’s mental health with respect to technology – including SMD. With the notable exception of therapeutic intervention, the recommendations are primarily *preventative* in

orientation. Although the report goes into far greater detail, the recommendations are divided into specific categories such as parents, Government, technology companies, the education sector, and clinicians. Regarding parents, some of the recommendations suggest they set screen time boundaries for their children such as keeping their mobile phones out of their bedrooms at night, and modelling good technology behaviour (e.g., not using a mobile phone whilst eating). The report sends a clear message stating the responsibility for the protection of children and young people is a collective responsibility involving individuals, carers, professionals, technology companies, and the UK Government. Further, the report welcomed the UK Government's commitment to establishing an independent regulator who would be tasked with the responsibility of writing a code of practice for social media, gaming, and Internet companies. In this regard, the UK Government's formal approach constitutes an implicit movement toward the United States' policy-driven SMD strategy, indicated above. Crucially, the UK regulator would have enforcement powers.

Application of the outlined *preventative* and *treatment* strategies to FLWs and FLEs would suggest a lack of consensus as there are no 'gold standard' methods for the prevention and treatment of SMD. Acknowledging the concept SMD is still in its infancy regarding prevention and treatment, with respect to FLWs and FLEs with 'High' SMD levels, considerable work remains if validated and reliable methods of reducing SMD are to be rolled out. Although the largely preventative Royal College of Psychiatrists recommendations would appear to hold great merit, a similar argument to the one posited for SMD treatment would appear to hold with regard to FLWs and FLEs registering 'Low' and 'Medium' SMD scores, i.e., there is a need for validated and reliable prevention strategies, also.

Summarizing, refuting **H13**, which states FLWs attending Welsh/Bilingual-medium schools would show a higher SMD level compared to FLEs attending Welsh/Bilingual-medium schools, data showed statistically similar proportions of FLWs and FLEs recording 'Low', 'Medium' and 'High' SMD scores at each of the three time points. The suggestion is that FLWs' and FLEs' different reasons for using social media effectively cancelled one another out in terms of a statistical comparison. Data would suggest *preventative* strategies to stop FLWs' and FLEs' 'Low' and 'Medium' SMD scores increasing, and *treatment* strategies to bring down 'High' SMD scoring FLWs and FLEs

remains the objective. However, before effective preventative and treatment strategies can be rolled out, there is a need for validated and reliable methods to be devised and tested. On top of this, the concept SMD needs to be fully recognized as an addiction in its own right.

#### **8.4.2. Self-Esteem**

Welsh/Bilingual-medium school FLWs' and FLEs' trajectorial patterns regarding the number of participants recording 'Low', 'Medium' and 'High' levels of self-esteem over the nine-month timeframe mirrored one another, suggesting little change over time. Observationally, data showed a U-shaped trajectory from T1 to T3 at 'Low' and 'High' self-esteem levels for both groups, but an inverted U-shape trajectory at the 'Medium' level of self-esteem.

Viewed from a high level, longitudinal (T2 and T3 only) and cross-sectional (see Chapter Five) analyses showed that a greater number of FLEs were represented at a 'Low' level of self-esteem. However, with regard to representation at a 'High' level of self-esteem, longitudinal data (T1 to T3 inclusive) showed *no* difference between FLWs and FLEs, whereas cross-sectional analysis suggested a greater number of FLWs were represented at the 'High' level. Regarding the number of FLWs and FLEs represented at the 'Medium' level of self-esteem, there was no difference between longitudinal (T1 to T3 inclusive) and cross-sectional analyses. Explaining the contrary outcome for 'High' self-esteem representation between longitudinal and cross-sectional analyses, it is noted that there is a marked difference in the number of participants assessed at the longitudinal (FLWs = 74; FLEs = 186; total = 260) and cross-sectional (FLWs = 317; FLEs = 519; total = 836) phases, which might account for the difference. The lower number of participants in the longitudinal phase is attributed to participant attrition from T1 to T2; for instance, two of the Welsh/Bilingual-medium schools did not participate beyond T1.

An interesting observation was that at longitudinal T1 there were no differences regarding the number of FLWs and FLEs represented at each of the three levels of self-esteem. However, at T2 and T3 group differences were obtained whereby a greater number of FLEs were represented at a 'Low' level of self-esteem. One possible explanation for the change from T1 to T2 is that the effect upon lower Welsh ability FLEs

feeling linguistically marginalized at T1 did not have time to take full effect until T2. Although further research would be required – and is recommended – to test this explanation, it is possible that the time-lag from perceiving a difference in Welsh language ability and feelings of marginalization experienced at T1 and a subsequent decrement in self-esteem recorded at T2 accounted for the non-difference between FLWs' and FLEs' self-esteem score at T1. However, once the full effect upon lower Welsh ability FLEs' self-esteem showed up at T2, this persisted through to T3. According to this explanation, the fact a greater number of FLEs were represented at T3 'Low' self-esteem would suggest the reason for the difference between FLWs and FLEs had not diminished; for instance, a possible perception that their Welsh language ability was lower than FLWs persisted with a subsequent negative impact upon perception of marginalization and level of self-esteem.

There is a potential problem with the above explanation, though: the time of year when participants completed the T1 to T3 RSES (i.e., self-esteem questionnaire). With T1 completed June-July 2018 and T2 and T3 completed November-December 2018 and March-April 2019, respectively, it is noted T1 was completed at the *end* of the academic year as opposed to the *start* of the academic year. Although data has not captured this aspect, it would be a reasonable assumption the majority of the participants completing T1 would have been in their respective schools for the majority of the academic year, i.e., since September 2017. Accordingly, if lower Welsh language ability FLEs perceived themselves linguistically marginalized at the *start* of the academic year, you would have thought any impact upon their level of self-esteem would have shown up long before T1. Data, though, suggests the impact upon self-esteem only showed up by T2. In support of the explanation outlined in the previous paragraph, though, the larger number of participants completing the cross-sectional RSES revealed a significant difference in the number of FLWs and FLEs recording 'Low' self-esteem scores – an outcome that accords with the idea that lower Welsh language ability FLEs' self-esteem might be impacted by a perception of being linguistically marginalized. Recognizing the RSES was completed by exactly the same participants at T1, T2 and T3 would suggest the lower number completing the longitudinal RSES compared to the cross-sectional RSES might be a contributory factor in the difference between the RSES at T1 cross-sectional and T1 longitudinal regarding the number of participants recording 'Low' self-esteem scores,

which is the issue already covered, above, when discussing FLW and FLE representation at the ‘High’ level of self-esteem.

Taken collectively, cross-sectional and longitudinal data broadly supports **H14** (FLWs attending Welsh/Bilingual-medium schools would show a higher self-esteem level compared to FLEs attending Welsh/Bilingual-medium schools) since data has shown that a greater number of FLEs (both cross-sectional and longitudinal analyses) are represented at a ‘Low’ level of self-esteem, which accords with the idea that lower Welsh language ability FLEs’ perception of being linguistically marginalized within Welsh/Bilingual-medium schools reduces the level of self-esteem, a conclusion that ties in with Baker (2003). If FLWs’ self-esteem scores might be elevated on account of SIT processes, the opposite might occur, also. As suggested within Chapter Five (Self-esteem cross-sectional), lower Welsh language ability FLEs might not enjoy the same self-esteem enhancing benefits associated with affiliation to Welsh culture and language enjoyed by FLWs (and conceivably higher Welsh language ability FLEs – see below) where both attend Welsh/Bilingual-medium schools. Baker (2003) indicated that children’s self-esteem might be elevated through recognition of their first language, with the opposite scenario holding, also. Application of Baker (2003) might suggest that a child receiving educational instruction in his or her *non*-first language – and especially in a language that perhaps the child has yet to master – might diminish the child’s level of self-esteem since he or she might feel linguistically marginalized (Lehmiller, 2012; Hall & Wilson, 2021). Indeed, focusing upon Welsh/Bilingual-medium school participants *only*, data encourages support for this explanation since Chapter Six (Depression, Loneliness, and Social Anxiety) showed that a statistically significantly greater proportion of FLEs ( $n = 471$ ) reported having a lower Welsh language ability (29.30%) compared to 6.91% of FLWs ( $n = 275$ ) reporting the same, whereas 70.7% of FLEs and 93.09% of FLWs reported having a higher Welsh language ability. An additional explanation regarding FLEs greater representation at a ‘Low’ level of self-esteem might relate to a perception of the English language being discriminated against within the Welsh/Bilingual-medium school environment, which is a concept suggested by Wei, Wang, and Ku (2012). However, FLEs’ perception that English has been discriminated against within the Welsh/Bilingual-medium school context might be dependent upon the extent to which a given school places an emphasis upon the Welsh language compared to the English language; for instance, Bilingual Category ‘A’ schools would use Welsh 80% of the time during lessons

whereas Bilingual Category ‘C’ schools would use Welsh 50-79% of the time during lessons (Welsh Government, 2021d). The key point, though, is that a lower Welsh language ability FLE perceiving a degree of linguistic discrimination might feel disrespected or inferior, which would negatively impact mental health – including self-esteem (Wei, Wang, & Ku, 2012). The language discrimination concept was recognized by Wright and Bougie (2007), also. Developing the discussion, a reference to one’s linguistic ability was made, above, when using the term “lower Welsh language ability FLE”, which is important regarding potential impact upon self-esteem. Wright and Bougie (2007) showed how a child’s self-esteem might be negatively impacted on account of his or her *limited ability in the language of instruction*, which triggered feelings of frustration and – potentially – a perception of detachment or exclusion. Thus, lower Welsh language ability FLEs might feel more isolated and marginalized with subsequent decrements in self-esteem. As indicated above, Chapter Six (Depression, Loneliness, and Social Anxiety) showed that a greater proportion of FLEs reported a lower Welsh language ability compared to FLWs – a result that emphasizes the importance and relevance of Wright and Bougie’s (2007) analysis to FLWs and FLEs attending Welsh/Bilingual-medium schools. Within Chapter Five (Self-esteem cross-sectional), it was suggested that over time, the immersive approach of Welsh/Bilingual-medium schools would likely enhance lower Welsh ability FLEs’ Welsh language proficiency with subsequent decreases in feelings of isolation and marginalization thereby raising self-esteem. However, longitudinal analysis has demonstrated that a greater proportion of FLEs compared to FLWs were represented at ‘Low’ self-esteem levels at T2 and T3, which might suggest the immersive approach has yet to take effect. Pragmatically, it is possible that a timeframe greater than nine-months (i.e., T1 to T3) would be required before seeing any material benefit arising from the immersive argument in terms of FLEs’ overall self-esteem level.

Another interesting difference between cross-sectional and longitudinal analyses is the number of FLWs and FLEs represented at a ‘High’ level of self-esteem. Cross-sectional analysis showed a clear difference between FLWs and FLEs with a greater number of FLWs represented at a ‘High’ level of self-esteem, whereas at each of the three time points of the longitudinal analysis there were *no* differences between FLWs and FLEs. Having already potentially attributed the difference between cross-sectional and longitudinal analyses to a difference in the number of participants, conceivably the same



explanation might hold with respect to FLW and FLE representation at a ‘High’ level of self-esteem. However, there is another potential explanation that might explain why there were no differences between FLWs and FLEs at a ‘High’ level of self-esteem at each of the three time points. Acknowledging that *lower* Welsh language ability FLEs’ self-esteem might be impacted by perceptions of being linguistically marginalized, it is possible the statistically *similar* number of FLWs and FLEs represented at ‘Medium’ and ‘High’ levels of self-esteem might be attributed to these FLWs’ and FLEs’ *higher* Welsh language ability (that is, a higher Welsh language ability than the lower Welsh language ability FLEs) benefiting in terms of SIT and closer affiliation to Welsh culture and community processes with a subsequent benefit in terms of self-esteem. In other words, it is not only FLWs that benefit in terms of SIT and closer affiliation to the Welsh culture and community (Tajfel & Turner, 1979; Garcia, 1985; Wright & Taylor, 1995; Baker, 2033; Hendry, Mayer, & Kloep, 2007; Taylor, Bassili, & Aboud, 1973), but also FLEs with a *higher* Welsh language ability. This would seem entirely reasonable as according to SIT and affiliation processes (e.g., Tajfel & Turner, 1979), an equal ability in the language of the community (for instance, the Welsh language within Welsh/Bilingual-medium schools) would create a closer bond with the Welsh language community with subsequent enhancements in terms of self-esteem.

Summarizing, cross-sectional and longitudinal data broadly supports **H14** (FLWs attending Welsh/Bilingual-medium schools would show a higher level of self-esteem compared to FLEs attending Welsh/Bilingual-medium schools). Although there was no difference at T1 (longitudinal), cross-sectional and longitudinal (T2 and T3) analyses show a greater proportion of FLEs were represented at a ‘Low’ level of self-esteem. This result might suggest that receipt of education in a language other than one’s first language might trigger a feeling of being linguistically marginalized, which negatively impacts self-esteem. Another possible explanation for FLEs’ greater representation at a ‘Low’ level of self-esteem would be FLEs feeling their first language was discriminated against within Welsh/Bilingual-medium schools. Regarding the proportion of FLWs and FLEs reporting ‘Medium’ and ‘High’ levels of self-esteem, cross-sectional and longitudinal analyses showed similar results at the ‘Medium’ level, but at the ‘High’ level a difference was only found during cross-sectional analysis. A possible explanation for the similar proportion of FLWs and FLEs registering ‘High’ scores at each of the three time points is that FLWs and FLEs with higher Welsh language ability levels both derive an

approximately equal benefit in terms of SIT processes and closer affiliation to the Welsh culture and community. This last point is important as it suggests that individuals speaking a first language other than the one used within a specific context (such as Welsh within Welsh/Bilingual-medium schools) might derive a similar self-esteem enhancing benefit as the native first language speakers – provided their language ability levels are similar.

#### **8.4.3. Social Media Dependency and Self-Esteem: Cross-Lagged Model**

A key objective was to understand the longitudinal bidirectional relationship between SMD and self-esteem, with the literature suggesting a negative association between the variables (e.g., Sam *et al.*, 2022; Kocak & Younis, 2021; Khan, Khan, & Moin, 2021). Analysis did not show any path differences between FLWs and FLEs, which suggests no support for either **H15** (the negative association between SMD → Self-esteem would be stronger for FLWs at each of the three time points) or **H16** (the negative association between Self-esteem → SMD would be stronger for FLEs at each of the three time points).

As stated previously, an interesting observation relates to the poor cross-lagged associations between SMD ← → Self-esteem across the three timepoints. A possible suggestion for the lack of significant associations between the variables for FLWs and FLEs (except for the path T2 Self-esteem → T3 SMD, which demonstrated a significant negative relationship for both groups:  $p = .003$ ) is the SEM analysis being under-powered due to the relatively small number of participants within both groups. Accordingly, in terms of the hypotheses, the tested SEM design failed to support either hypothesis. Although this would require re-testing, it is possible that FLWs and FLEs might demonstrate statistically significant strengths of association on the tested paths – provided a larger sample was used. The nine-month timeframe might also be too short a period to manifest changes over time, also.

Although FLWs and FLEs showed the same strength of association between the variables, the one path demonstrating inter-variable significance was T2 Self-esteem → T3 SMD. The significant negative association for both groups suggest earlier *lower* self-esteem (T2) predicted later *higher* SMD (T3). The negative association between Self-

esteem → SMD has been empirically suggested in numerous studies (Sam *et al.*, 2022; Suhud *et al.*, 2023; Zhao *et al.*, 2022; Smith, 2022; Xiao, Peng, & Liao, 2022; Matang *et al.*, 2021). Whilst both groups demonstrated the same strength of association between the variables, it is important to identify some of the possible reasons for the negative association between T2 Self-esteem → T3 SMD. Adopting a pragmatic viewpoint, FLWs' and FLEs' significant negative association between T2 Self-esteem → T3 SMD might be explained by a combination of linguistic and *non-linguistic* factors. To assume linguistic factors alone would be responsible for the groups' respective negative association between T2 Self-esteem → T3 SMD would be too great a claim. As suggested within the SMD longitudinal discussion, above, the influence of language-based factors would likely represent a cog within a wheel whereby each of the other cogs also influences the groups' respective strength of association between the two variables. Focusing upon a linguistic-based explanation for both groups' negative association, as self-esteem was the predictor variable in the relationship T2 Self-esteem → T3 SMD, we need only concern ourselves with the *social identification* perspective, which suggested FLWs' negative association between the variables might be explained by SIT mechanisms (e.g., Tajfel & Turner, 1979) and closer affiliation to Welsh culture and the community (e.g., Hendry, Mayer, & Kloep, 2007; Jones, 2002; Coupland, Bishop, Evans, & Garret, 2006), with FLEs deriving fewer benefits in terms of SIT and Welsh culture / community affiliation. Data, though, suggested *no* difference between the groups in terms of strength of association between the variables, which does not encourage support for the SIT and Welsh culture / community argument. With both groups demonstrating the same strength of association between T2 Self-esteem → T3 SMD, the initial conclusion would suggest both groups are equally impacted by SIT and Welsh culture / community processes. This conclusion, though, would appear too simplistic when one considers the strength of association between the variables for both groups might also be impacted by an array of *non-linguistic*-based factors, some of which are outlined below.

Application of the literature to FLWs and FLEs registering low self-esteem scores would suggest they have a lower ability to adapt to their environment and are more susceptible to problematic or deviant behaviours such developing a tendency to over-immense themselves in media (Eo & Lee, 2022). Illustrating the danger of established addictive behaviours, Sam *et al.* (2022) stated *Social Learning Theory* posits that an addictive behaviour (for instance, SMD) acts as a reinforcer to the addicted person, and

that the addictive behaviour is principally shaped by the individual's expectations and beliefs regarding the addictive behaviour. This is an important point regards low self-esteem FLWs and FLEs as this suggests that their dependency upon social media might be reinforced by what they hope to gain from using social media. In other words, their perceived expectations regarding the possible benefits from using social media would likely spur them into greater social media usage, thereby acerbating their dependency. In a sense, they are trapped within a catch-22 scenario. Focusing upon the one-way self-esteem → SMD relationship, it is possible to see how this catch-22 situation might arise; for instance, low self-esteem individuals' heightened sense of inferiority attracted them to social media as a means of securing greater anonymity (Sam *et al.*, 2022), with the anonymity aspect identified by Zhao *et al.* (2022), also. A number of other low self-esteem related aspects have been associated with SMD, also, such as a desire for greater on-line acceptance compared to their off-line social interaction difficulties, a need for social reward and to be perceived as popular, a desire for others' positive feedback, a perception that the social media environment is a safe place where they can express themselves freely, etc. (Sam *et al.*, 2022; Smith, 2022; Diefenbach & Anders, 2022; Wang *et al.*, 2022b; Sehar *et al.*, 2022). A number of studies have suggested low self-esteem individuals' susceptibility to SMD may be driven by perceptions of the 'Self' and a desire to influence others' attitudes toward their projected 'Self' by creating a desired on-line persona (Sam *et al.*, 2022; Smith, 2022; Boer *et al.*, 2022; Tóth & Kovács, 2022). Related to the last point, Smith (2022) noted how creating an on-line persona gave the low self-esteem individual a sense of control regarding how he or she might be perceived by others. Amplifying Smith's (2022) control observation, Maepa and Wheeler (2022) suggested individuals with low self-esteem can take control of how they present their image on social media and present a desired image of their 'Self' as opposed to their true 'Self'. Identifying another catch-22 scenario, the latter authors observed that whilst presentation of the desired 'Self' reduced feelings of anxiety, the reduction in anxiety merely prompted greater social media usage – potentially triggering SMD. Referencing the *Social Compensation Hypothesis*, Studies have also shown that low self-esteem individuals may use social media to compensate for their off-line social interaction problems (Abrar-ul-Hassan & Safdar, 2022; Zhao *et al.*, 2022; Wang *et al.*, 2022b).

Summarizing, data did not uphold the assertion that cross-lagged longitudinal SMD ← → Self-esteem differences might be attributed to either *social identification* or

*linguistic devaluation* explanations, which are outlined above. As a *caveat*, the suggestion is the lack of statistically significant path differences between FLWs and FLEs might be due to the analysis being under-powered as a result of the relatively low number of participants. In terms of the one path demonstrating a significant negative association for FLWs and FLEs (i.e., T2 Self-esteem → T3 SMD), the pragmatic conclusion suggests both groups' strength of association between the variables would likely be impacted by a combination of linguistic and non-linguistic factors with the combined effect of the factors affecting both groups to an apparently equal extent since both showed the same level of significance ( $p = .003$ ). Conceivably, the impact of language-based reasons upon FLWs' strength of association between the variables might have been greater compared to FLEs, with the non-language-based reasons affecting FLEs to a greater extent – thereby attaining an overall similar statistical outcome for both groups. This last assertion, though, is pure conjecture and would require further work in order to be either affirmed or refuted. The pragmatic recommendation would be to re-run the SEM analysis using a larger population to ensure the analysis is not under-powered.

#### **8.4.4. Discussion Summary**

Data showed statistically similar proportions of FLWs and FLEs registering 'Low', 'Medium' and 'High' SMD scores at T1, T2 and T3. The suggestion is that the reasons why FLWs and FLEs might engage in social media usage effectively cancelled one another out in terms of statistical significance. 'Low' and 'Medium' SMD scoring FLWs and FLEs would benefit from preventative strategies to stop their SMD scores rising to a higher level, whereas 'High' SMD scoring participants would clearly benefit from treatment strategies intended to reduce their SMD scores. At present, there is a dearth of valid and reliable preventative and treatment options.

Cross-sectional and longitudinal analyses broadly support the hypothesis that FLWs would show a higher level of self-esteem compared to FLEs. In general, although there was no difference at T1 (longitudinal), data shows that a greater proportion of FLEs were represented at 'Low' self-esteem scores. A couple of explanations were provided: 'Low' self-esteem FLEs might be impacted by a perception their first language (English) was discriminated against within Welsh/Bilingual-medium schools; and that they might feel linguistically marginalized. A potentially interesting explanation for the similar

proportion of FLWs and FLEs registering ‘High’ self-esteem scores would be both groups deriving a benefit from SIT and Welsh cultural / community affiliation processes – provided their Welsh language proficiency were at a similarly high level.

Inter-group significance was not achieved on any of the longitudinal T1 to T3 SMD  $\leftarrow \rightarrow$  Self-esteem paths. The suggestion was the SEM analysis was under-powered, which potentially contributed to the lack of significance. Further, analysis of the various inter-variable paths showed only one significant relationship (i.e., T2 Self-esteem  $\rightarrow$  T3 SMD), and this was obtained for FLWs and FLEs who showed an identical structural weight ( $p = .003$ ). Whilst linguistic factors may have played a role in FLWs’ and FLEs’ responses, a pragmatic conclusion would suggest participants’ responses were influenced by a combination of linguistic and non-linguistic factors. The SEM analysis would benefit from being re-run using a larger sample size.

## 9. CHAPTER NINE: Qualitative Analysis

### 9.1. Introduction and Hypothesis

The aim of the present chapter is to compare Welsh/Bilingual- and English-medium school participants' qualitative responses regarding Welsh language opportunities on social media.

The comparative aspect retains empirically backed components that suggest a deductive analytical design. Accordingly, as shown by the following empirically supported references, certain thematic responses might be expected; for instance, previous research suggests a proportion of FLWs generally used English on social media (Cunliffe, Morris, & Prys, 2013a), and whilst engaging in Internet activities *per se* (including social media) (McAllister, Blunt, & Prys, 2013). Further, whilst there are few *technical* constraints preventing minority language speakers from using their language on social media (Cunliffe, Morris, & Prys, 2013a), the suggestion is that a number of *non-technical* factors influenced their choice of language on social media such as others' languages, usage of English was considered more convenient, or not knowing many users on social media capable of using the minority language (McAllister, Blunt, & Prys, 2013). The latter authors noted also that minority language speakers' restricted opportunity to use their first language on-line might also be influenced by a lack of awareness regarding the on-line platforms capable of hosting their minority heritage language. However, keeping a pragmatic disposition, conceivably participants' responses might introduce additional arguments hitherto unearthed by empirical analyses, which is suggestive of an inductive design. Thus, though a deductive design has been applied, conceivably there persist shades of grey since new themes might arise. Acknowledging that Welsh/Bilingual-medium schools place a stronger emphasis on the Welsh language compared to English-medium schools (Welsh Government, 2007), the key point-of-interest is whether perceptual differences existed between Welsh/Bilingual- and English-medium school participants regarding Welsh language opportunities on social media. Thus, the objective tests the following hypothesis.

**HQ1. It is hypothesized that Welsh/Bilingual-medium participants perceive fewer opportunities to use Welsh on social media compared to English-medium participants' perceptions.**

## 9.2. Method

### 9.2.1. Participants

Participants attended State-maintained Welsh/Bilingual- and English-medium secondary schools located in Wales. Participants indicated their consent to take part in the interviews before starting the time wave one questionnaire. Each participating school selected the interviewees. Accordingly, the number of Welsh/Bilingual-medium school participants was eleven (males = 5; females = 6), and the number of English-medium school participants was twelve (males = 6; females = 6). The Welsh/Bilingual-medium participants were all FLWs, and the English-medium participants were all FLEs. The mean age for the Welsh/Bilingual- and English-medium school participants was 15 years.

### 9.2.2. Procedure

At the request of each school, participants were mostly interviewed in pairs. Participants' teachers were not present during the interviews. The researcher facilitated all interviews, with each interview lasting 45-60 minutes. With each participant given a unique and anonymous identifier, Table 30 records participants' identifiers, school type, and the dates the interviews were conducted. Regarding the below table, please note that "W" denotes a Welsh/Bilingual-medium school, "E" denotes an English-medium school, "M" denotes male, and "F" denotes female. The numbers after each 'W' and 'E' refer to each interviewee, e.g., 'W1 [F]' would indicate the first Welsh/Bilingual-medium interviewee was a female.

*Table 30. Interview Schedule*

	<b>Welsh/Bilingual School No. 1</b>	<b>Welsh/Bilingual School No. 2</b>	<b>English School No. 1</b>	<b>English School No. 2</b>
Interview Date	15 <sup>th</sup> March 2019	19 <sup>th</sup> June 2019	23 <sup>rd</sup> September 2019	23 <sup>rd</sup> September 2019
Interview #1	W1[F], W2 [F]	W7 [M]	E1 [F], E2 [M]	E7 [F], E8 [M]
Interview #2	W3 [F], W4 [M]	W8 [M], W9 [F]	E3 [M], E4 [F]	E9 [M], E10 [F]
Interview #3	W5 [M]	W10 [F], W11 [M]	E5 [M], E6 [F]	E11 [M], E12 [F]
Interview #4	W6 [F]	-	-	-

Prior to each interview, participants received assurances regarding anonymity and the freedom to decline a response to the question and, also, the possibility of withdrawing



from the interview at any time of their choosing without having to give a reason. Encouraging an open response, the comparative question presented to Welsh/Bilingual- and English-medium school participants was identically worded [HQ1]: *Does social media provide enough opportunities to communicate using Welsh?*

### **9.2.3. Analytic Design**

As previously shown, the design adopts a primarily deductive method. The supportive rationale was predicated on the basis that HQ1 proceeds from a hypothesis that was informed by empirical analyses.

The deductive approach was subjected to the six-step thematic analytic design proposed by Braun and Clarke (2006), which has received support amidst the research community (e.g., Xu & Zammit, 2020; Crompton *et al.*, 2020; Xi, Xu, Zhang, & Ayalon, 2021; Liebenberg, Jamal, & Ikeda, 2020; Liu, Nikitas, & Parkinson, 2020; Tambling *et al.*, 2021). The flexibility of thematic analysis lends itself to the face-to-face interview scenario (Terry, Hayfield, Clarke, & Braun, 2017). Where qualitative analysis forms a part of the overall research project, the latter authors advise that the recommended minimum number of interviewees for higher research degrees should be 15-20 individuals, which has been exceeded in the present study wherein twenty-three participants were interviewed.

The applied six-step (Braun & Clarke, 2006) process addressed the following in strict chronological order:

***Data familiarization.*** Interviews, which were digitally recoded using a Phillips DVT2510 Voice Tracer Audio Recorder with Dragon Naturally Speaking software developed by Dragon Systems, were fully transcribed. The dual process of transcription and re-reading of transcripts afforded a higher degree of textual familiarity.

***Generation of initial codes.*** Codes were non-numerical in orientation. The deployed codes were brief textual descriptions referencing related concepts embedded within participants' quotations, e.g., with respect to Welsh/Bilingual participants, some of the identified concepts were 'Welsh is a minor language', 'Welsh language is growing', etc. Whilst there is no strict rule regarding coding, consistency of application across the entirety of the data set was sought in that an identified code might relate to a single word

or multiple words. Code descriptors (i.e., code names) were conceptual in nature, i.e., free of researcher interpretation.

***Searching for themes.*** Having identified the various codes, the next step in the process entailed the collation of related codes into designated themes. Pursuing the Welsh/Bilingual example referenced during initial generation of the codes, above, the codes ‘Welsh is a minor language’, ‘Welsh language is growing’, and ‘Welsh language has died a bit’ comprised a theme entitled ‘Perception of the Welsh language’. As illustrated within the ‘Results’ sub-section, below, mind maps were used to identify and demarcate themes and codes from one another. In one instance, one of the identified codes called for the creation of a sub-code.

***Reviewing themes.*** Having established an initial set of themes, the next step in the process entailed a review of the themes to determine whether they ‘fitted’ the data, codes, and themes *per se*. As per Braun and Clarke (2006), a two-step process was enacted. First, data was examined to determine whether the themes accurately reflected the transcribed data. Second, the mind maps were reviewed to provide assurance the themes also reflected the over-arching themes of the data.

***Defining and naming themes.*** As a process of continual refinement, this stage essentially formed the ‘story’ of the participants’ quotations. Pursuing the Welsh/Bilingual example illustrated during first code generation, above, the theme ‘Perception of the Welsh language’ (accommodating the identified three codes) attracted an over-arching definition showing the theme’s codes collectively reflected participants’ belief regarding the vitality and future prospects of the Welsh language.

***Producing the report.*** Whilst quantitative analyses might employ *p*-values, for instance, to prove or disprove a hypothesis, qualitative analysis must rely upon rather more subjective evaluations. To prove support for the tested hypothesis, for instance, reliance was made upon participants’ quotations. Where available, the literature was employed to clarify and explain findings.

Please note that each of the six steps outlined above (including coding) was undertaken by the author alone. No other person was involved in code generation or code checking process.

### 9.3. Results

Driven by empirical research and the devised hypothesis **HQ1** (hypothesis: it is hypothesized that Welsh/Bilingual-medium participants perceive fewer opportunities to use Welsh on social media compared to English-medium participants' perceptions), execution of Braun and Clarke's (2006) six-step process unearthed an array of themes and related sub-themes (i.e., codes) for Welsh/Bilingual- and English-medium participants regarding the research question: *Does social media provide enough opportunities to communicate using Welsh?* Many of the themes resonated with empirically referenced analyses, above. Presented below are the mind maps (accommodating themes and related codes – including one sub-code) and tables that provide an explanation for each identified theme. The first mind map (Figure 40) and 'explanation' Table 31, below, relate to the Welsh/Bilingual-medium school participants.

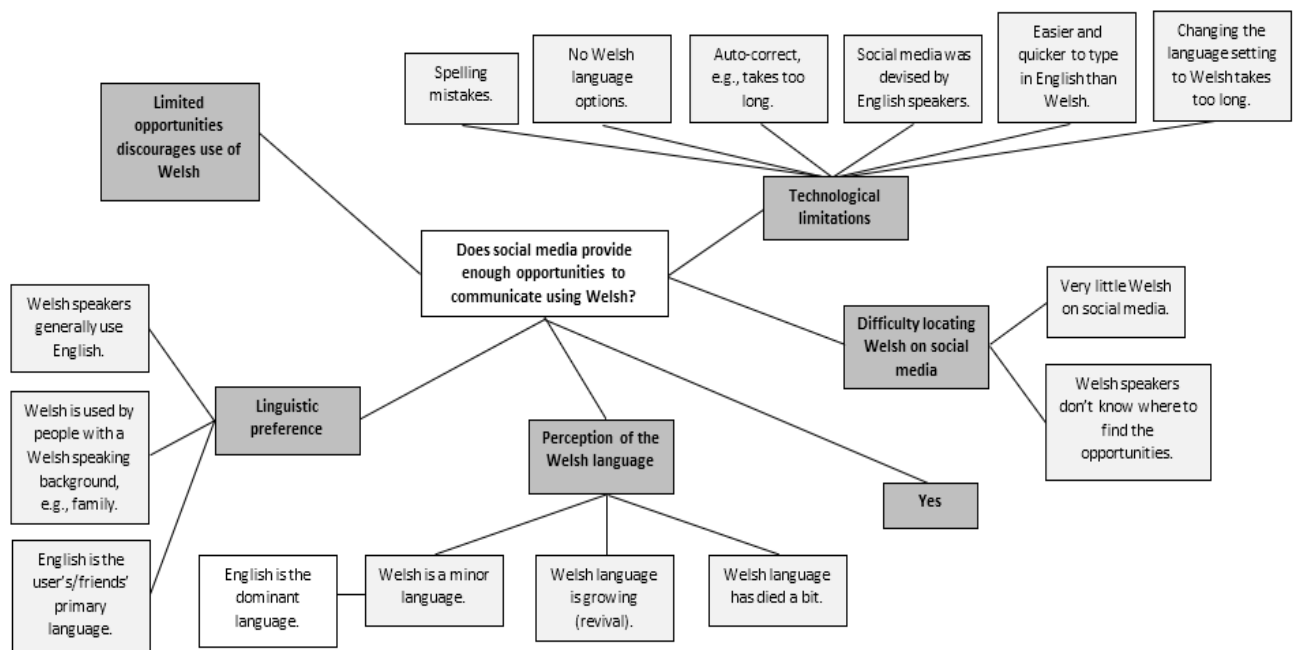


Figure 40. Qualitative Hypothesis Mind Map - Welsh /Bilingual

Table 31. Qualitative Hypothesis Explanation - Welsh/Bilingual

Themes	Sub-Themes (Codes)	Explanation
Perception of the Welsh language	Welsh is a minor language. Welsh is growing (revival). Welsh language has died a bit.	Belief about the vitality and future prospects of the Welsh language varies.
Linguistic preference	Welsh-speakers generally use English. Welsh is used by people with a Welsh-speaking background. English is used by self/friends.	Welsh-speakers do not invariably use Welsh.
Few opportunities (compared to English)	Lack of Welsh discourages use of Welsh outside school.	Limited opportunity discourages Welsh usage.
Technological limitations	Spelling mistakes, auto correct, etc. No Welsh language options. Social media devised by English-speakers. Easier and quicker to use English. Changing the language setting takes too long.	Implication is that Welsh usage is curtailed due to technical limitations and not necessarily personal choice.
Difficulty locating Welsh on social media	Little Welsh on social media. Welsh-speakers do not know where to find opportunities.	Implication is that the Welsh language is poorly represented and promoted on social media.

Detailed below is the mind map (Figure 41) and ‘explanation’ Table 32 relating to English-medium school participants.

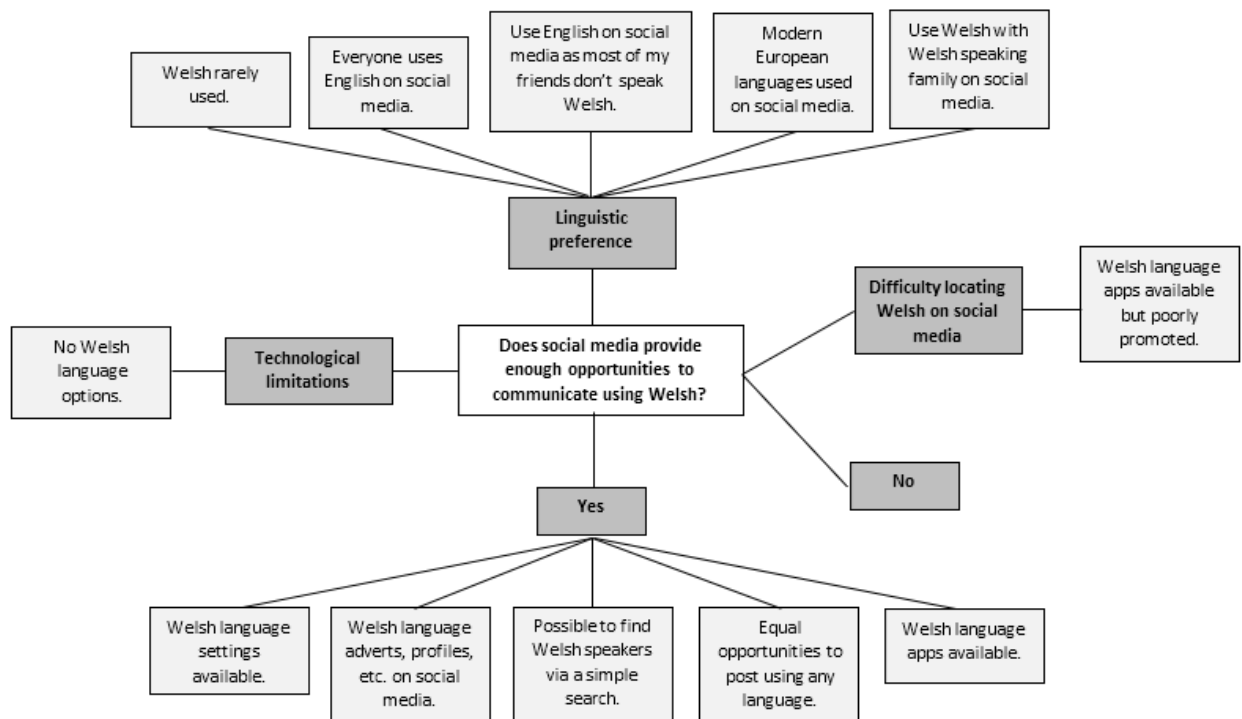


Figure 41. Qualitative Hypothesis Mind Map - English

Table 32. Qualitative Hypothesis Explanation - English

Themes	Sub-Themes (Codes)	Explanation
Yes – opportunities available	Welsh language settings available. Welsh language adverts, profiles, etc. Possible to find Welsh-speakers via a simple search. Equal opportunities for all languages. Welsh language apps available.	Implication is that opportunities are available to Welsh-speakers on social media.
Technological limitations	No Welsh language options.	Implication is that Welsh usage is curtailed due to technical limitations and not necessarily personal choice.
Linguistic preference	Welsh rarely used. Everyone uses English on social media. Use English – friends do not speak Welsh. Modern European languages used on social media. Use Welsh with Welsh-speaking family.	English and modern European languages are used mostly.
Difficulty locating Welsh on social media	Welsh language apps available but poorly promoted.	Implication is that the Welsh language is poorly promoted on social media.

The thematic analytical approach, above, revealed five and four broad themes for Welsh/Bilingual- and English-medium school participants, respectively, with three of the themes repeated for both groups. However, despite broad thematic similarity, the groups differed with regard to certain sub-codes. The salient themes and qualitative evidence are detailed below.

### 9.3.1. Technological Limitations

Appearing as the dominant theme amidst the Welsh/Bilingual cohort, and to a lesser extent amidst the English cohort, participants' responses referenced social media's inability to adequately host and support the Welsh language, which effectively deterred FLWs from using Welsh on social media in any meaningful way. Participants' responses, for instance, suggested a dearth of Welsh language options on social media.

*"I don't think you can really set your language on your phone to Welsh. If you did, I reckon more people would speak more Welsh on social media."* {W8}

*"There's no option to choose the Welsh language."* (W9)

*"On Facebook, we don't have the option to have everything in Welsh."* (E4)

*“... there’s no option to kind of change the language to Welsh if you want.” (E3)*

Alluding to the linguistic emphasis of social media’s original software engineers, one participant suggested an absence of Welsh linguistic influence at the conception stage.

*“The people that made social media are probably English and I don’t think any of them are Welsh, so they probably, basically, just made them in English so there isn’t a way to make them Welsh.” (W4)*

Numerous participants’ responses referenced the practical difficulties of using Welsh on social media, such as issues regarding the correct spelling of Welsh words.

*“... it’s kind of harder to do especially with like spelling is a big part of it. With auto-correct it takes about five minutes to type a single sentence. (W3)*

*“There are websites and all sorts in Welsh but it’s just that maybe sometimes there might be spelling mistakes.” (W8)*

The auto-correct feature within social media applications received criticism, as shown by W3, above, which was an assertion shared by another participant.

*“To start off with, you’ve got auto-correct: I can’t text my friends something in Welsh because it will auto-correct to something completely different. So, I just don’t bother.” (W10)*

Changing language settings also received criticism.

*“... it takes you a while to have to change the language...” (W6)*

### **9.3.2. Difficulty Locating Welsh on Social Media**

Although a greater proportion of Welsh/Bilingual participants referenced the difficulties associated with finding Welsh text on social media, this was an issue shared by both groups. Fundamentally, a core concern suggested the Welsh language *per se* was poorly represented on social media.

*“... there’s not really a lot of Welsh elements on social media... There’s not enough on there to encourage people to use Welsh outside school on social media, so people just don’t bother to do it.” (W3)*

*“The only Welsh I see is from the school page.” (W9)*

Suggesting there are opportunities for Welsh-speakers on social media, one of the English-medium school participants suggested the key issue related to the inadequate promotion of Welsh language opportunities.

*“Yes, there are a few different apps that you can use different languages, but it’s not promoted enough on, like, social media and stuff to [make] people want to learn Welsh and different languages.” (E7)*

Extending from E7’s observation, above, the difficulty associated with finding Welsh linguistic opportunities was similarly identified.

*“I think there [are] enough opportunities but people just don’t know they are there.” (W9)*

*“... people don’t know it’s there.” (W8)*

### **9.3.3. Linguistic Preference**

The linguistic preference theme featured strongly during Welsh/Bilingual- and English-medium school interviews. Inter-group consensus was suggested wherein participants within both linguistic settings suggested Welsh-speakers used English.

*“I do think people speak English more on-line even if they do speak Welsh.” (W1)*

*“...most people don’t bother speaking Welsh even though they go to a Welsh school...” (W4)*

*“... you don’t normally speak Welsh when you’re texting; it’s always English.” (W5)*

*“... people mainly talk in English or in [a] different language.” (E1)*

*“... the main language is English. Everyone uses English on-line.” (E12)*

However, there was recognition that Welsh might be used when communicating with Welsh-speaking family members or where the speaker retains a particularly strong Welsh emphasis.

*“I think the only reason that people use Welsh is if they are a very Welsh person or if their family is Welsh...” (W4)*

*“Like my grandma speaks Welsh and so does my mum – so I speak quite a lot of Welsh at home, and I would message them on Instagram, or something, in Welsh. So, I would talk to them in Welsh on Instagram” (E6)*

Suggesting friends' first language influenced choice of language used on-line, participants within both groups, accordingly, reached a degree of consensus.

*"Most of my friends are outside school anyway and don't speak Welsh." (W10)*

*"I don't speak much Welsh on-line... social media because I don't have many only speaking Welsh friends." (E5)*

Demonstrating a macro-linguistic vision, one of the English-medium participants, whilst indicating that perhaps the Welsh language might be considered a less popular language within the on-line domain, recognized the widespread popularity of not just English but, also, some of the more prominent European languages.

*"Obviously, German – the more modern foreign languages like French, German, Spanish, but not Welsh." (E4)*

#### **9.3.4. Few Opportunities Discourages Use of Welsh**

Suggesting limited Welsh on-line linguistic opportunities, one Welsh/Bilingual participant's response showed a lack of opportunity rather quelled Welsh-speakers' enthusiasm to use the language on social media.

*"There's not enough on there to encourage people to use Welsh outside school on social media, so people just don't bother to do it." (W3)*

For the most part, the perception that sufficient Welsh language social media opportunities exist was principally demonstrated by English-medium participants' responses, with only a couple of the Welsh/Bilingual participants sharing the same belief. The below extracts communicate a perceptual belief regarding the availability of language settings, apps, and opportunities.

*"You can have settings where you can change it yourself..." (E8)*

*"There are, like, Twitter accounts in the medium of Welsh, Instagram in Welsh." (W1)*

*"I think there might be something on Instagram." (W3)*

*"Yes, I think there are equal opportunities to everyone on-line because you can post or speak in whatever language you wish to." (E2)*



### 9.3.5. Perception of the Welsh Language

Inspecting responses from the Welsh/Bilingual cohort only, participants presented an array of sub-themes. The more salient sub-theme suggested Welsh was a minor language, with English being the more dominant. The inference was that Welsh was less active within the social media context. In this sense, Welsh within the social media domain was considered the lesser language compared to English.

*“If you scrolled five times, you’d see English written all over it.” (W8)*

*“... I haven’t seen anything from anybody else speaking the Welsh language – only the English.” (W9)*

*“... I don’t see any Welsh on social media at all.” (W7)*

Reflecting upon Welsh within a world-wide context, one participant simultaneously suggested, whilst there appears to be a Welsh language revival, it is not widely spoken.

*“Don’t get me wrong, Wales – the Welsh language – is growing but compared to like the whole world it’s not that popular a language... compared to English especially. So, I think that you’re not really going to see a lot of it on social media.” (W7)*

Another participant, whilst recognizing the dearth of Welsh on social media, simultaneously suggested linguistic death and revival.

*“You’d probably see every language apart from Welsh because Welsh has died off a bit. But now we’re trying to get it back...” (W8)*

## 9.4. Discussion

A couple of key observations might be deduced from participants’ responses. Operating from a broad thematic perspective there was an over-arching similarity between both groups – although they differed with respect to many of the sub-themes. Simultaneously, participants’ responses upheld certain empirical propositions while others appeared to be contradicted. In terms of **HQ1** (hypothesis: it is hypothesized that Welsh/Bilingual-medium participants perceive fewer opportunities to use Welsh on social media compared to English-medium participants’ perceptions), at the broad thematic level, a case might be presented suggesting response similarity between both groups thereby refuting the hypothesis; conversely, reflection upon the sub-themes – especially

with respect to perceived technological limitations, encourages a belief that the Welsh/Bilingual-medium participants perceived a greater array of obstacles preventing Welsh usage on social media, which might suggest support for the hypothesis.

Reflecting upon participants' perceptions of the Welsh language within the social media domain, Welsh/Bilingual participants' extracts suggest that English was the dominant language relative to Welsh, despite opportunities for FLWs to use Welsh on social media existing as suggested by Honeycutt and Cunliffe (2010; Keegan, Mato, & Ruru, 2015; Jones, 2011). Whilst a perception of English on-line dominance might not equate with actual diminution of the Welsh language, conceptually such a belief entertains the possibility of the Welsh language becoming digitally endangered, an assertion that has received attention at the political level (Welsh Government, 2018). Despite a perception of the Welsh language being dominated by English in the social media context, there was a recognition of a Welsh language revival, which appears to resonate with the Welsh Government's target of achieving approximately one million Welsh-speakers by 2050 (Welsh Government, 2017).

Related to the above sub-theme suggesting English was the dominant social media language, an added sub-theme, which was common to both groups, was the belief that most Welsh-speakers use English in place of Welsh on social media, which aligns with empirical analysis. Participants' belief that Welsh-speakers generally use English instead of Welsh on social media resonates with Cunliffe, Morris, and Prys (2013a) who suggested 39.8%, 30.1%, and 30.1% of first language Welsh-speakers used English, a mix of English and Welsh, or all Welsh on Facebook, respectively. Indeed, this ties in with Chapter Four (SMD: Cross-sectional) that showed whilst 77.4% of FLWs ( $n = 305$ ) 'Often' and 'Always' used Welsh face-to-face, only 60.2% of FLWs ( $n = 301$ ) 'Often' and 'Always' used Welsh on social media. Although the scope of their study accommodated a broader array of on-line components (including social media), participants' perceptions regarding on-line language used comply with McAllister, Blunt, and Prys (2013), also. Accepting the proposition that a proportion of FLWs switch to English on social media encourages application of Crystal's (2000) assimilation theory, which potentially transmits a self-esteem reducing message suggesting societal devaluation of the Welsh language and culture (Baker, 2003; Csata, Hlatky, & Liu, 2022; McDermott & Craith, 2022). Expanding, if FLWs *believe* there are fewer opportunities to

Welsh, they might come to believe that society beyond the Welsh-speaking collective holds the Welsh language in lower esteem compared to the majority language. By way of partial explanation, a couple of the participants suggested Welsh-speakers' use of Welsh on social media might be influenced according to the first language used by family and friends, which is an argument that parallels Cunliffe, Morris, and Prys' (2013a) proposition. Potentially negating the Welsh Government's one million Welsh-speakers by 2050 goal (Welsh Government, 2017), an assertion presented by one Welsh/Bilingual participant suggested a lack of opportunity to use Welsh on social media functioned as a deterrent against Welsh language usage.

Predominantly expressed by Welsh/Bilingual participants, participants' words suggest an array of technical limitations conspired to discourage the use of Welsh on social media; for instance, participants suggested there were few or no options enabling Welsh-speakers to choose the Welsh language. Developing this theme, if a Welsh-speaker truly *believes* technical limitations within an application prevent usage of the Welsh language on social media, then conceivably the perception of being discouraged to use Welsh on social media has become more preventative. This is an important distinction: irrespective of whether the technology can adequately host the Welsh language, if the user *believes* the technology is not Welsh-language 'friendly', then the perception within the Welsh-speaker's mind would have moved from one of discouragement to one of prevention. Contradicting the latter participants' assertion, a proportion of the participants suggested that options were available. The perceptual distinction might, for instance, be attributed to the poor promotion of the Welsh language and associated opportunities on social media, which was an issue raised by some of the participants. Promotion – or a lack thereof notwithstanding, additional technical constraints were articulated. One of the identified sub-themes related to the spelling of Welsh words on social media, with the suggestion that Welsh-speakers' usage of Welsh on social media became fraught with delay. The auto-correct feature on social media and time taken to adjust linguistic settings also received criticism.

Implicitly related to the Welsh language promotion issue shown above, a couple of the Welsh/Bilingual participants expressed difficulty in finding Welsh on social media. Relatedly, whilst suggesting social media opportunities existed for the Welsh language, an English-medium participant indicated that the poor promotion of Welsh language

opportunities on social media rather conspired against people's usage of Welsh. Indeed, the difficulty in finding Welsh on social media was a repeated sub-theme. Whilst only a couple of the Welsh/Bilingual participants suggested Welsh social media opportunities existed, a greater proportion of the English-medium participants indicated likewise, which might suggest a perceptual distinction between Welsh/Bilingual- and English-medium participants *per se* regarding Welsh language social media opportunities. Suggesting a prevalence of social media opportunities, articulated sub-themes suggested the existence of Welsh language settings, availability of Welsh-friendly apps, and a capability of running routine searches to find fellow Welsh-speakers.

Upon reflection, that perceived technological constraints conspire against practical usage of Welsh on social media cannot be denied – based upon participants' extracts. Additionally, the poor promotion of Welsh social media opportunities appears to hamper Welsh language social media practice. Participants' words also suggested the Welsh and English languages enjoy an imbalance with regard to social media 'dominance', i.e., there appears to be a perceptually constructed linguistic disequilibrium within the social media sphere. The *perceptual* reference is of potential significance since if FLWs *believed* there are few opportunities to use Welsh on social media and, additionally, *believed* English is the main language, they would be less inclined to use Welsh, thereby upholding the Welsh-English linguistic imbalance perception. FLWs' perceptions, however, would appear to run contrary to reality, which suggested FLWs' opportunities to use Welsh on social media are real (Honeycutt & Cunliffe, 2010; Keegan *et al.*, 2015). This would further suggest that Welsh would benefit from better promotion regarding social media opportunities, which is a point raised in the previous paragraph. Paralleling McAllister, Blunt, and Prys' (2013) non-technical barriers, participants' references to others' languages deciding the language spoken on social media suggests non-technical factors also influenced choice of language used on social media. Returning to the hypothesis (HQ1), which said Welsh/Bilingual-medium participants perceive fewer opportunities to use Welsh on social media compared to English-medium participants, the case for and against might be presented. At a high level, both groups' responses were similar to one another; for instance, participants within both groups recognized a difficulty in finding Welsh on social media. However, group differences were detected; for instance, Welsh/Bilingual-medium participants identified a greater number of technological limitations.

## 10.CHAPTER TEN: General Discussion

### 10.1. Aims and Objectives

The primary aim of the thesis was to identify differences/similarities between FLW and FLE participants attending Welsh/Bilingual-medium schools, and, also, Welsh/Bilingual- and English-medium secondary school participants with respect to the dependent variables (i.e., SMD and self-esteem) and the independent variables (i.e., depression, loneliness, and social anxiety). The variables were assessed using a variety of statistical methods including t-tests, chi-square, ANOVA, SEM, and longitudinal statistical techniques. FLWs' and FLEs' qualitative responses were also compared with one another. The theoretical framework of the study was predicated upon two aspects: the *linguistic devaluation* and *social identification* perspectives. Focusing upon the *linguistic devaluation* perspective first, the prediction is that FLW and Welsh/Bilingual-medium participants would use social media to a greater extent compared to FLE and English-medium participants. Numerous reasons were suggested why FLW and Welsh/Bilingual-medium participants might make greater use of social media, e.g., to attain greater language equality within the social media domain, to increase self-esteem, and/or enable FLWs to connect with one another. The *social identification* perspective suggests FLW and Welsh/Bilingual-medium participants' self-esteem levels would be greater than the level shown by FLE and English-medium participants. The supportive rationale is predicated upon FLWs' closer affiliation to the Welsh language and culture, which promote self-esteem.

This is the first study to comprehensively explore SMD and self-esteem aspects within the *linguistic* and *whole-school* comparative contexts. In order to explore the comparative dimensions, four research questions were addressed, and these are detailed below.

## 10.2. Summary of Findings

### **Question 1: Are there differences in SMD, self-esteem, depression, loneliness, and social anxiety at the linguistic- and school-based levels?**

The main headline was that there was no difference between FLWs' and FLEs' SMD scores where both were educated within Welsh/Bilingual-medium schools. However, there was a difference between Welsh/Bilingual- and English-medium schools. The suggested reason for the difference between the school types related to a possible marginalization of Welsh/Bilingual-medium FLWs' and FLEs' first language within the social media and school environments, respectively, which would not be the case for English-medium school participants for whom the majority indicated their first language was English. Combining data for Welsh/Bilingual- and English-medium schools, approximately 10.3% registered a high SMD level. Within the Welsh/Bilingual-medium schools, the similar SMD scores for FLWs and FLEs is conceivably attributed to a levelling out effect whereby the possible reason driving both groups' SMD scores effectively cancelled one another out in terms of statistical significance. The statistical outcomes obtained for SMD were also shown for the dependency upon Snapchat, Instagram, and the social media activity keeping-in-touch with friends, i.e., there was no difference between FLWs and FLEs, but Welsh/Bilingual-medium schools scored more highly than English-medium schools.

Regarding self-esteem scores, data showed no difference between Welsh/Bilingual- and English-medium schools, which was not the case for FLWs versus FLEs where FLWs registered the higher mean score. Various reasons were suggested for the results; for instance, regarding the difference between FLWs and FLEs, the suggestion is that statistical significance is due to a combination of FLWs' and FLEs' increased and decreased self-esteem scores, respectively. FLWs' elevated scores might be explained by SIT and close affiliation to Welsh culture, language and the community, and FLEs' lower scores attributed to feeling linguistically marginalized. The similar scores for Welsh/Bilingual- and English-medium schools might be attributed to a levelling out effect within the Welsh/Bilingual-medium schools whereby FLWs' and FLEs' higher and lower self-esteem scores, respectively, cancel one another out, thereby resulting in a similar overall self-esteem score for both school types.

Focusing upon the independent variables, the potential reason for the difference in depression, loneliness, and social anxiety scores between FLWs and FLEs would appear to parallel the explanation used for their different self-esteem scores, also, i.e., FLEs' higher score on each independent variable might be attributed to social interaction concerns whereas FLWs' lower scores are due to SIT and close affiliation to the Welsh language, culture and community. The similar scores on each variable for Welsh/Bilingual- and English-medium schools would once again suggest a levelling out of Welsh/Bilingual-medium FLWs' and FLEs' scores, which resulted in no difference between both school types.

**Question 2: Is there a difference between FLWs and FLEs when SMD, self-esteem, depression, loneliness, and social anxiety are assessed within a structural equation model?**

SEM analysis assessed two aspects: SMD's predictive relationship with self-esteem, depression, loneliness, and social anxiety; and the scenario whereby depression, loneliness, and social anxiety predicted self-esteem. FLWs' and FLEs' path coefficients were compared with one another. With SMD assuming the predictor variable role, data showed that FLWs recorded the stronger association for all four paths. Various reasons were put forward; for instance, FLWs' social media usage might arise out of a desire to increase self-esteem or as an expression of Welsh language equality. With depression, loneliness, and social anxiety predicting self-esteem, two of the three hypotheses were supported whereby FLEs showed the stronger inter-variable association. The suggestion was that FLWs' affiliation to Welsh culture, language and the community provided protection against depression, loneliness, and social anxiety, which weakened the strength of the inter-variable associations compared to FLEs who were not protected by SIT and affiliation processes.

**Question 3: Is there a longitudinal difference between FLWs and FLEs with respect to SMD and self-esteem?**

Statistically similar proportions of FLWs and FLEs registered 'Low', 'Medium' and 'High' SMD scores at T1, T2 and T3. With FLWs' and FLEs' social media usage being driven by different reasons (for instance, FLWs might use social media to enhance self-

esteem), both groups effectively cancelled one another out in terms of statistical significance.

Although there was no difference at T1, data shows that a greater proportion of FLEs were represented at 'Low' self-esteem scores. A couple of reasons were put forward: 'Low' self-esteem FLEs might be affected by a perception that their first language (English) was discriminated against within Welsh/Bilingual-medium schools; also, they might feel marginalized. Explaining the similar proportion of FLWs and FLEs registering 'High' self-esteem scores, the suggestion is that FLWs and FLEs derived a similar benefit in terms of SIT processes and close affiliation to the Welsh language, culture, and community – provided there were of a similarly high Welsh language proficiency.

Regarding the three-time wave cross-lagged SMD  $\leftrightarrow$  Self-esteem model, there were no path differences between FLWs and FLEs. The suggestion was the SEM analysis was under-powered, which potentially contributed to the lack of significance. SEM analysis would benefit from being re-run using a larger sample size.

#### **Question 4: Is there a difference in perception between FLWs and FLEs regarding the opportunities of using Welsh on social media?**

At a macro level, there were few differences between FLWs and FLEs regarding opportunities of using Welsh on social media; for instance, both groups recognized a difficulty in locating Welsh on social media. Group differences, however, were obtained whereby FLWs identified a greater number of technical constraints inhibiting opportunities of using Welsh on social media.

The thesis tested sixteen quantitative-based hypotheses and one qualitative hypothesis. The results of the hypotheses are now summarized: **H1** (Welsh/Bilingual-medium and FLWs' SMD scores would be higher than English-medium and FLEs' scores) was supported at the whole-school level where Welsh/Bilingual scored more highly, but no difference between FLWs' and FLEs' scores; **H2** (Welsh/Bilingual-medium and FLWs' self-esteem scores would be higher than English-medium and FLEs' scores) was supported at the linguistic level where FLWs scored more highly, but there was no difference between the school types; **H3** (Welsh/Bilingual-medium and FLWs' depression scores would be lower than English-medium and FLEs' scores) was supported



at the linguistic level where FLEs scored more highly, but there was no difference between the school types; **H4** (Welsh/Bilingual-medium and FLWs' loneliness scores would be lower than English-medium and FLEs' scores) was supported at the linguistic level where FLEs scored more highly, but there was no difference between the school types; **H5** (Welsh/Bilingual-medium and FLWs' social anxiety scores would be lower than English-medium and FLEs' scores) was supported at the linguistic level where FLEs' scored more highly, but there was no difference between the school types; **H6** (positive association between SMD → Depression would be stronger for FLWs) was supported as FLWs showed the stronger positive association; **H7** (positive association between SMD → Loneliness would be stronger for FLWs) was supported as FLWs showed the stronger positive association; **H8** (positive association between SMD → Social Anxiety would be stronger for FLWs) was supported as FLWs showed the stronger positive association; **H9** (negative association between SMD → Self-esteem would be stronger for FLWs) was supported as FLWs showed the stronger negative association; **H10** (negative association between Depression → Self-esteem would be stronger for FLEs) was supported as FLEs showed the stronger negative association; **H11** (negative association between Loneliness → Self-esteem would be stronger for FLEs) was not supported as there was a non-significant association between the variables for FLWs and FLEs; **H12** (negative association between Social Anxiety → Self-esteem would be stronger for FLEs) was supported as FLEs showed the stronger negative association; **H13** (FLWs' longitudinal SMD scores would be higher than FLEs' scores) was not supported; **H14** (FLWs' longitudinal self-esteem scores would be higher than FLEs' scores) was not supported; **H15** (negative longitudinal association between SMD → Self-esteem would be stronger for FLWs at T1, T2 and T3) was not supported; **H16** (negative longitudinal association between Self-esteem → SMD would be stronger for FLEs at T1, T2 and T3) was not supported; and **HQ1** (Welsh/Bilingual-medium participants perceive fewer opportunities to use Welsh on social media compared to English-medium participants) was not supported at the macro level, but was supported at the micro level.

### 10.3. Implications and Recommendations

The thesis' primary objective was to understand whether there was a difference between FLWs' and FLEs' level of SMD. Data showed that there was no difference

between the groups within either cross-sectional or longitudinal analyses. The implication is that users' tendency toward SMD does not appear to be directly influenced by first-language spoken or whether an individual was educated in his or her first or second language. Any suggestion that educationalists should hold little concern regarding adolescents' levels of SMD, though, should be dismissed since data showed 10.3% of the overall population (after combining Welsh/Bilingual- and English-medium participants) registered a high level of SMD. The situation evokes greater concern given the fact that SMD has yet to be formally acknowledged as an 'addiction' in its own right. This last point requires resolution since people's perceptions of SMD would likely change if SMD was officially recognized by the DSM, for instance. Granting SMD official 'addiction' status would likely propel initiatives to both treat and prevent SMD, which might be best described as fragmented and disjointed.

Whilst a validated and reliable method for the treatment of SMD has yet to be established (Rachubinska, Cybulska, & Grochans, 2021) with various strategies suggested (e.g., Hou *et al.*, 2019; Kocak, Ilme, & Younis, 2021), one of the main problems pertaining to the variety of current treatment strategies is the demonstrated high level of recidivism (Mahamid & Berte, 2019). With the fifteenth century Dutch philosopher Desiderius Erasmus allegedly saying, "Prevention is better than cure" (Brainy Quote, 2023), the preventative strategies suggested by the Royal College of Psychiatrists (Dubicka & Theodosiou, 2020) would appear to offer the best chance of checking SMD's progress within the adolescent (and older) population. However, acknowledging the extent to which social media has embedded itself within the majority of people's lives, total abstinence from social media is clearly unrealistic (Silomba, Akakandelwa, & Ng'andu, 2021). The latter authors advocated a controlled use of social media as the best way forward. This would appear to suggest a whole-society responsibility with the implication that schools, families, and users need to come together in order to recognize the dangers associated with and potential triggers of SMD. This would imply a need for an education-based strategy whereby informed and controlled usage of social media is the objective.

The situation regarding SMD within the linguistic context might not be so clear cut when other variables are taken into consideration. SEM analyses clearly demonstrated differences between FLWs and FLEs whenever SMD predicted self-esteem, depression,

loneliness, and social anxiety. Data supported the hypothesis, which suggested FLWs' greater use of social media might be triggered by a desire to increase self-esteem or perhaps as a means of connecting with other FLWs. The significance of SEM analysis is emphasized with data showing FLWs' depression, loneliness, and social anxiety scores were lower than FLEs where both groups attended Welsh/Bilingual-medium schools. The implication here is that an individual's first language does matter when FLWs and FLEs are co-educated within Welsh/Bilingual-medium schools with FLEs appearing to be at a disadvantage. With FLWs' lower depression, loneliness, and social anxiety scores potentially being attributed to SIT processes and close affiliation to the Welsh language, culture and community, the suggestion is that FLEs higher scores for each variable might be attributed to FLEs potentially feeling marginalized within Welsh/Bilingual-medium schools on account of their lower Welsh language ability compared to FLWs and higher Welsh language ability FLEs. From an implication perspective, this last point is important as it suggests educationalists and policy makers should adopt strategies to bolster lower Welsh language ability FLEs' levels of self-esteem, depression, loneliness, and social anxiety. This is given added significance acknowledging SMD's negative association with self-esteem and positive association with each of depression, loneliness and social anxiety – with these associations demonstrated empirically within the reviewed literature and thesis analyses. Within the context of language, the implication is that improvements in FLEs' self-esteem, depression, loneliness, and social anxiety levels might be facilitated through Welsh language proficiency initiatives. This last point is developed below.

A significant implication arising from the data is the potential for FLEs to increase their level of self-esteem, and decrease their levels of depression, loneliness and social anxiety. This is suggested by longitudinal self-esteem data showing a similar proportion of FLWs and FLEs registering 'High' self-esteem scores at each of the three time points, i.e., conceivably FLWs and FLEs with higher Welsh language ability levels both derive an approximately equal benefit in terms of SIT processes and closer affiliation to the Welsh language, culture and community. Acknowledging self-esteem's negative association with depression, loneliness and social anxiety (demonstrated by empirical research and thesis data), this is potentially important since the implication of improving one's Welsh language ability equates to an elevation in self-esteem level, with elevated self-esteem associated with decreased depression, loneliness and social anxiety. This would make sense since an FLE enjoying a similarly high Welsh language ability to

FLWs and other FLEs with higher Welsh language abilities would likely feel more included within the Welsh/Bilingual-medium community and thereby derive a stronger sense of belonging, with associated benefits in terms of SIT processes and closer affiliation to the Welsh language, culture and community.

Following on from the last paragraph, the implication with regard to educationalists and policy makers would be elevations in FLEs' Welsh language proficiency would promote a perception of being included by the Welsh/Bilingual-medium peer group with an associated elevation in self-esteem. This is given added impetus when one reflects upon thesis analysis showing a greater number of FLEs reporting a lower Welsh language ability level compared to FLWs. Thus, strategies to enhance lower Welsh language ability FLEs' Welsh language proficiency would clearly prove beneficial in terms of their sense of inclusion and self-esteem. In order to give lower Welsh language ability FLEs the best chance of integrating within Welsh/Bilingual-medium schools, great care would be needed to ensure they are not entered directly into Welsh Medium or Bilingual Category 'A' schools where the Welsh language emphasis is at its greatest compared to Bilingual Category 'B', 'C', 'D', and English with significant Welsh schools – and certainly greater than English-medium schools. Gradual immersion would appear to be a more pragmatic approach to improving lower Welsh language ability FLEs' Welsh language skills. An important and related point is parental choice regarding where their children should be educated. In this regard, informed parental involvement in discussions regarding where their children are educated is paramount.

Another potentially significant implication arising from the data is the possibility of the Welsh language being threatened by social media. Although previous studies have shown that the Welsh language has established a foothold within the digital landscape, FLWs switching to the majority language English may threaten the continued vitality of the Welsh language. This would appear to have added significance given that thesis data showed that whilst 77.4% of FLWs used Welsh face-to-face 'Often' or 'Always', only 60.2% used Welsh on social media 'Often' or 'Always'. With Census data showing a decrease in the number of Welsh-speakers from 2011 to 2022 (ONS, 2022), this would appear to be an important point. Acknowledging the importance of language to minority language speakers' cultural and social identities (e.g., Dabrowska, 2017), the erosion of a language on-line would potentially threaten the language's continued vitality. The

implication is FLWs' preference for the English language on social media (with language choice being determined by an array of factors such as language of the target audience) might raise questions regarding the significance of the Welsh language within FLWs' minds; for instance, it might be perceived as less important compared to the majority language. Underscoring the salience of the last point, FLWs' qualitative responses suggested the Welsh language was inferior to English within the social media context. In this sense, policy makers, educationalists and the Welsh-speaking community should consider the impact of social media upon minority groups' language and culture as people are becoming increasingly dependent on social media as a means of cementing closer bonds with others.

Implicitly following on from the previous paragraph, FLWs' qualitative responses regarding Welsh language opportunities on social media revealed a number of themes suggesting concern for the Welsh language's vitality in the social media-specific context; for instance, FLWs stated that they tended to use English in place of Welsh (quantitative analysis supports this observation, also), there were few Welsh on-line opportunities, etc. FLWs also suggested Welsh was a minor language. Potentially of greater concern was FLWs' belief that social media applications did not adequately host the Welsh language. The implication of FLWs' responses that suggest social media might not be Welsh language 'friendly' would be continued use of the majority language. Reiterating an aspect of the previous paragraph, thesis data would suggest support for this assertion since cross-sectional analysis at T1 showed whilst 77.4% of FLWs ( $n = 305$ ) 'Often' and 'Always' used Welsh face-to-face, only 60.2% of FLWs ( $n = 301$ ) 'Often' and 'Always' used Welsh on social media. Two recommendations would seem appropriate. First, social media providers' increased provision of the Welsh language (and other minority languages) might improve minority language speakers' social media experiences if issues such as auto-correct were enhanced. Second, interpretation of FLWs' and FLEs' qualitative responses suggested Welsh language social media opportunities might be poorly promoted. Unless these two aspects are addressed, the implication arising from interviewees' responses would be FLWs continued use of the majority language. Whilst Welsh identity is more than just language (Hendry, Mayer, & Kloep, 2007), language is clearly a significant component (Dabrowska, 2017; Harries, Byren, & Lymperopoulou, 2014). Any form of dilution of the Welsh language (such as FLWs using English as opposed to Welsh on social media) might constitute a threat to the continued vitality of

the Welsh language. Hence, initiatives to promote Welsh language opportunities on social media and enhance minority language speakers' first language experiences on social media would strengthen the on-line vitality of minority languages such as Welsh.

Since empirical and thesis analyses have demonstrated SMD's negative association with self-esteem, and SMD's positive relationship with each of depression, loneliness, and social anxiety, clearly initiatives designed to treat and prevent SMD would likely prove beneficial regards individuals' levels of self-esteem, depression, loneliness, and social anxiety. Although thesis analysis is overtly linguistic in terms of its comparative aspect, the wider implication of preventing and treating SMD would likely realize tangible benefits to the broader society in terms of people's self-esteem, depression, loneliness, and social anxiety. Conversely, initiatives designed to address low levels of self-esteem and high levels of depression, loneliness, and social anxiety would likely address SMD, too, as studies have shown a bi-directional relationship between SMD and each of self-esteem (Acar *et al.*, 2022; Sam *et al.*, 2022), depression (White-Gosselin & Poulin, 2022; Žmavc *et al.*, 2022), loneliness (Sert & Başkale, 2022; Bakry *et al.*, 2022), and social anxiety (Soraci *et al.*, 2022; Zhang, 2022). In this sense, thesis data showing associations between SMD and each of the variables would likely retain significance in terms of the wider population, also.

Previously we have seen that the distribution of FLWs is not evenly distributed throughout Wales with a greater concentration of FLWs within the northern and western regions (ONS, 2011). Acknowledging that FLWs also reside in areas of Wales that are not hitherto considered Welsh-language 'hot spots' such as Monmouthshire (Welsh Government, 2021e), an interesting future study would be to compare FLWs' SMD responses between FLWs living in Welsh-language 'hot spots' against the FLWs living in areas not renowned for the geographic strength of the Welsh language. A qualitative design would potentially unearth speakers' feelings and strength of feeling regards Welsh language representation on social media and how this might affect their perception of the Welsh language in others' eyes. Whilst the thesis' qualitative analysis looked into this area, it did not attempt to draw a contrast between FLWs living in different parts of Wales. Relatedly, FLWs' social media usage rates – including SMD – might be better understood through examination of their motives for social media use and whether

motivational differences exist between FLWs living within areas where the Welsh-language is strong and areas where Welsh-language representation is weaker.

Within Chapter One a reference to the thesis' socio-economic contribution was made. This aspect now needs to be developed in the light of the thesis' results. Focusing first upon the *social* dimension, to assume the linguistic component of the research retains a purely Welsh-centric influence would be committing a disservice to other nations wherein minority and majority languages co-exist with one another. Wherever minority languages such as Welsh co-exist with dominant majority languages, thesis results offer guidance; for instance, thesis analyses showed that FLEs had worse self-esteem, depression, loneliness, and social anxiety scores than FLWs where both attended Welsh/Bilingual-medium schools. Taking an international perspective, might a similar sequence of results apply to other countries where pupils are educated in their non-first language? This is an area requiring research. Research results might show whether thesis results are unique to this study or suggest wider applicability to other nations. This is a potentially important point because if studies conducted in other countries produced a similar sequence of results, the societal consequence would be a concern for educationalists, policy makers, parents and pupils; for instance, Cárdenas *et al.* (2022) showed that depression is associated with a reduction in academic motivation and an increased rate of distraction. Whilst there was no difference in SMD scores between FLWs and FLEs, differences were obtained whenever SMD adopted the predictor variable role with self-esteem, depression, loneliness, and social anxiety. The implication here is that SMD in isolation does not appear to attract a linguistic exposition; however, when SMD is integrated within SEM analysis, the picture changes and shows that FLEs once again appear to be at a disadvantage (and this assertion is amplified when one considers that two of the three paths from Depression, Loneliness and Social Anxiety → Self-esteem also revealed FLEs to be at a disadvantage). Given that 10.3% of the whole sample registered high SMD and that SEM analysis showed FLEs to be at a disadvantage compared to FLWs, clearly SMD cannot – and should not – be overlooked. With SMD negatively associated with academic achievement (Akalin, 2022) and an array of unwelcome associations such as poorer sleep outcomes (Khan, Sajjad, & Iqbal, 2022), the societal impact of SMD is profound.

The potential *economic* consequences of thesis results are divided into two categories: category one accommodates self-esteem, depression, loneliness, and social anxiety; and

category two covers SMD. Taking category one first, with FLEs demonstrating lower self-esteem and higher depression, loneliness, and social anxiety scores than FLWs, the suggestion is that mental health resource allocation should be targeted to FLEs. As we have consistently seen throughout the thesis, low self-esteem and high depression, loneliness, and social anxiety have been linked to an array of negative outcomes. Taking a step back, if lower Welsh language ability FLEs' lower self-esteem and higher depression, loneliness, and social anxiety scores might be attributed to a feeling of being marginalized, thesis data offers hope of a solution as it was suggested that FLWs and *higher* Welsh language ability FLEs might enjoy an equal benefit in terms of SIT processes and close affiliation to Welsh language, culture, and the community. Clearly the objective would be to increase lower Welsh language ability FLEs' proficiency levels. An increase in Welsh language proficiency would enhance FLEs' confidence and promote a feeling of belonging. This approach would be more cost-effective than engaging the services of professionals who might address FLEs' higher levels of depression, for instance. Taking a pragmatic stance, to assume FLEs' worse scores for each variable are *solely* attributed to their lower Welsh language ability would be misguided since lower scores on each variable may also be due to an array of other non-language factors. This should not discredit the part played by language, though. Whilst non-language factors likely contribute to FLEs' higher depression scores, a feeling of being marginalized due to poorer Welsh language ability cannot – and should not – be downplayed. Indeed, in specific contexts such as Welsh/Bilingual-medium schools, it is possible the impact of language is more influential than some of the other non-language factors. In the medium- to long-term, improving lower Welsh language ability FLEs' proficiency levels would improve FLEs' confidence and sense of belonging. The net consequence might be an overall improvement in FLEs' self-esteem, depression, loneliness, and social anxiety scores, which would potentially reduce the need for professional intervention. A lowered demand for professional intervention would equate to significant financial savings for the Welsh/Bilingual-medium schools and education authorities. In the below paragraph, the potential *economic* impact of SMD is considered.

In these litigious times, it is not inconceivable to envisage lawsuits being leveraged against social media service providers (such as Facebook, Instagram, and Snapchat) for failing in their duty of care to their adolescent consumers experiencing SMD and associated psychological consequences. For instance, an article in the on-line *Independent*



newspaper (Matthews-King, 2019) reported that “Facebook, YouTube and other social media giants should have a legal ‘duty of care’ to ensure they act to protect the mental health and well-being of younger users, MPs have concluded”, which is an ambition reinforced by UK Parliament’s Science and Technology Committee (BBC, 2019). Politicians share the burden of responsibility, also. As policy makers, the politicians have a mandated duty of care to safeguard society from perceived harm, and this overriding principle was forcibly expressed by Sir Winston Churchill (UK Parliament, 2007): “The first duty of a member of Parliament is to do what he thinks in his faithful and disinterested judgement is right and necessary for the honour and safety of Great Britain. His second duty is to his constituents, for whom he is the representative but not the delegate... It is only in the third place that his duty to party organization or programme takes rank. All these three loyalties should be observed, but there is no doubt of the order in which they stand under any healthy manifestation of democracy.” It is with reference to the second of Churchill’s responsibilities that a social media duty of care ethic could be encoded within the legislature, which would compel social media service providers to not only take note but act in a manner that would help reduce the incidences of SMD amidst the adolescent cohort. As previously mentioned, a legislative approach would constitute a movement toward the United States’ legislative approach. Proactive and responsible measures adopted by the social media service providers could ultimately save these growing corporations loss of reputation and financial seepage via potentially damaging compensation claims. The greater social and economic benefit arising from social media service providers’ mandated duty of care would realize a significant benefit to not only FLWs and FLEs, but to the wider society irrespective of language.

Viewed holistically, the *socio-economic* consequences outlined above would suggest they need to be addressed sooner rather than later. Doing nothing is simply not an option. However, if there is a need – even an expectation – for service providers and politicians to act responsibly, it is first necessary that the concept SMD is formally classified as an addiction. As long as SMD retains its current unofficial addiction status, how is it possible for service providers and politicians to take the issue seriously? A failure to act on SMD is a failure to protect children and adolescents. In the immortal words of legendary NASA Flight Director Gene Krantz (Krantz, 2009), “Failure is not an option”.

## 10.4. Strengths and Limitations

### 10.4.1. Strengths

The primary strength of this thesis is that it is the first study to assess the dependent and independent variables and their inter-relations within a comparative linguistic context. Comparative analyses were approached from two contrasting perspectives: the *social identification* perspective proceeded from the position that FLWs' self-esteem levels might be promoted through SIT processes and close affiliation to the Welsh language, culture and community; and the *linguistic devaluation* perspective whereby FLWs greater usage of social media might be driven by five factors such as a desire to increase level of self-esteem or simply to connect with other FLWs. In these respects, the thesis offers a unique contribution to the literature regarding linguistics, social identity, social media, and psychological variable comparative processes.

Cross-sectional analyses employed a large sample size ( $n = 1,709$ ), which was approximately equally split between each of the four groups (i.e., FLWs attending Welsh/Bilingual and English-medium schools, and FLEs attending Welsh/Bilingual and English-medium schools). G\*Power analysis confirmed the sample size of 1,709 participants was satisfactory. The large sample facilitated identification of a more precise mean value for each of the surveyed measurement scales such as SMD and self-esteem. Additionally, the large number of participants facilitated better discrimination of outliers and normality estimations within a given data set. The large sample reduced the possibility of statistical test results being distorted by response bias, which provides greater confidence regarding the statistically-informed conclusions.

The surveyed schools were randomly selected and accommodated broad socio-economic and ethnic representation. Despite a broad similarity between the Welsh/Bilingual- and English-medium schools, differences were detected; for instance, with respect to ethnicity, there was a statistically significant difference in the proportion of English-medium participants belonging to the 'Asian' category compared to Welsh-bilingual medium schools.

Qualitative analyses employed an approximately equal split between Welsh/Bilingual- and English-medium schools; also, there was an approximately equal gender split.

Interviewees were presented with an identically worded open-ended question. The interviews were undertaken within the participants' respective schools without the presence of class teachers, whose presence might have affected participants' responses. The surveyed cohort of twenty-three participants satisfied the minimal requirement of 15-20 participants for higher research degrees.

Welsh/Bilingual-medium school participants were presented with bilingual questionnaires at each of the three timepoints, and participants were free to use either the English or Welsh versions, thereby accommodating participants' first language. Thus, FLWs and FLEs received equal opportunities in that their respective languages were not disparaged through a lack of opportunity.

SEM analysis facilitated testing of each scale's factor structure using EFA to determine the best model fit for the data. To the best of the author's knowledge, this is the first linguistic-based study to explore scales' factors.

#### **10.4.2. Limitations**

Participants were recruited based on the schools and participants prepared to take part in the study. With respect to the longitudinal analyses, a limitation pertained to the decreased response rate after T1; for instance, two of the Welsh/Bilingual-medium schools did not take part beyond T1. Whilst participant attrition did not affect T1 analyses, conceivably the reduced number of participants within the cross-lagged longitudinal SEM analysis resulted in the analysis being under-powered, which might have contributed to the low proportion of significant paths. Future longitudinal designs would benefit from the retention of a greater number of participants across all timepoints.

Although the qualitative interviews took place away from the participants' teachers, the majority of the interviewees were interviewed in pairs. Conceivably, in the presence of a peer, a participant's response might be guarded and moderated on account of the presence of another pupil. In this regard, it is acknowledged that participants' responses might not have been entirely free and honest. However, this assertion is subjective. Future qualitative analyses would be encouraged to interview participants in isolation from their peers. The present study complied with participating schools' restricted administrative

practices and time schedules, which necessitated two participants being interviewed together.

Another potential limitation of the interviews was the relatively small (twenty-three interviewees) number of interviewees. Accordingly, a degree of caution is required regards interpretation of interviewees' responses and generalization to other minority language speakers. In mitigation, the number of interviewees accords with the recommended number of interviewees for higher research degrees, which is estimated at 15-20 people. Future qualitative studies might also benefit from workshops wherein raised issues might be explored in greater depth using a larger number of interviewees. However, workshop-based studies would require careful management since some individuals might dominate proceedings, others might be too shy to express themselves in front of peers, and individuals' responses might not be completely open and honest as they might not wish to express their true thoughts before their peers.

Post-interview coding of interviewees' responses was carried out by the author alone, i.e., no other person was involved in the code generation and checking process. Whilst every effort was made to ensure the coding process was free of author subjectivity, this must be acknowledged as a potential limitation. Future qualitative interviews would be advised to use more than one person to check coding.

Participants completed the questionnaires in-class under the supervision of their respective teachers and alongside their peers. Accordingly, participants' responses might have been moderated to accommodate the presence of their peers and teachers. In this respect, there is a possibility the responses might not truly reflect how a given individual actually felt. Alternative questionnaire completion strategies conceivably accommodate the completion of questionnaires at home or within a neutral setting away from their peers and teachers. Another way of obtaining data would have been via an on-line survey methodology such as Qualtrics; however, on-line survey completion was discounted on the grounds that participating schools might have had an administrative problem in arranging computer-lab time for the participants to complete the questionnaires. Additionally, in the absence of a reward mechanism, the probability is that few participants would have engaged with an on-line questionnaire in their own time.

An added limitation with respect to the cross-sectional analyses is that inter-variable association does not infer causation. For example, the empirically supported negative relationship between self-esteem and SMD could be interpreted as low self-esteem causes elevated SMD, or higher SMD causes lower self-esteem. Although longitudinal designs would better determine causality, present longitudinal analysis only established significance on one of the tested paths for FLWs and FLEs alike (i.e., T2 self-esteem → T3 SMD). However, as previously noted, analysis might have been under-powered due to the relatively low number of participants. Another potential limitation associated with the longitudinal analyses is the nine-month timeframe, which may be too short a time span to manifest changes in SMD, self-esteem, and bi-directional changes in the SMD ↔ Self-esteem cross-lagged path analysis.

The psychological variables were measured using a single scale for each variable. Although the used scales were all valid and reliable and showed acceptable Cronbach  $\alpha$  estimates, use of a second scale for each variable would have provided greater assurance regarding the statistical analyses, i.e., the statistical results obtained from two scales for a given variable might have corroborated one another. However, it is acknowledged that the use of two scales for each variable would have proven impractical since the questionnaires would have become inordinately large and too time-consuming for the participants and schools alike.

### **10.5. Closing Statement**

Although not officially recognized as an ‘addiction’, SMD remains a significant societal challenge with demonstrated adverse consequences for adolescents’ mental health. The thesis is the first attempt to explore SMD within a comparative linguistic context between minority and majority language speakers. Whilst data did not suggest a difference in FLWs’ and FLEs’ direct SMD scores, differences were obtained when depression, loneliness, and social anxiety were factored into SEM analysis within a model where SMD predicted self-esteem. SEM results showed FLWs retained the stronger association whenever SMD predicted self-esteem, depression, loneliness, and social anxiety. Interpretation of the results suggests FLWs benefited in terms of SIT and their closer affiliation to Welsh language, culture and the community. Illustrating the significance of SEM analysis, whenever self-esteem, depression, loneliness and social

anxiety were analyzed in isolation, FLEs appeared to be worse off, which might suggest a perception of feeling marginalized contributed to the difference between the groups' scores. Initiatives to improve lower Welsh language ability Welsh/Bilingual-medium school attending FLEs' Welsh language skills would likely increase feelings of belongingness, which should enhance their level of self-esteem and reduce perceptions of depression, loneliness and social anxiety. Longitudinal analysis suggested no difference between FLWs' and FLEs' SMD scores. Regarding self-esteem longitudinal analysis, a significantly greater number of FLEs were represented at 'Low' self-esteem scores, thereby suggesting a perception of FLEs feeling more marginalized. Initiatives to improve lower Welsh language ability FLEs' Welsh proficiency would be clearly advantageous in terms of raising self-esteem and decreasing depression, loneliness, and social anxiety. With 10.3% of the whole population indicating a 'High' level of SMD, there exists an obvious need for valid and reliable treatment and prevention strategies. With a greater number of FLWs using Welsh face-to-face compared to on social media, the implication is that social media might threaten the vitality of the Welsh language. Interventions to promote and enhance the use of Welsh on social media and to address SMD are recommended.

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## APPENDICES

### Appendix A

#### Ethical Approval

The below note confirms the ethical approval provided ahead of the data gathering process.



## Memo

**To:** Richard Jones [REDACTED]

**From:** [REDACTED] for Departmental Ethics Committee

**Copy:** Prof. Phil Reed

**Date:** 12<sup>th</sup> January 2018

**Re:** **Self-esteem and social media problematic usage: a comparative analysis of Welsh medium and English medium pupils' perceptions**

Your proposed study "Self-esteem and social media problematic usage: a comparative analysis of Welsh medium and English medium pupils' perceptions" has been reviewed and is approved. Provided that the information obtained is kept absolutely confidential and that no personally identifiable information is entered on computer, you may proceed with your studies.

Please ensure that the signed copy of this Ethical Approval, together with any other paperwork associated with your research, is included in your final write up.

In order for your study to be displayed on the **Experiment Management System (Participant Pool)**:

Forward this approval via email to [REDACTED]

AND

Send a request for your study to be made visible, via the link on the EMS website (see Researcher Documentation for details).



## Appendix B

### Part One School Cover Letter

The below is an example of a typical cover letter sent to participating schools ahead of the data gathering process. For purposes of anonymity, the below letter has been redacted.

**Sender:** Richard Jones  
**School:** College of Human and Health Sciences  
**Department:** Psychology Department  
Singleton Park  
Swansea  
SA2 8PP  
[Redacted]  
[Redacted]  
**Date:** 12<sup>th</sup> June 2018

### **RE: Swansea University Psychology Department Research: Social Media Addiction (Part 1 Survey: Summer Term 2018)**

Deputy Head Teacher,  
<Redacted>

Dear ----,

Following previous correspondence regarding the Psychology Department's social media addiction research, please find enclosed within the **4** delivered parcels **575** questionnaires. We have enclosed an additional 10 forms just in case one or two forms are lost or spoiled.

Regarding completion, we would be very grateful if the questionnaire booklets could be distributed amongst the pupils within years 8, 9 and 10.

With your leave, we hope to collect the completed questionnaires the week commencing 16<sup>th</sup> July. Accordingly, we would be obliged if you would inform us when the forms are ready for collection. Once notified, we will attend your school and collect the completed survey forms. I am contactable via the above e-mail address and telephone number.

Should you have any questions or concerns, please do not hesitate to contact me.

May I take this opportunity to express our gratitude for the assistance provided by yourself, your teachers and your pupils. Thank you.

Yours sincerely,

Richard Jones.

Enc.



- **Step 3:** Upon receipt of the e-mail from your administration team, I'll contact Parcel Force UK and make the payment and instruct them to attend your school for collection. No financial cost shall be incurred by your school.

Should you have any questions or concerns, please do not hesitate to contact me.

May I take this opportunity to express our gratitude for the assistance provided by yourself, your teachers and your pupils. Thank you. The estimated completion time for this questionnaire is 2-3 minutes.

Yours sincerely,

Richard Jones.

Enc.



their approximate dimensions and weights. The administration team should send the e-mail to my University address: [REDACTED]

- **Step 3:** Upon receipt of the e-mail from your administration team, I'll contact Parcel Force UK and make the payment and instruct them to attend your school for collection. No financial cost shall be incurred by your school.

Should you have any questions or concerns, please do not hesitate to contact me.

May I take this opportunity to express our gratitude for the assistance provided by yourself, your teachers and your pupils over the three phases of the research. Thank you. The estimated completion time for this questionnaire is 5 minutes.

Yours sincerely,

Richard Jones.

Enc.

## Appendix E

### **Parent / Guardian Information and Permission Request Letter**

Detailed below is a sample letter sent to parents / guardians summarising the purpose and logistics of the research in addition to requesting permission for their child's participation.

### **PARENT / GUARDIAN INFORMATION SHEET**

### **SWANSEA UNIVERSITY PSYCHOLOGY DEPARTMENT**

### **PhD RESEARCH REQUEST**

**Research topic: Self-esteem and social media problematic usage: a comparative analysis of Welsh Medium and English Medium participants' perceptions**

#### **Executive Summary**

The proposed research will focus on the link between self-esteem, social media usage, depression, loneliness and social anxiety amongst 13-16-year-olds attending Welsh and English secondary schools. The research is split into 3 phases to be taken in the Summer Term 2018, Autumn Term 2018, and Winter Term 2019. At each phase participants will be requested to complete a tick-box questionnaire.

The Summer Term 2018 survey takes about 45-50 minutes and asks questions on self-esteem, social media usage, depression, loneliness and social anxiety. The Autumn Term 2018 survey takes about 10-15 minutes and asks questions on self-esteem and social media usage. The Winter Term 2019 survey takes about 5 minutes and asks questions on self-esteem and social media usage.

The results from this survey will assist future research activities that aim to better understand the association between problematic social media usage and self-esteem, depression, loneliness and social anxiety. Greater understanding will facilitate more effective treatment and prevention initiatives. We believe the results of the research will realise a direct benefit to adolescents, the education system and society as a whole.

Dear Parent/Guardian,

I am a PhD Psychology student at Swansea University. With your consent, I would like to invite your child to take part in some research, which will be undertaken within your child's school. Before you decide if your child can take part, it is important for you to understand why the research is being conducted. Please read the following information.

The school's Head Teacher (**[name of Head Teacher]**) has given permission for me to conduct the study. This research has also been approved by the Department of Psychology's Ethics Committee. [Approval date: 12<sup>th</sup> January 2018.]

The researcher has received clearance from the Disclosure and Barring Service [DBS]. [Date of issue: 19<sup>th</sup> December 2017; certificate number: XXXXXXXXXXXXX. The certificate is an Enhanced Criminal Record Certificate within the meaning of sections 113B and 116 of the Police Act 1997. Contact: [customerservices@dbs.gsi.gov.uk](mailto:customerservices@dbs.gsi.gov.uk).]

### **What is the study about?**

We are conducting research on the link between self-esteem, depression, loneliness, social anxiety and the use of social media amongst 13–16-year-olds attending Welsh and English Medium secondary schools.

### **What does the study involve?**

If you are happy for your child to take part in the survey, we would be grateful if you would inform your child of your decision.

The survey has three parts:

#### Part 1: [Summer Term 2018]

- The Part 1 survey booklet will be handed to your child by the form teacher during a form period. Your child should read the information sheet. If your child is happy to take part, he/she completes a consent form.
- Part 1 asks questions on demographics, self-esteem, social media usage, depression, loneliness, and social anxiety.
- All responses are a quick tick-in-the-box. The survey should take no longer than 45-50 minutes.
- The completed survey booklets will be collected by the form teacher.

#### Part 2: [Autumn Term 2018]

- The Part 2 survey booklet will be handed to your child by the form teacher. The survey is completed during the form period.
- Part 2 asks questions on self-esteem and social media usage.
- All responses are a quick tick-in-the-box. The survey should take no longer than 10-15 minutes.

### Part 3: [Winter Term 2019]

1. The Part 3 survey booklet will be handed to your child by the form teacher. The survey is completed during the form period.
2. Part 3 asks questions on self-esteem and social media usage.
3. All responses are a quick tick-in-the-box. The survey should take no longer than 5 minutes.

#### **One-to-one discussions**

To obtain a greater level of understanding, we intend running a small number of one-to-one discussions within selected schools. If your child's school is one of the schools selected, we would be grateful if you would indicate to your child whether or not you're happy for him/her to take part in one of the discussions. In addition to your consent, your child must also indicate his/her consent when completing Part 1 of the survey. The discussions will last no longer than 5-10 minutes. Your child's identity will not be disclosed at any stage during or after the study. The discussions will be recorded to ensure we capture all that is spoken. The recordings are for no other reason.

It is perfectly acceptable for your child to complete the survey but decline participation in the discussions.

#### **Is participation voluntary?**

Yes - participation is voluntary.

#### **What are the benefits?**

The results from this survey will assist future research activities that aim to better understand the association between problematic social media usage and self-esteem, depression, loneliness and social anxiety. Greater understanding will facilitate more effective treatment and prevention initiatives.

#### **Are there any risks?**

We foresee no risks to your child. However, if the study topic raises any issues, please contact the study Supervisor Professor Reed [REDACTED]. Some of the questions deal with issues of a sensitive nature. Please remember that your child can withdraw from the study at any time, without penalty and without having to give any reason.



**What will happen to the data obtained?**

All the data obtained will remain confidential to the research. The identity of your child and his/her school will not be entered onto any computer retrieval system or disclosed at any stage during or after the research. Total anonymity of your child and his/her school is absolutely guaranteed.

**Who should I contact if I want to know more?**

If you have any further questions, please feel free to contact:

Richard Jones  
Department of Psychology  
Swansea University



Professor Phil Reed  
Department of Psychology  
Swansea University



Alternatively, you may wish to contact your Head Teacher.

Kind Regards,

Richard Jones.

## Appendix F

### Part One Bilingual Questionnaire

The below is the bilingual questionnaire completed by Welsh/Bilingual-medium school participants.

#### **TAFLEN WYBODAETH A FFURFLEN GYDSYNIO I GYMRYD RHAN ADRAN SEICOLEG PRIFYSGOL ABERTAW CAIS YMCHWIL PhD**

#### **[Rhan 1: Tymor Haf 2018]**

Fe'ch gwahoddir i gymryd rhan mewn gwaith ymchwil. Cyn i chi benderfynu cymryd rhan ai peidio, darllenwch yr wybodaeth isod. Mae'r ymchwil hwn wedi cael ei gymeradwyo gan eich Pennaeth a chan Bwyllgor Moeseg Ymchwil Adran Seicoleg Prifysgol Abertawe.

#### **Beth yw diben yr ymchwil?**

Rydym yn cynnal ymchwil i'r cysylltiad rhwng hunanbarch, iselder ysbryd, unigrwydd, pryder cymdeithasol a'r defnydd o gyfryngau cymdeithasol ymhlith pobl ifanc rhwng 13 ac 16 oed sy'n mynychu ysgolion uwchradd Cymraeg a Saesneg.

#### **Pwy sy'n gwneud yr ymchwil?**

Caiff yr ymchwil ei wneud gan Richard Jones yn Adran Seicoleg Prifysgol Abertawe, gan oruchwyliaeth yr Athro Phil Reed.

#### **Beth mae'r arolwg yn ei gynnwys?**

Mae tair rhan i'r arolwg: mae Rhan 1 (i'w cwblhau heddiw) yn para 45-50 munud; mae Rhan 2 (Tymor yr Hydref 2018) yn para 10-15 munud; ac mae Rhan 3 (Tymor y Gaeaf 2019) yn para tua 5 munud. Mae'r holl gwestiynau yn gofyn i chi roi tic cyflym mewn blwch. Caiff yr arolygon hyn eu cwblhau yn yr ystafell ddosbarth. Mae'n rhaid dychwelyd arolygon wedi'u cwblhau i'ch athro. Os ydych yn hapus i gymryd rhan, llenwch y '**Ffurflen Gydsynio i Gymryd rhan**' isod. Mae cymryd rhan yn wirfoddol.

#### **Beth fydd yn digwydd i'r wybodaeth byddaf yn ei darparu?**

Ni fyddwn yn datgelu pwy ydych chi ar unrhyw adeg yn ystod yr ymchwil neu ar ei ôl nac yn cofnodi'ch enw ar unrhyw system gyfrifiadurol. Mae'n bosib y caiff canlyniadau'r ymchwil eu cyflwyno i bartïon â diddordeb a'u cyhoeddi mewn cyfnodolion gwyddonol a chyfryngau cysylltiedig.

#### **Trafodaethau un i un**

Bydd trafodaethau un i un yn cael eu cynnal o fewn ysgolion dethol hefyd. Bydd pob trafodaeth yn para 5-10 munud. Os hoffech gymryd rhan, nodwch hyn yn y '**Ffurflen Gydsynio i Gymryd Rhan**' isod. Caiff y trafodaethau eu recordio er mwyn sicrhau cywirdeb yn unig. Os byddwch yn cymryd rhan yn un o'r trafodaethau, ni fydd neb yn gwybod pwy ydych chi.

#### **Oes modd cymryd rhan yn yr arolwg ond ddim yn y trafodaethau un i un?**

Oes.

#### **Beth os bydd cwestiynau eraill gennyf?**

Os oes rhagor o gwestiynau gennyh ynglŷn â'r ymchwil hwn, mae croeso i chi gysylltu â ni:

Richard Jones  
Yr Adran Seicoleg  
Prifysgol Abertawe

Yr Athro Phil Reed  
Yr Adran Seicoleg  
Prifysgol Abertawe

## Ffurflen Gydsynio i Gymryd Rhan

Cwblhewch y **DDWY** adran ganlynol:

### Arolwg papur tair rhan

Ticiwch **UN** blwch yn unig:

Rwyf wedi darllen a deall yr wybodaeth ac rwy'n <b>CYDSYNIO</b> i gymryd rhan	
Rwyf wedi darllen a deall yr wybodaeth ac <b>NID WYF YN</b> <b>CYDSYNIO</b> i gymryd rhan	

### Trafodaethau un-i-un

Ticiwch **UN** blwch yn unig:

Rwyf wedi darllen a deall yr wybodaeth ac rwy'n <b>CYDSYNIO</b> i gymryd rhan - os caf fy nethol	
Rwyf wedi darllen a deall yr wybodaeth ac <b>NID WYF YN</b> <b>CYDSYNIO</b> i gymryd rhan	

Cwblhewch y canlynol:

ENW LLAWN: .....

DYDDIAD HEDDIW: .....

### Cyfarwyddiadau

Diolch am gymryd rhan. Rydym yn gwerthfawrogi'ch cymorth yn fawr. Cofiwch, does dim atebion anghywir yn yr arolwg hwn.

Oni nodir fel arall, mae'r holl gwestiynau'n gofyn i chi roi tic mewn blwch yn unig.

Atebwch **bob** cwestiwn.

Cyn dechrau'r arolwg, byddem yn ddiolchgar pe gallech ateb ychydig gwestiynau syml amdanoch chi yn yr adran **Demograffeg** isod.

### Demograffeg

**C.1** Ysgrifennwch enw'ch ysgol yn y blwch isod.

**C.2** Nodwch pa ryw ydych chi. [Ticiwch **UN** blwch yn unig]

Gwryw	
Benyw	

**C.3** Ysgrifennwch eich oedran a grŵp blwyddyn yn y blychau canlynol os gwelwch yn dda.

Oedran:  Grŵp blwyddyn:

**C.4** Nodwch eich ethnigrwydd. [Ticiwch UN blwch yn unig]

Gwyn	
Du	
Asiaidd	
Cymysg	
Arall	
Dwi ddim am ddweud	

**C.5** Ysgrifennwch eich côd post cartref yn y blwch isod.

**C.6** Ysgrifennwch eich iaith gyntaf yn y blwch isod.

**C.7** Gan feddwl am **UN** iaith ar y tro, darllenwch y datganiadau a thiciwch y datganiad sy'n disgrifio'ch gallu yn yr iaith honno orau.

Ticiwch **UN** blwch yn unig ar gyfer **POB** iaith.

	Saesneg	Cymraeg
	[Ticiwch <b>UN</b> blwch yn unig]	[Ticiwch <b>UN</b> blwch yn unig]
Dwi'n methu siarad, darllen nac ysgrifennu unrhyw eiriau.		
Rwy'n gallu siarad, darllen ac ysgrifennu ambell air yma ac acw.		
Rwy'n gallu siarad, darllen ac ysgrifennu nifer bach o eiriau.		
Rwy'n gallu siarad, darllen ac ysgrifennu brawddegau syml iawn.		
Rwy'n gyfforddus yn siarad, yn darllen ac yn ysgrifennu brawddegau mwy cymhleth.		
Rwy'n gallu siarad, darllen ac ysgrifennu brawddegau cymhleth. Mae cyfathrebu'n rhwydd i mi.		

**C.8** Gan feddwl am **UN** iaith ar y tro, nodwch pa mor aml rydych chi'n defnyddio'r iaith honno i **siarad wyneb yn wyneb â'ch ffrindiau**.

Ticiwch **UN** blwch yn unig ar gyfer **POB** iaith.

	Byth	Yn aml iawn	Weithiau	Yn aml	Drwy'r amser
Saesneg					
Cymraeg					

**C.9** Gan feddwl am **UN** iaith ar y tro, nodwch pa mor aml rydych chi'n defnyddio'r iaith honno i **gyfathrebu â ffrindiau yn y cyfryngau cymdeithasol fel Facebook Twitter, X-Box ayb.**

Ticiwch **UN** blwch yn unig ar gyfer **POB** iaith.

	Byth	Yn anaml iawn	Weithiau	Yn aml	Drwy'r amser
Saesneg					
Cymraeg					

### **Adran 1**

Isod mae rhestr o 10 datganiad sy'n ymwneud â'ch teimladau amdanoch chi eich hun. Ar gyfer pob datganiad, dywedwch i ba raddau rydych chi'n cytuno neu'n anghytuno.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Cytuno' n gryf	Cytuno	Anghytuno	Anghytuno ' n gryf
1. Ar y cyfan, rwy'n fodlon arnaf fi fy hun.				
2. Weithiau, dwi'n meddwl fy mod i'n dda i ddim.				
3. Rwy'n teimlo bod gen i nifer o rinweddau da.				
4. Rwy'n gallu gwneud pethau cystal â'r rhan fwyaf o bobl eraill.				
5. Rwy'n teimlo nad oes gen i lawer o achos i fod yn falch.				
6. Rwy'n teimlo'n dda i ddim ar adegau, yn bendant.				
7. Rwy'n teimlo mod i'n berson gwerth chweil, o leiaf cystal â phobl eraill.				
8. Hoffwn i gael mwy o hunan-barch.				
9. Ar y cyfan, rwy'n tueddu i deimlo fy mod i'n fethiant.				
10. Mae gen i agwedd bositif tuag ataf fi fy hun.				

## Adran 2

At ddiben yr adran hon, diffinnir y cyfryngau cymdeithasol fel "Facebook, Twitter, Instagram ac ati." Darllenwch bob un o'r 6 datganiad a nodwch yr ymateb sy'n eich disgrifio chi orau.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Yn anaml iawn	Yn anaml	Weithiau	Yn aml	Yn aml iawn
1. Rwy'n treulio llawer o amser yn meddwl am y <b>cyfryngau cymdeithasol</b> neu'n cynllunio sut i'w defnyddio.					
2. Rwy'n teimlo ysgogiad i ddefnyddio <b>cyfryngau cymdeithasol</b> mwy a mwy.					
3. Rwy'n defnyddio <b>cyfryngau cymdeithasol</b> i anghofio am broblemau personol.					
4. Rwyf wedi ceisio lleihau'r amser rwy'n ei dreulio ar y cyfryngau cymdeithasol ond heb lwyddiant.					
5. Rwy'n teimlo'n aflonydd neu'n annifyr os nad wyf yn gallu defnyddio <b>cyfryngau cymdeithasol</b> .					
6. Rwy'n defnyddio <b>cyfryngau cymdeithasol</b> cymaint fel bod hynny wedi effeithio'n negyddol ar fy ngwaith ysgol.					



### Adran 3

Rhestrir isod nifer o deimladau y gallech chi fod wedi eu profi neu ffyrdd o ymddwyn. Ar gyfer pob datganiad, nodwch i ba raddau rydych chi wedi teimlo fel hyn yn ystod yr **wythnos ddiwethaf**.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Dim o gwbl	Ychydig	Rhywfaint	Llawer
1. Roeddwn i'n poeni am bethau nad ydynt yn fy mhoeni fel arfer.				
2. Doeddwn i ddim yn teimlo fel bwyta. Doedd dim llawer o chwant bwyd arnaf.				
3. Doeddwn i ddim yn gallu teimlo'n hapus, hyd yn oed pan geisiodd fy nheulu neu fy ffrindiau fy helpu i deimlo'n well.				
4. Roeddwn i'n teimlo fy mod i gystal â'r disgyblion eraill.				
5. Roeddwn i'n teimlo mod i'n methu talu sylw i'r hyn roeddwn i'n ei wneud.				
6. Roeddwn i'n teimlo'n isel ac yn anhapus.				
7. Roeddwn i'n teimlo fy mod i wedi blino gormod i wneud pethau.				
8. Roeddwn i'n teimlo fel tasai rhywbeth da ar fin digwydd.				
9. Roeddwn i'n teimlo fel bod pethau wnes i o'r blaen heb droi mas yn iawn.				
10. Roeddwn i'n teimlo'n ofnus.				
11. Doeddwn i ddim yn cysgu cystal ag arfer.				
12. Roeddwn i'n hapus.				
13. Roeddwn i'n dawelach nag arfer.				
14. Roeddwn i'n teimlo'n unig, fel nad oedd gen i unrhyw ffrindiau.				

15. Roeddwn i'n teimlo nad oedd y disgyblion rwy'n eu hadnabod yn gyfeillgar neu doeddwn nhw ddim eisiau bod gyda fi.				
16. Ces i amser da.				
17. Roeddwn i'n teimlo fel crïo.				
18. Roeddwn i'n teimlo'n drist.				
19. Roeddwn i'n teimlo nad oedd pobl yn fy hoffi.				
20. Roedd yn anodd dechrau gwneud pethau.				

### Adran 4

Mae rhestr o 24 datganiad isod. Ar gyfer pob datganiad, nodwch pa mor wir yw i chi.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Mae hynny bob amser yn wir amdanaf fi	Mae hynny'n wir amdanaf fi y rhan fwyaf o'r amser	Mae hynny'n wir amdanaf fi weithiau	Dyw hynny bron byth yn wir amdanaf fi	Dyw hynny ddim yn wir amdanaf fi o gwbl
1. Mae'n hawdd i mi wneud ffrindiau yn yr ysgol.					
2. Rwy'n hoffi darllen.					
3. Does gen i neb i siarad â nhw yn fy nosbarth.					
4. Rwy'n dda am weithio gyda'r disgyblion eraill yn fy nosbarth.					
5. Rwy'n gwyllo llawer o deledu.					
6. Mae'n anodd i mi wneud ffrindiau yn yr ysgol.					
7. Rwy'n hoffi'r ysgol.					
8. Mae gen i lawer o ffrindiau yn fy nosbarth.					
9. Rwy'n teimlo'n unig yn yr ysgol.					
10. Dwi'n gallu dod o hyd i ffrind yn fy nosbarth pan fydd angen un arnaf.					

<b>11.</b> Rwy'n cymryd rhan mewn chwaraeon yn aml.					
<b>12.</b> Mae'n anodd cael y disgyblion yn yr ysgol i'm hoffi.					
<b>13.</b> Rwy'n hoffi gwyddoniaeth.					
<b>14.</b> Does gen i neb i chwarae gyda nhw yn yr ysgol.					
<b>15.</b> Rwy'n hoffi cerddoriaeth.					
<b>16.</b> Rwy'n cyd-dynnu'n dda gyda'r disgyblion eraill yn fy nosbarth.					
<b>17.</b> Rwy'n teimlo fy mod i'n cael fy ngadael mas o bethau yn yr ysgol.					
<b>18.</b> Does dim disgyblion eraill gallaf droi atyn nhw pan fydd angen help arnaf yn yr ysgol.					
<b>19.</b> Rwy'n hoffi paentio a thynnu lluniau.					
<b>20.</b> Dwi ddim yn cyd-dynnu'n dda gyda'r disgyblion eraill yn yr ysgol.					
<b>21.</b> Rwy'n unig yn yr ysgol.					
<b>22.</b> Rwy'n boblogaidd gyda'r disgyblion yn yr ysgol.					
<b>23.</b> Rwy'n hoff iawn o chwarae gemau bwrdd.					
<b>24.</b> Does gen i ddim ffrindiau yn y dosbarth.					

## Adran 5

Darllenwch bob sefyllfa yn ofalus. Mae'r cwestiwn hwn yn gofyn faint o **OFN** fyddai arnoch chi yn y sefyllfa honno.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Dim ofn	Ychydig	Cymedrol	Gwael
1. Siarad â'r disgyblion eraill yn y dosbarth.				
2. Cymryd rhan mewn grwpiau gwaith yn yr ystafell ddosbarth.				
3. Bwyta o flaen eraill, e.e. yn ffreutur yr ysgol.				
4. Gofyn i oedolyn nad ydych yn ei adnabod yn dda am help.				
5. Rhoi cyflwyniad yn y dosbarth.				
6. Mynd i barti neu weithgareddau ysgol.				
7. Ysgrifennu ar fwrdd y dosbarth o flaen eraill.				
8. Siarad â disgyblion nad ydych yn eu hadnabod yn dda.				
9. Dechrau sgwrs gyda phobl nad ydych yn eu hadnabod yn dda.				
10. Defnyddio toiledau'r ysgol neu rai cyhoeddus.				
11. Mynd i mewn i ystafell ddosbarth pan fydd y lleill yn eistedd yn barod.				
12. Bod yn destun sylw pawb, e.e. eich parti pen-blwydd.				
13. Gofyn cwestiynau yn y dosbarth.				
14. Ateb cwestiynau yn y dosbarth.				
15. Darllen yn uchel yn y dosbarth.				
16. Sefyll profion.				
17. Dweud 'na' pan fydd rhywun yn gofyn i chi wneud rhywbeth nad ydych chi eisiau ei wneud.				

18. Dweud wrth eraill eich bod yn anghytuno â nhw neu eich bod yn grac gyda nhw.				
19. Edrych yn llygaid pobl nad ydych yn eu hadnabod yn dda.				
20. Dychwelyd rhywbeth i siop.				
21. Cymryd rhan mewn chwaraeon neu berfformio o flaen pobl eraill.				
22. Ymaelodi â chlwb.				
23. Cwrdd â phobl newydd neu ddieithriad.				
24. Gofyn am ganiatâd athro i adael yr ystafell ddosbarth.				

### **Adran 5.1**

Darllenwch bob sefyllfa yn ofalus. Mae'r cwestiwn hwn yn gofyn pa mor aml byddech yn **OSGOI** y sefyllfa honno.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Byth	Weithiau	Yn aml	Fel arfer
1. Siarad â disgyblion eraill yn y dosbarth.				
2. Cymryd rhan mewn grwpiau gwaith yn yr ystafell ddosbarth.				
3. Bwyta o flaen eraill, e.e. yn ffreutur yr ysgol.				
4. Gofyn i oedolyn nad ydych yn ei adnabod yn dda am help.				
5. Rhoi cyflwyniad yn y dosbarth.				
6. Mynd i barti neu weithgareddau ysgol.				
7. Ysgrifennu ar fwrdd y dosbarth o flaen eraill.				
8. Siarad â disgyblion nad ydych yn eu hadnabod yn dda.				

<b>9.</b> Dechrau sgwrs gyda phobl nad ydych yn eu hadnabod yn dda.				
<b>10.</b> Defnyddio toiledau'r ysgol neu doiledau cyhoeddus.				
<b>11.</b> Mynd i mewn i ystafell ddosbarth pan fydd y lleill yn eistedd yn barod.				
<b>12.</b> Bod yn destun sylw pawb, e.e. eich parti pen-blwydd.				
<b>13.</b> Gofyn cwestiynau yn y dosbarth.				
<b>14.</b> Ateb cwestiynau yn y dosbarth.				
<b>15.</b> Darllen yn uchel yn y dosbarth.				
<b>16.</b> Sefyll profion.				
<b>17.</b> Dweud 'na' pan fydd rhywun yn gofyn i chi wneud rhywbeth nad ydych chi eisiau ei wneud.				
<b>18.</b> Dweud wrth eraill eich bod yn anghytuno â nhw neu eich bod yn grac gyda nhw.				
<b>19.</b> Edrych yn llygaid pobl nad ydych yn eu hadnabod yn dda.				
<b>20.</b> Dychwelyd rhywbeth i siop.				
<b>21.</b> Cymryd rhan mewn chwaraeon neu berfformio o flaen pobl eraill.				
<b>22.</b> Ymaelodi â chlwb.				
<b>23.</b> Cwrdd â phobl newydd neu ddieithriad.				
<b>24.</b> Gofyn am ganiatâd athro i adael yr ystafell ddosbarth.				

## Adran 6

Ar gyfer pob un o'r **darparwyr** cyfryngau cymdeithasol yn y rhestr isod, nodiwch tua faint o amser byddwch yn ei dreulio ar y safle yn ystod diwrnod arferol.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Dwi ddim yn defnyddio'r darparwr hwn	Llai nag awr y dydd	1-2 awr y dydd	2-3 awr y dydd	3-4 awr y dydd	Mwy na 4 awr y dydd
1. Facebook						
2. Twitter						
3. Vimeo						
4. Facebook Messenger						
5. Instagram						
6. Tumblr						
7. YouTube						
8. X-Box (h.y. yn siarad â chwaraewyr eraill wrth chwarae)						
9. WhatsApp						
10. Flickr						
11. Pinterest						
12. Skype						
13. Google+						
14. Snapchat						
Eraill (rhowch fanylion)						
1.....						
2.....						
3.....						

## Adran 6.1

Ar gyfer pob un o'r **gweithgareddau** cyfryngau cymdeithasol yn y rhestr isod, nodwch tua faint o amser byddwch yn ei dreulio yn cymryd rhan yn y gweithgaredd hwnnw yn ystod diwrnod arferol.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Dwi ddim yn cymryd rhan yn y gweithgaredd hwn	Llai nag awr y dydd	1-2 awr y dydd	2-3 awr y dydd	3-4 awr y dydd	Mwy na 4 awr y dydd
1. Gwneud ffrindiau newydd						
2. Cadw mewn cysylltiad â'r ffrindiau sydd gen i eisoes						
3. Diweddarau fy mhroffil						
4. Darllen proffiliau eraill						
5. Chwarae gemau cyfrifiadurol ar blatfform cyfryngau cymdeithasol.						
6. Gwylïo ffilmiau						
7. Gwrando ar gerddoriaeth						
8. Postio fideos						
9. Postio ffotograffau						
10. Sgwrsio mewn ystafelloedd sgwrsio						
Erail (rhowch fanylion)						
1.....						
2.....						
3.....						



**PARTICIPANT INFORMATION SHEET & CONSENT FORM  
SWANSEA UNIVERSITY PSYCHOLOGY DEPARTMENT  
PhD RESEARCH REQUEST**

**[Part 1: Summer Term 2018]**

You are being invited to take part in some research. Before you decide whether or not to participate, please read the information below. This research has been approved by your Head Teacher and Swansea University's Department of Psychology Research Ethics Committee.

**What is the purpose of the research?**

We are conducting research on the link between self-esteem, depression, loneliness, social anxiety and the use of social media amongst 13–16-year-olds attending Welsh and English secondary schools.

**Who is carrying out the research?**

The research is being conducted by Richard Jones at Swansea University's Psychology Department under the supervision of Professor Phil Reed.

**What does the survey involve?**

The survey has three parts: Part 1 (to be taken today) lasts 45-50 minutes; Part 2 (Autumn Term 2018) lasts 10-15 minutes; and Part 3 (Winter Term 2019) lasts about 5 minutes. All responses are a quick tick-in-the-box. The surveys will be taken in-class. Completed surveys must be returned to your teacher. If you are happy to take part, please complete the '**Participant's Consent Form**', below. Participation is voluntary.

**What will happen to the information I provide?**

Your identity will not be disclosed at any stage during or after the research or entered onto any computer system. Results of the research may be presented to interested parties and published in scientific journals and related media.

**One-to-one discussions**

One-to-one discussions within selected schools will also take place. Each discussion will last 5-10 minutes. If you would like to take part, please indicate this in the '**Participant's Consent Form**', below. The discussions will be recorded for accuracy only. If you take part in one of the discussions, your identity will never be known.

**Can I take part in the survey but not the one-to-one discussions?**

Yes.

**What if I have other questions?**

If you have further questions about this research, please do not hesitate to contact us:

Richard Jones  
Department of Psychology  
Swansea University  
[Redacted]

Professor Phil Reed  
Department of Psychology  
Swansea University  
[Redacted]

## Participant's Consent Form

Please complete the following **TWO** sections:

### Three-part paper-based survey

Please tick **ONE** box only:

I have read and understood the information and I <b>CONSENT</b> to my participation	
I have read and understood the information and I do <b>NOT CONSENT</b> to my participation	

### One-to-one discussions

Please tick **ONE** box only:

I have read and understood the information and I <b>CONSENT</b> to my participation – if selected	
I have read and understood the information and I do <b>NOT CONSENT</b> to my participation	

**Please complete the following:**

**FULL NAME:** .....

**TODAY'S DATE:** .....

## **Instructions**

Thank you for taking part. Your help is very much appreciated. Please note that there are no wrong answers to this survey.

Unless stated, all questions require a simple tick in a box.

Please answer **all** the questions.

Before starting the survey, we would be grateful if you would answer a few easy questions about you in the **Demographics** section, below.

## **Demographics**

**Q.1** Please write the name of your school in the box below.

**Q.2** Please indicate your sex. [Tick **ONE** box only]

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

**Q.3** Please write your age and year group in the boxes below.

Age:  Year group:

**Q.4** Please indicate your ethnicity. [Tick **ONE** box only]

White	<input type="checkbox"/>
Black	<input type="checkbox"/>
Asian	<input type="checkbox"/>
Mixed	<input type="checkbox"/>
Other	<input type="checkbox"/>
Don't wish to say	<input type="checkbox"/>

**Q.5** Please write your home postcode in the box below.

**Q.6** Please write your first language in the box below.

--

**Q.7** Taking **ONE** language at a time, please read through the statements and tick the statement that best reflects your ability in that language.

Please tick **ONE** box only for **EACH** language.

	English [Tick <b>ONE</b> box only]	Welsh [Tick <b>ONE</b> box only]
I cannot speak, read or write any words.		
I can speak, read and write the odd word here and there.		
I can speak, read and write a small number of words.		
I can speak, read and write very basic sentences.		
I am comfortable speaking, reading and writing more complex sentences.		
I can speak, read and write complicated sentences. Communication for me is easy.		

**Q.8** Taking **ONE** language at a time, please indicate how often you use that language when **speaking with friends face-to-face**.

Please tick **ONE** box only for **EACH** language.

	Never	Rarely	Sometimes	Often	Always
English					
Welsh					

**Q.9** Taking **ONE** language at a time, please indicate how often you use that language when communicating with friends on social media sites such as Facebook, Twitter, X-Box, etc.

Please tick **ONE** box only for **EACH** language.

	Never	Rarely	Sometimes	Often	Always
English					
Welsh					

### **Section 1**

Detailed below is a list of 10 statements relating to how you feel about yourself. For each statement, please indicate the extent to which you agree or disagree.

Please tick **ONE** box for **EACH** statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. On the whole, I am satisfied with myself.				
2. At times, I think I am no good at all.				
3. I feel that I have a number of good qualities.				
4. I am able to do things as well as most other people.				
5. I feel I do not have much to be proud of.				
6. I certainly feel useless at times.				
7. I feel that I'm a person of worth, at least on an equal plane with others.				
8. I wish I could have more respect for myself.				
9. All in all, I am inclined to feel that I am a failure.				
10. I take a positive attitude toward myself.				

## Section 2

For the purpose of this section, social media is defined as “Facebook, Twitter, Instagram and the like.” Please read each of the 6 statements and indicate the response that is most like you.

Please tick **ONE** box for **EACH** statement.

	Very Rarely	Rarely	Sometimes	Often	Very Often
1. I spend a lot of time thinking about <b>social media</b> or planning how to use it.					
2. I feel an urge to use <b>social media</b> more and more.					
3. I use <b>social media</b> to forget about personal problems.					
4. I have tried to cut down on the use of <b>social media</b> without success.					
5. I become restless or troubled if I'm not allowed to use <b>social media</b> .					
6. I use <b>social media</b> so much that it has had a negative impact on my schoolwork.					

### Section 3

Below is a list of the ways you might have felt or acted. For each statement, please indicate how much you have felt this way during the **past week**.

Please tick **ONE** box for **EACH** statement.

	Not at all	A little	Some	A lot
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating. I wasn't very hungry.				
3. I wasn't able to feel happy, even when my family or friends tried to help me feel better.				
4. I felt like I was just as good as other pupils.				
5. I felt like I couldn't pay attention to what I was doing.				
6. I felt down and unhappy.				
7. I felt like I was too tired to do things.				
8. I felt like something good was going to happen.				
9. I felt like things I did before didn't work out right.				
10. I felt scared.				
11. I didn't sleep as well as I usually sleep.				
12. I was happy.				
13. I was more quiet than usual.				
14. I felt lonely, like I didn't have any friends.				
15. I felt like the pupils I know were not friendly or they didn't want to be with me.				
16. I had a good time.				
17. I felt like crying.				
18. I felt sad.				
19. I felt people didn't like me.				
20. It was hard to get started doing things.				

## Section 4

Below is a list of 24 statements. For each statement, please indicate how true it is for you.

Please tick **ONE** box for **EACH** statement.

	That is always true about me	That is true about me most of the time	That is sometimes true about me	That is hardly ever true about me	That is not true about me at all
1. It's easy for me to make friends at school.					
2. I like to read.					
3. I have nobody to talk to in my class.					
4. I'm good at working with other pupils in my class.					
5. I watch TV a lot.					
6. It's hard for me to make friends at school.					
7. I like school.					
8. I have lots of friends in my class.					
9. I feel alone at school.					
10. I can find a friend in my class when I need one.					
11. I play sports a lot.					
12. It's hard to get pupils in school to like me.					
13. I like science.					
14. I don't have anyone to play with at school.					
15. I like music.					
16. I get along with my classmates.					
17. I feel left out of things at school.					
18. There are no other pupils I can go to when I need help at school.					
19. I like to paint and draw.					
20. I don't get along with other pupils at school.					
21. I'm lonely at school.					
22. I am well liked by the pupils in school.					
23. I like playing board games a lot.					
24. I don't have any friends in class.					



## Section 5

Read each situation carefully. This question asks how **FEARFUL** you would feel in that situation.

Please tick **ONE** box for **EACH** statement.

	No fear	Mild	Moderate	Severe
1. Talking to classmates.				
2. Participating in work groups in the classroom.				
3. Eating in front of others, e.g., school canteen.				
4. Asking an adult you don't know well for help.				
5. Giving a presentation in class.				
6. Going to parties or school activities.				
7. Writing on the class board in front of others.				
8. Talking with pupils you don't know well.				
9. Starting a chat with people you don't know well.				
10. Using school or public bathrooms.				
11. Going into a classroom when others are already seated.				
12. Being the centre of attention, e.g., your birthday party.				
13. Asking questions in class.				
14. Answering questions in class.				
15. Reading out loud in class.				
16. Taking tests.				
17. Saying "no" when someone asks you to do something you don't want to do.				
18. Telling others that you disagree or that you are angry with them.				
19. Looking at people you don't know well in the eyes.				
20. Returning something to a shop.				
21. Playing sport or performing in front of other people.				
22. Joining a club.				
23. Meeting new people or strangers.				
24. Asking a teacher to leave the classroom.				

## Section 5.1

Read each situation carefully. This question asks how frequently you would **AVOID** that situation.

Please tick **ONE** box for **EACH** statement.

	Never	Occasionally	Often	Usually
1. Talking to classmates.				
2. Participating in work groups in the classroom.				
3. Eating in front of others, e.g., school canteen.				
4. Asking an adult you don't know well for help.				
5. Giving a presentation in class.				
6. Going to parties or school activities.				
7. Writing on the class board in front of others.				
8. Talking with pupils you don't know well.				
9. Starting a chat with people you don't know well.				
10. Using school or public bathrooms.				
11. Going into a classroom when others are already seated.				
12. Being the centre of attention, e.g., your birthday party.				
13. Asking questions in class.				
14. Answering questions in class.				
15. Reading out loud in class.				
16. Taking tests.				
17. Saying "no" when someone asks you to do something you don't want to do.				
18. Telling others that you disagree or that you are angry with them.				
19. Looking at people you don't know well in the eyes.				
20. Returning something to a shop.				
21. Playing sport or performing in front of other people.				
22. Joining a club.				
23. Meeting new people or strangers.				
24. Asking a teacher to leave the classroom.				

## Section 6

For each of the social media **providers** listed below, please indicate approximately how long you spend on the site in an average day.

Please tick **ONE** box for **EACH** statement.

	I don't use this provider	Less than 1 hour per day	1-2 hours per day	2-3 hours per day	3-4 hours per day	More than 4 hours per day
1. Facebook						
2. Twitter						
3. Vimeo						
4. Facebook Messenger						
5. Instagram						
6. Tumblr						
7. YouTube						
8. X-Box (i.e., talking with fellow gamers when playing)						
9. WhatsApp						
10. Flickr						
11. Pinterest						
12. Skype						
13. Google+						
14. Snapchat						
Other(s) [Please state]						
1.....						
2.....						
3.....						

## Section 6.1

For each of the social media **activities** listed below, please indicate approximately how long you spend engaged in that activity during an average day.

Please tick **ONE** box for **EACH** statement.

	I don't engage in this activity	Less than 1 hour per day	1-2 hours per day	2-3 hours per day	3-4 hours per day	More than 4 hours per day
1. Making new friends						
2. Keeping in touch with existing friends						
3. Updating my profile						
4. Reading others' profiles						
5. Playing computer games within a social media application						
6. Watching films						
7. Listening to music						
8. Posting videos						
9. Posting photos						
10. Taking part in chat rooms						
Other(s) [Please state]						
1.....						
2.....						
3.....						

## Appendix G

### Part Two Bilingual Questionnaire

The below is the bilingual questionnaire completed by Welsh/Bilingual-medium school participants.

#### TAFLEN WYBODAETH A FFURFLEN GYDSYNIO I GYMRYD RHAN ADRAN SEICOLEG PRIFYSGOL ABERTAW CAIS YMCHWIL PhD

#### [Rhan 2: Tymor yr Hydref 2018]

Fe'ch gwahoddir i gymryd rhan mewn ymchwil. Cyn i chi benderfynu cymryd rhan ai peidio, darllenwch yr wybodaeth isod. Mae'r ymchwil hwn wedi cael ei gymeradwyo gan eich Pennaeth a chan Bwyllgor Moeseg Ymchwil Adran Seicoleg Prifysgol Abertawe.

#### **Beth yw diben yr ymchwil?**

Rydym yn cynnal ymchwil i'r cysylltiad rhwng hunan-barch, iselder ysbryd, unigrwydd, pryder cymdeithasol a'r defnydd o gyfryngau cymdeithasol ymhlith pobl ifanc rhwng 13 ac 16 oed sy'n mynychu ysgolion uwchradd Cymraeg a Saesneg.

#### **Pwy sy'n gwneud yr ymchwil?**

Caiff yr ymchwil ei wneud gan Richard Jones yn Adran Seicoleg Prifysgol Abertawe, dan oruchwyliaeth yr Athro Phil Reed.

#### **Beth mae'r arolwg yn ei gynnwys?**

Mae tair rhan i'r arolwg: cynhaliwyd Rhan 1 yn ystod tymor yr Haf; ni fydd Rhan 2 (i'w chynnal heddiw) yn cymryd mwy na 2–3 munud; ac ni fydd Rhan 3 (Tymor y Gaeaf 2019) yn cymryd mwy na 5 munud. Mae'r holl gwestiynau yn gofyn i chi roi tic cyflym mewn blwch. Caiff yr arolygon hyn eu cwblhau yn yr ystafell ddosbarth. Mae'n rhaid dychwelyd arolygon wedi'u cwblhau i'ch athro. Os ydych yn hapus i gymryd rhan, cwblhewch y '**Ffurflen Gydsynio i Gymryd rhan**' isod. Mae cymryd rhan yn wirfoddol.

#### **Beth fydd yn digwydd i'r wybodaeth a roddaf?**

Ni fyddwn yn datgelu pwy ydych chi ar unrhyw adeg yn ystod yr ymchwil neu ar ei ôl, nac yn cofnodi'ch enw ar unrhyw system gyfrifiadurol. Mae'n bosib y caiff canlyniadau'r ymchwil eu cyflwyno i bartïon â diddordeb a'u cyhoeddi mewn cyfnodolion gwyddonol a chyfryngau cysylltiedig.

#### **Beth os oes gwestiynau eraill gennyf?**

Os oes rhagor o gwestiynau gennyh ynghlŷn â'r ymchwil hwn, mae croeso i chi gysylltu â ni:

Richard Jones  
Adran Seicoleg  
Prifysgol Abertawe

Yr Athro Phil Reed  
Adran Seicoleg  
Prifysgol Abertawe

## Ffurflen Gydsynio i Gymryd Rhan

A wnewch chi gwblhau'r ffurflen gydsynio ganlynol.

Ticiwch **UN** blwch yn unig:

Rwyf wedi darllen a deall yr wybodaeth ac rwy'n <b>CYDSYNIO</b> i gymryd rhan	
Rwyf wedi darllen a deall yr wybodaeth ac <b>NID WYF YN</b> <b>CYDSYNIO</b> i gymryd rhan	

Cwblhewch y canlynol:

ENW LLAWN: .....

DYDDIAD HEDDIW:.....

## Cyfarwyddiadau

Diolch am gymryd rhan. Rydym yn gwerthfawrogi'ch cymorth yn fawr. Cofiwch, does dim atebion anghywir yn yr arolwg hwn.

Oni nodir fel arall, mae'r holl gwestiynau'n gofyn i chi roi tic mewn blwch yn unig.

Atebwch **bob** cwestiwn.

Cyn dechrau'r arolwg, byddem yn ddiolchgar pe gallech ateb ychydig gwestiynau syml amdanoch chi yn yr adran **Demograffeg** isod.

## Demograffeg

**C.1** Ysgrifennwch enw'ch ysgol yn y blwch isod.

--

**C.2** Nodwch pa ryw ydych chi. [Ticiwch **UN** blwch yn unig]

Gwryw	
Benyw	

**C.3** Ysgrifennwch eich oedran a grŵp blwyddyn yn y blychau isod.

Oedran:  Grŵp Blwyddyn:

**C.4.** Nodwch eich ethnigrwydd. [Ticiwch **UN** blwch yn unig]

Gwyn	
Du	
Asiaidd	
Cymysg	
Arall	
Dwi ddim am ddweud	

**C5.** Ysgrifennwch eich côd post cartref yn y blwch isod.

**C6.** Ysgrifennwch eich iaith gyntaf yn y blwch isod.

## **Adran 1**

Isod mae rhestr o 10 datganiad sy'n ymwneud â'ch teimladau amdanoch chi eich hun. Ar gyfer pob datganiad, dywedwch i ba raddau rydych chi'n cytuno neu'n anghytuno.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Cytuno'n gryf	Cytuno	Anghytuno	Anghytuno'n gryf
1. Ar y cyfan, rwy'n fodlon arnaf fi fy hun.				
2. Weithiau, dwi'n meddwl fy mod i'n dda i ddim.				
3. Rwy'n teimlo bod gen i nifer o rinweddau da.				
4. Rwy'n gallu gwneud pethau cystal â'r rhan fwyaf o bobl eraill.				
5. Rwy'n teimlo nad oes gen i lawer o achos i fod yn falch.				
6. Rwy'n teimlo'n dda i ddim ar adegau, yn bendant.				
7. Rwy'n teimlo mod i'n berson gwerth chweil, o leiaf cystal â phobl eraill.				
8. Hoffwn i gael mwy o hunan-barch.				
9. Ar y cyfan, rwy'n tueddu i deimlo fy mod i'n fethiant.				
10. Mae gen i agwedd bositif tuag ataf fi fy hun.				



## Adran 2

At ddiben yr adran hon, diffinnir y cyfryngau cymdeithasol fel "Facebook, Twitter, Instagram ac ati." Darllenwch bob un o'r 6 datganiad a nodwch yr ymateb sy'n eich disgrifio chi orau.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Yn anaml iawn	Yn anaml	Weithiau	Yn aml	Yn aml iawn
1. Rwy'n treulio llawer o amser yn meddwl am y <b>cyfryngau cymdeithasol</b> neu'n cynllunio sut i'w defnyddio.					
2. Rwy'n teimlo awydd i ddefnyddio'r <b>cyfryngau cymdeithasol</b> mwy a mwy.					
3. Rwy'n defnyddio'r <b>cyfryngau cymdeithasol</b> i anghofio am broblemau personol.					
4. Rwyf wedi ceisio lleihau'r amser rwy'n ei dreulio ar y cyfryngau cymdeithasol ond heb lwyddiant.					
5. Rwy'n teimlo'n aflonydd neu'n annifyr os nad wyf yn gallu defnyddio'r <b>cyfryngau cymdeithasol</b> .					
6. Rwy'n defnyddio'r <b>cyfryngau cymdeithasol</b> cymaint fel bod hynny wedi effeithio'n negyddol ar fy ngwaith ysgol.					

**PARTICIPANT INFORMATION SHEET & CONSENT FORM  
SWANSEA UNIVERSITY PSYCHOLOGY DEPARTMENT  
PhD RESEARCH REQUEST**

**[Part 2: Autumn Term 2018]**

You are being invited to take part in some research. Before you decide whether or not to participate, please read the information below. This research has been approved by your Head Teacher and Swansea University's Department of Psychology Research Ethics Committee.

**What is the purpose of the research?**

We are conducting research on the link between self-esteem, depression, loneliness, social anxiety and the use of social media amongst 13–16-year-olds attending Welsh and English secondary schools.

**Who is carrying out the research?**

The research is being conducted by Richard Jones at Swansea University's Psychology Department under the supervision of Professor Phil Reed.

**What does the survey involve?**

The survey has three parts: Part 1 was taken during the Summer Term; Part 2 (to be taken today) will take no more than 2-3 minutes; and Part 3 (Winter Term 2019) will take no more than 5 minutes. All responses are a quick tick-in-the-box. The surveys will be taken in-class. Completed surveys must be returned to your teacher. If you are happy to take part, please complete the '**Participant's Consent Form**', below. Participation is voluntary.

**What will happen to the information I provide?**

Your identity will not be disclosed at any stage during or after the research or entered onto any computer system. Results of the research may be presented to interested parties and published in scientific journals and related media.

**What if I have other questions?**

If you have further questions about this research, please do not hesitate to contact us:

Richard Jones  
Department of Psychology  
Swansea University  
[REDACTED]

Professor Phil Reed  
Department of Psychology  
Swansea University  
[REDACTED]

## Participant's Consent Form

Please complete the following consent form.

Please tick **ONE** box only:

I have read and understood the information and I <b><u>CONSENT</u></b> to my participation	
I have read and understood the information and I do <b><u>NOT CONSENT</u></b> to my participation	

Please complete the following:

**FULL NAME:** .....

**TODAY'S DATE:** .....

## Instructions

Thank you for taking part. Your help is very much appreciated. Please note that there are no wrong answers to this survey.

Unless stated, all questions require a simple tick in a box.

Please answer **all** the questions.

Before starting the survey, we would be grateful if you would answer a few easy questions about you in the **Demographics** section, below.

## Demographics

**Q.1** Please write the name of your school in the box below.

--

**Q.2** Please indicate your sex. [Tick **ONE** box only]

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

**Q.3** Please write your age and year group in the boxes below.

Age:  Year group:

**Q.4** Please indicate your ethnicity. [Tick **ONE** box only]

White	<input type="checkbox"/>
Black	<input type="checkbox"/>
Asian	<input type="checkbox"/>
Mixed	<input type="checkbox"/>
Other	<input type="checkbox"/>
Don't wish to say	<input type="checkbox"/>

**Q.5** Please write your home postcode in the box below.

**Q.6** Please write your first language in the box below.

### **Section 1**

Detailed below is a list of 10 statements relating to how you feel about yourself. For each statement, please indicate the extent to which you agree or disagree.

Please tick **ONE** box for **EACH** statement.

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>1.</b> On the whole, I am satisfied with myself.				
<b>2.</b> At times, I think I am no good at all.				
<b>3.</b> I feel that I have a number of good qualities.				
<b>4.</b> I am able to do things as well as most other people.				
<b>5.</b> I feel I do not have much to be proud of.				
<b>6.</b> I certainly feel useless at times.				
<b>7.</b> I feel that I'm a person of worth, at least on an equal plane with others.				
<b>8.</b> I wish I could have more respect for myself.				
<b>9.</b> All in all, I am inclined to feel that I am a failure.				
<b>10.</b> I take a positive attitude toward myself.				

## Section 2

For the purpose of this section, social media is defined as “Facebook, Twitter, Instagram and the like.” Please read each of the 6 statements and indicate the response that is most like you.

Please tick **ONE** box for **EACH** statement.

	Very Rarely	Rarely	Sometimes	Often	Very Often
1. I spend a lot of time thinking about <b>social media</b> or planning how to use it.					
2. I feel an urge to use <b>social media</b> more and more.					
3. I use <b>social media</b> to forget about personal problems.					
4. I have tried to cut down on the use of <b>social media</b> without success.					
5. I become restless or troubled if I’m not allowed to use <b>social media</b> .					
6. I use <b>social media</b> so much that it has had a negative impact on my schoolwork.					

## Appendix H

### **Part Three Bilingual Questionnaire and Debrief**

The below is the bilingual questionnaire completed by Welsh/Bilingual-medium school participants.

#### **TAFLEN WYBODAETH A FFURFLEN GYDSYNIO I GYMRYD RHAN ADRAN SEICOLEG PRIFYSGOL ABERTAW CAIS YMCHWIL PhD**

#### **[Rhan 3: Tymor y Gaeaf 2019]**

Gwahoddir chi i gymryd rhan mewn ymchwil. Cyn i chi benderfynu cymryd rhan ai peidio, darllenwch yr wybodaeth isod. Mae'r ymchwil hwn wedi cael ei gymeradwyo gan eich Pennaeth a chan Bwyllgor Moeseg Ymchwil Adran Seicoleg Prifysgol Abertawe.

#### **Beth yw diben yr ymchwil?**

Rydym yn ymchwilio i'r cysylltiad rhwng hunan-barch, iselder ysbryd, unigrwydd, pryder cymdeithasol a'r defnydd o gyfryngau cymdeithasol ymhlith pobl ifanc rhwng 13 ac 16 oed sy'n mynychu ysgolion uwchradd Cymraeg a Saesneg.

#### **Pwy sy'n gwneud yr ymchwil?**

Caiff yr ymchwil ei wneud gan Richard Jones yn Adran Seicoleg Prifysgol Abertawe, dan oruchwyliaeth yr Athro Phil Reed.

#### **Beth mae'r arolwg yn ei gynnwys?**

Mae tair rhan i'r arolwg: cynhaliwyd Rhan 1 yn ystod tymor yr Haf; cynhaliwyd Rhan 2 yn ystod tymor yr Hydref; ac ni fydd Rhan 3 (Tymor y Gaeaf 2019) yn cymryd mwy na 5 munud. Mae'r holl gwestiynau yn gofyn i chi roi tic cyflym mewn blwch. Caiff yr arolygon hyn eu cwblhau yn yr ystafell ddosbarth. Mae'n rhaid dychwelyd arolygon wedi'u cwblhau i'ch athro. Os ydych yn hapus i gymryd rhan, llenwch y '**Ffurflen Gydsynio i Gymryd rhan**' isod. Mae cymryd rhan yn wirfoddol.

#### **Beth fydd yn digwydd i'r wybodaeth a roddaf?**

Ni fyddwn yn datgelu pwy ydych chi ar unrhyw adeg yn ystod yr ymchwil neu ar ei ôl nac yn cofnodi'ch enw ar unrhyw system gyfrifiadurol. Mae'n bosib y caiff canlyniadau'r ymchwil eu cyflwyno i bartïon â diddordeb a'u cyhoeddi mewn cyfnodolion gwyddonol a chyfryngau cysylltiedig.

#### **Beth os oes gennyf gwestiynau eraill?**

Os oes rhagor o gwestiynau gennych ynglŷn â'r ymchwil hwn, mae croeso i chi gysylltu â ni:

Richard Jones  
Adran Seicoleg  
Prifysgol Abertawe

Yr Athro Phil Reed  
Adran Seicoleg  
Prifysgol Abertawe

## Ffurflen Gydsynio i Gymryd Rhan

A wnewch chi gwblhau'r ffurflen gydsynio ganlynol.

Ticiwch **UN** blwch yn unig:

Rwyf wedi darllen a deall yr wybodaeth ac rwy'n <b>CYDSYNIO</b> i gymryd rhan	
Rwyf wedi darllen a deall yr wybodaeth ac <b>NID WYF YN</b> <b>CYDSYNIO</b> i gymryd rhan	

Cwblhewch y canlynol:

ENW LLAWN: .....

DYDDIAD HEDDIW:.....



## Cyfarwyddiadau

Diolch am gymryd rhan. Rydym yn gwerthfawrogi'ch cymorth yn fawr. Cofiwch, does dim atebion anghywir yn yr arolwg hwn.

Oni nodir fel arall, mae'r holl gwestiynau'n gofyn i chi roi tic mewn blwch yn unig.

Atebwch **bob** cwestiwn.

Cyn dechrau'r arolwg, byddem yn ddiolchgar pe gallech ateb ychydig gwestiynau syml amdanoch chi yn yr adran **Demograffeg** isod.

## Demograffeg

**C.1** Ysgrifennwch enw'ch ysgol yn y blwch isod.

--

**C.2** Nodwch pa ryw ydych chi. [Ticiwch **UN** blwch yn unig]

Gwryw	
Benyw	

**C.3** Ysgrifennwch eich oedran a grŵp blwyddyn yn y blychau isod.

Oedran:  Grŵp Blwyddyn:

**C4.** Nodwch eich ethnigrwydd. [Ticiwch **UN** blwch yn unig]

Gwyn	
Du	
Asiaidd	
Cymysg	
Arall	
Dwi ddim am ddweud	

**C5.** Ysgrifennwch eich côd post cartref yn y blwch isod.

**C6.** Ysgrifennwch eich iaith gyntaf yn y blwch isod.

## **Adran 1**

Isod mae rhestr o 10 datganiad sy'n ymwneud â'ch teimladau amdanoch chi eich hun. Ar gyfer pob datganiad, dywedwch i ba raddau rydych chi'n cytuno neu'n anghytuno.

Ticiwch UN blwch ar gyfer POB datganiad.

	Cytuno' n gryf	Cytuno	Anghytun o	Anghytun o' n gryf
1. Ar y cyfan, rwy'n fodlon arnaf fi fy hun.				
2. Weithiau, dwi'n meddwl fy mod i'n dda i ddim.				
3. Rwy'n teimlo bod gen i nifer o rinweddau da.				
4. Rwy'n gallu gwneud pethau cystal â'r rhan fwyaf o bobl eraill.				
5. Rwy'n teimlo nad oes gen i lawer o achos i fod yn falch.				
6. Rwy'n teimlo'n dda i ddim ar adegau, yn bendant.				
7. Rwy'n teimlo mod i'n berson gwerth chweil, o leiaf cystal â phobl eraill.				
8. Hoffwn i gael mwy o hunan-barch.				
9. Ar y cyfan, rwy'n tueddu i deimlo fy mod i'n fethiant.				
10. Mae gen i agwedd bositif tuag ataf fi fy hun.				

## Adran 2

At ddiben yr adran hon, diffinnir y cyfryngau cymdeithasol fel "Facebook, Twitter, Instagram ac ati." Darllenwch bob un o'r 6 datganiad a nodwch yr ymateb sy'n eich disgrifio chi orau.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Yn anaml iawn	Yn anaml	Weithiau	Yn aml	Yn aml iawn
1. Rwy'n treulio llawer o amser yn meddwl am y <b>cyfryngau cymdeithasol</b> neu'n cynllunio sut i'w defnyddio.					
2. Rwy'n teimlo ysgogiad i ddefnyddio <b>cyfryngau cymdeithasol</b> mwy a mwy.					
3. Rwy'n defnyddio <b>cyfryngau cymdeithasol</b> i anghofio am broblemau personol.					
4. Rwyf wedi ceisio lleihau'r amser rwy'n ei dreulio ar y <b>cyfryngau cymdeithasol</b> ond heb lwyddiant.					
5. Rwy'n teimlo'n aflonydd neu'n annifyr os nad wyf yn gallu defnyddio <b>cyfryngau cymdeithasol</b> .					
6. Rwy'n defnyddio <b>cyfryngau cymdeithasol</b> cymaint fel bod hynny wedi effeithio'n negyddol ar fy ngwaith ysgol.					

### Adran 3

Mae'r cwestiwn hwn yn ymwneud ag **Instagram**. Darllenwch bob un o'r 6 datganiad a nodwch yr ymateb sy'n eich disgrifio chi orau.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Yn anaml iawn	Yn anaml	Weithiau	Yn aml	Yn aml iawn
1. Rwy'n treulio llawer o amser yn meddwl am <b>Instagram</b> neu'n cynllunio sut i'w ddefnyddio.					
2. Rwy'n teimlo ysgogiad i ddefnyddio <b>Instagram</b> mwy a mwy.					
3. Rwy'n defnyddio <b>Instagram</b> i anghofio am broblemau personol.					
4. Rwyf wedi ceisio lleihau'r amser rwy'n ei dreulio ar <b>Instagram</b> ond heb lwyddiant.					
5. Rwy'n teimlo'n aflonydd neu'n annifyr os nad wyf yn gallu defnyddio <b>Instagram</b> .					
6. Rwy'n defnyddio <b>Instagram</b> cymaint fel bod hynny wedi effeithio'n negyddol ar fy ngwaith ysgol.					

## Adran 4

Mae'r cwestiwn hwn yn ymwneud â **Snapchat**. Darllenwch bob un o'r 6 datganiad a nodwch yr ymateb sy'n eich disgrifio chi orau.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Yn anaml iawn	Yn anaml	Weithiau	Yn aml	Yn aml iawn
1. Rwy'n treulio llawer o amser yn meddwl am <b>Snapchat</b> neu'n cynllunio sut i'w ddefnyddio.					
2. Rwy'n teimlo ysgogiad i ddefnyddio <b>Snapchat</b> mwy a mwy.					
3. Rwy'n defnyddio <b>Snapchat</b> i anghofio am broblemau personol.					
4. Rwyf wedi ceisio lleihau'r amser rwy'n ei dreulio ar <b>Snapchat</b> ond heb lwyddiant.					
5. Rwy'n teimlo'n aflonydd neu'n annifyr os nad wyf yn gallu defnyddio <b>Snapchat</b> .					
6. Rwy'n defnyddio <b>Snapchat</b> cymaint fel bod hynny wedi effeithio'n negyddol ar fy ngwaith ysgol.					

## Adran 5

Mae'r cwestiwn hwn yn ymwneud â'ch defnydd o gyfryngau cymdeithasol **i gadw mewn cysylltiad â ffrindiau presennol**. Darllenwch bob un o'r 6 datganiad a nodwch yr ymateb sy'n eich disgrifio chi orau.

Ticiwch **UN** blwch ar gyfer **POB** datganiad.

	Yn anaml iawn	Yn anaml	Weithiau	Yn aml	Yn aml iawn
1. Rwy'n treulio llawer o amser yn meddwl am y cyfryngau cymdeithasol <b>i gadw mewn cysylltiad â ffrindiau presennol</b> neu'n cynllunio i wneud hynny.					
2. Rwy'n teimlo ysgogiad i ddefnyddio'r cyfryngau cymdeithasol <b>i gadw mewn cysylltiad â ffrindiau presennol</b> mwy a mwy.					
3. Rwy'n defnyddio cyfryngau cymdeithasol <b>i gadw mewn cysylltiad â ffrindiau presennol</b> i anghofio am broblemau personol.					
4. Rwyf wedi ceisio lleihau'r amser rwy'n ei dreulio ar y cyfryngau cymdeithasol <b>i gadw mewn cysylltiad â ffrindiau presennol</b> ond heb lwyddiant.					
5. Rwy'n teimlo'n aflonydd neu'n annifyr os nad wyf yn gallu defnyddio'r cyfryngau cymdeithasol <b>i gadw mewn cysylltiad â ffrindiau presennol</b> .					
6. Rwy'n defnyddio cyfryngau cymdeithasol <b>i gadw mewn cysylltiad â ffrindiau presennol</b> cymaint fel bod hynny wedi effeithio'n negyddol ar fy ngwaith ysgol.					

## FFURFLEN ÔL-DRAFODAETH

### **Pwnc Ymchwil: Hunanbarch a'r defnydd problemus o'r cyfryngau cymdeithasol: dadansoddiad cymharol o ganfyddiadau cyfranogwyr cyfrwng Cymraeg a Saesneg.**

Diolch am gymryd rhan yn ein gwaith ymchwil! Nawr eich bod chi wedi gorffen y tri arolwg, gadewch i ni esbonio'r rhesymeg sydd y tu ôl i'r gwaith hwn.

Mae gennym ddiddordeb yn y cysylltiad rhwng hunanbarch, iselder ysbryd, unigrwydd, pryder cymdeithasol a'r defnydd o gyfryngau cymdeithasol ymhlith pobl ifanc rhwng 13 ac 16 oed sy'n mynychu ysgolion uwchradd cyfrwng Cymraeg a Saesneg. Bydd canlyniadau'r arolwg yn ein galluogi ni i fesur hunanbarch, iselder ysbryd, unigrwydd, pryder cymdeithasol a'r defnydd o gyfryngau cymdeithasol ar un adeg, yn ogystal â mesur hunanbarch a defnydd y cyfranogwyr o gyfryngau cymdeithasol dros gyfnod hirach o amser.

Mae gwaith ymchwil blaenorol wedi dangos cysylltiad rhwng lefelau hunanbarch a'r defnydd o gyfryngau cymdeithasol. Yn y gwaith ymchwil hwn, rydym yn cymharu'r ymatebion a roddwyd gan gyfranogwyr sy'n mynd i ysgolion cyfrwng Cymraeg a Saesneg, nad ydynt wedi eu hastudio yn y gorffennol. Er mwyn ein helpu i gyflawni nodau ein hymchwil, mae cyfranogwyr wedi cwblhau cyfres o holiaduron. Mae pob holiadur wedi'i greu i ymdrin ag agwedd wahanol ar yr ymchwil e.e. mesur lefelau hunanbarch a'r defnydd o gyfryngau cymdeithasol.

Os ydych yn teimlo bod unrhyw rai o'r materion a godwyd yn yr ymchwil hwn wedi cael effaith arnoch, a hoffech drafod unrhyw bryderon, cysylltwch â goruchwyliwr yr astudiaeth:

██████████ Gallwch hefyd gysylltu â Gwasanaethau Lles Prifysgol Abertawe i gael cyngor: Y Gwasanaethau Lles, Adeilad Horton, Prifysgol Abertawe, Parc Singleton, Abertawe SA2 8PP, Ffôn: [www.swansea.ac.uk/cy/amrywiol/adran-gwasanaethau-cymorth-i-fyfyrwyr/wellbeing-services/](http://www.swansea.ac.uk/cy/amrywiol/adran-gwasanaethau-cymorth-i-fyfyrwyr/wellbeing-services/). Gellir cael cyngor a chefnogaeth ar broblemau iechyd meddwl amrywiol megis iselder ysbryd a gorbryder drwy wefan 'Live Well' y GIG [www.nhs.uk/Livewell/youth-mental-health/Pages/Youth-mental-health-help.aspx](http://www.nhs.uk/Livewell/youth-mental-health/Pages/Youth-mental-health-help.aspx). Gellir cael gwybodaeth bellach am ffyrdd iach o fyw hefyd ar [www.bbc.co.uk/health](http://www.bbc.co.uk/health).

Os oes rhagor o gwestiynau gennych ynglŷn â'r ymchwil hwn, mae croeso i chi gysylltu â ni:

Richard Jones  
Adran Seicoleg  
Prifysgol Abertawe  
██████████

Yr Athro Phil Reed  
Adran Seicoleg  
Prifysgol Abertawe  
██████████

**PARTICIPANT INFORMATION SHEET & CONSENT FORM  
SWANSEA UNIVERSITY PSYCHOLOGY DEPARTMENT  
PhD RESEARCH REQUEST**

**[Part 3: Winter Term 2019]**

You are being invited to take part in some research. Before you decide whether to participate, please read the information below. This research has been approved by your Head Teacher and Swansea University's Department of Psychology Research Ethics Committee.

**What is the purpose of the research?**

We are conducting research on the link between self-esteem, depression, loneliness, social anxiety and the use of social media amongst 13-16-year-olds attending Welsh and English secondary schools.

**Who is carrying out the research?**

The research is being conducted by Richard Jones at Swansea University's Psychology Department under the supervision of Professor Phil Reed.

**What does the survey involve?**

The survey has three parts: Part 1 was taken during the Summer Term; Part 2 was taken during the Autumn Term; and Part 3 (Winter Term 2019) will take no more than 5 minutes. All responses are a quick tick-in-the-box. The surveys will be taken in-class. Completed surveys must be returned to your teacher. If you are happy to take part, please complete the '**Participant's Consent Form**', below. Participation is voluntary.

**What will happen to the information I provide?**

Your identity will not be disclosed at any stage during or after the research or entered onto any computer system. Results of the research may be presented to interested parties and published in scientific journals and related media.

**What if I have other questions?**

If you have further questions about this research, please do not hesitate to contact us:

Richard Jones  
Department of Psychology  
Swansea University  
[REDACTED]

Professor Phil Reed  
Department of Psychology  
Swansea University  
[REDACTED]



## Participant's Consent Form

Please complete the following consent form.

Please tick **ONE** box only:

I have read and understood the information and I <b><u>CONSENT</u></b> to my participation	
I have read and understood the information and I do <b><u>NOT CONSENT</u></b> to my participation	

Please complete the following:

FULL NAME: .....

TODAY'S DATE: .....

## Instructions

Thank you for taking part. Your help is very much appreciated. Please note that there are no wrong answers to this survey.

Unless stated, all questions require a simple tick in a box.

Please answer **all** the questions.

Before starting the survey, we would be grateful if you would answer a few easy questions about you in the **Demographics** section, below.

## Demographics

**Q.1** Please write the name of your school in the box below.

--

**Q.2** Please indicate your sex. [Tick **ONE** box only]

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

**Q.3** Please write your age and year group in the boxes below.

Age:  Year group:

**Q.4** Please indicate your ethnicity. [Tick **ONE** box only]

White	<input type="checkbox"/>
Black	<input type="checkbox"/>
Asian	<input type="checkbox"/>
Mixed	<input type="checkbox"/>
Other	<input type="checkbox"/>
Don't wish to say	<input type="checkbox"/>

**Q.5** Please write your home postcode in the box below.

**Q.6** Please write your first language in the box below.

### **Section 1**

Detailed below is a list of 10 statements relating to how you feel about yourself. For each statement, please indicate the extent to which you agree or disagree.

Please tick **ONE** box for **EACH** statement.

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>1.</b> On the whole, I am satisfied with myself.				
<b>2.</b> At times, I think I am no good at all.				
<b>3.</b> I feel that I have a number of good qualities.				
<b>4.</b> I am able to do things as well as most other people.				
<b>5.</b> I feel I do not have much to be proud of.				
<b>6.</b> I certainly feel useless at times.				
<b>7.</b> I feel that I'm a person of worth, at least on an equal plane with others.				
<b>8.</b> I wish I could have more respect for myself.				
<b>9.</b> All in all, I am inclined to feel that I am a failure.				
<b>10.</b> I take a positive attitude toward myself.				

## Section 2

For the purpose of this section, social media is defined as “Facebook, Twitter, Instagram and the like.” Please read each of the 6 statements and indicate the response that is most like you.

Please tick **ONE** box for **EACH** statement.

	Very Rarely	Rarely	Sometimes	Often	Very Often
1. I spend a lot of time thinking about <b>social media</b> or planning how to use it.					
2. I feel an urge to use <b>social media</b> more and more.					
3. I use <b>social media</b> to forget about personal problems.					
4. I have tried to cut down on the use of <b>social media</b> without success.					
5. I become restless or troubled if I'm not allowed to use <b>social media</b> .					
6. I use <b>social media</b> so much that it has had a negative impact on my schoolwork.					

### Section 3

This question relates to **Instagram**. Please read each of the 6 statements and indicate the response that is most like you.

Please tick **ONE** box for **EACH** statement.

	Very Rarely	Rarely	Sometimes	Often	Very Often
<b>1.</b> I spend a lot of time thinking about <b>Instagram</b> or planning how to use it.					
<b>2.</b> I feel an urge to use <b>Instagram</b> more and more.					
<b>3.</b> I use <b>Instagram</b> to forget about personal problems.					
<b>4.</b> I have tried to cut down on the use of <b>Instagram</b> without success.					
<b>5.</b> I become restless or troubled if I'm not allowed to use <b>Instagram</b> .					
<b>6.</b> I use <b>Instagram</b> so much that it has had a negative impact on my schoolwork.					

## Section 4

This question relates to **Snapchat**. Please read each of the 6 statements and indicate the response that is most like you.

Please tick **ONE** box for **EACH** statement.

	Very Rarely	Rarely	Sometimes	Often	Very Often
<b>1.</b> I spend a lot of time thinking about <b>Snapchat</b> or planning how to use it.					
<b>2.</b> I feel an urge to use <b>Snapchat</b> more and more.					
<b>3.</b> I use <b>Snapchat</b> to forget about personal problems.					
<b>4.</b> I have tried to cut down on the use of <b>Snapchat</b> without success.					
<b>5.</b> I become restless or troubled if I'm not allowed to use <b>Snapchat</b> .					
<b>6.</b> I use <b>Snapchat</b> so much that it has had a negative impact on my schoolwork.					

## Section 5

This question is about your use of social media sites to **keep in touch with existing friends**. Please read each of the 6 statements and indicate the response that is most like you.

Please tick **ONE** box for **EACH** statement.

	Very Rarely	Rarely	Sometimes	Often	Very Often
<b>1.</b> I spend a lot of time thinking about using social media to <b>keep in touch with existing friends</b> or planning to do so.					
<b>2.</b> I feel an urge to use social media to <b>keep in touch with existing friends</b> more and more.					
<b>3.</b> I use social media to <b>keep in touch with existing friends</b> to forget about personal problems.					
<b>4.</b> I have tried to cut down on the use of social media to <b>keep in touch with existing friends</b> without success.					
<b>5.</b> I become restless or troubled if I'm not allowed to use social media to <b>keep in touch with existing friends</b> .					
<b>6.</b> I use social media to <b>keep in touch with existing friends</b> so much that it has had a negative impact on my schoolwork.					

## DEBRIEF FORM

### **Research topic: Self-esteem and social media problematic usage: a comparative analysis of Welsh Medium and English Medium participants' perceptions.**

Thank you for taking part in our research! Now that you've finished the three surveys, let us explain the rationale behind this work.

We are interested in the link between self-esteem, depression, loneliness, social anxiety and the use of social media amongst 13-16-year-olds attending Welsh and English Medium secondary schools. The results of the survey will enable us to measure participants' self-esteem, depression, loneliness, social anxiety and social media usage at a single moment-in-time and, also, measure participants' self-esteem and social media usage over an extended time period.

Previous research has demonstrated an association between levels of self-esteem and the use of social media. In this research we are comparing the responses provided by participants attending Welsh and English Medium schools, which has not been previously studied. To help us achieve our research goals, participants have completed a series of questionnaires. Each questionnaire has been designed to cover a different aspect of the research, e.g., measuring levels of self-esteem and social media usage.

If you feel affected by any of the issues raised by this research and would like to discuss any concerns, then please contact the study Supervisor: [REDACTED] You can also contact Swansea University's Wellbeing Services for advice: Wellbeing Services, Horton Building, Swansea University, Singleton Park, Swansea, SA2 8PP, tel.: xxxx xxxxxx, [www.swansea.ac.uk/wellbeing/](http://www.swansea.ac.uk/wellbeing/). Advice and assistance on various mental health problems such as depression and anxiety may be obtained via the NHS 'Live Well' website [www.nhs.uk/Livewell/youth-mental-health/Pages/Youth-mental-health-help.aspx](http://www.nhs.uk/Livewell/youth-mental-health/Pages/Youth-mental-health-help.aspx). Further information about healthy lifestyles can also be found at [www.bbc.co.uk/health](http://www.bbc.co.uk/health). If you have any other questions about the research, please do not hesitate to contact us at:

Richard Jones  
Department of Psychology  
Swansea University  
[REDACTED]

Professor Phil Reed  
Department of Psychology  
Swansea University  
[REDACTED]



## Appendix I

### Literature Review Search Terms

Detailed below are the search terms and combinations used during the literature review. All searches involving SMD commenced January 2003, which is the approximate timeframe that coincided with the proliferation of mass social media network applications. All searches involving self-esteem (excluding SMD) commenced January 1990. The end date for all searches was December 2022. The search process used the search engines Google Scholar, PsychINFO, ASSIA, and Web of Science.

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<b>Search Term Variables:</b>	Self-Esteem; Depression; Loneliness; Social Anxiety; & Wales
<b>Search Term Combinations:</b>	“Self-Esteem” + “Depression” + “Wales” “Self-Esteem” + “Loneliness” + “Wales” “Self-Esteem” + “Social Anxiety” + “Wales”

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<b>Search Term Variables:</b>	Social Media Addiction   Dependency   Intrusion   Problematic Usage; & Wales
<b>Search Term Combinations:</b>	“Social Media Addiction” + “Wales” “Social Media Dependency” + “Wales” “Social Media Intrusion” + “Wales” “Social Media Problematic Usage” + “Wales”

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<b>Search Term Variables:</b>	Social Media Addiction   Dependency   Intrusion   Problematic Usage; & Welsh
<b>Search Term Combinations:</b>	“Social Media Addiction “ + “Welsh” “Social Media Dependency” + “Welsh” “Social Media Intrusion” + “Welsh” “Social Media Problematic Usage” + “Welsh”

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<b>Search Term Variables:</b>	Self-Esteem; Social Media Addiction   Dependency   Intrusion   Problematic Usage; Depression; Loneliness; Social Anxiety; & Path Analysis
<b>Search Term Combinations:</b>	“Self-Esteem” + “Social Media Addiction” + Depression” + “Path Analysis” “Self-Esteem” + “Social Media Dependency” + “Depression” + “Path Analysis” “Self-Esteem” + “Social Media Intrusion” + “Depression” + “Path Analysis” “Self-Esteem” + “Social Media Problematic Usage” + “Depression” + “Path Analysis” “Self-Esteem” + “Social Media Addiction” + “Loneliness” + “Path Analysis” “Self-Esteem” + “Social Media Dependency” + Loneliness” + “Path Analysis” “Self-Esteem” + “Social Media Intrusion” + “Loneliness” + “Path Analysis” “Self-Esteem” + “Social Media Problematic Usage” + “Loneliness” + “Path Analysis” “Self-Esteem” + “Social Media Addiction” + “Social Anxiety” + “Path Analysis” “Self-Esteem” + “Social Media Dependency” + “Social Anxiety” + “Path Analysis”

“Self-Esteem” + “Social Media Intrusion” + “Social Anxiety”  
+ “Path Analysis”  
“Self-Esteem” + “Social Media Problematic Usage” + “Social  
Anxiety” + “Path Analysis”

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**Search Term Variables:** Longitudinal; Self-Esteem; Social Media Addiction | Dependency |  
Intrusion | Problematic Usage; & Welsh

**Search Term Combinations:** “Longitudinal” + “Self-Esteem” + “Social Media Addiction” +  
“Welsh”  
“Longitudinal” + “Self-Esteem” + “Social Media Dependency”  
+ “Welsh”  
“Longitudinal” + “Self-Esteem” + “Social Media Intrusion” +  
“Welsh”  
“Longitudinal” + “Self-Esteem” + “Social Media Problematic  
Usage” + “Welsh”  
“Longitudinal” + “Self-Esteem” + “Social Media Addiction” +  
“Language”  
“Longitudinal” + “Self-Esteem” + Social Media Dependency”  
+ “Language”  
“Longitudinal” + “Self-Esteem” + “Social Media Intrusion” +  
“Language”  
“Longitudinal” + “Self-Esteem” + “Social Media Problematic  
Usage” + “Language”

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## Appendix J

### Swansea University Press Office

Detailed below are data demonstrating the audience reach of a press notification showing how social media may be threatening the future of the Welsh language.



#### SWANSEA UNIVERSITY IN THE NEWS



December 13, 2022

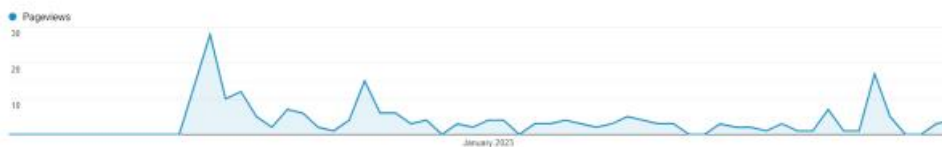
New research shows the Welsh language and its speakers might be disadvantaged by social media

A new study from Swansea University has highlighted how social media may be threatening the future of the Welsh language and the psychological health of its speakers.

#### COVERAGE - From 13 Dec 22 to 31 Jan 2023

##### Highlights

- Approximately **202 items of coverage** which mention Swansea University including online, print, TV and radio (please attached the detailed list of items and links to their stories)
- Coverage
- in around **7 countries:**  
Australia (1), Canada (1), Ireland (1), New Zealand (1), Singapore (1), USA (8), Yemen (1)
- The estimated reach in the UK is about **30m**
- **218 visits** to this story on our website (2:54 mins average time on page)



**Swansea University** @SwanseaUni · Dec 13, 2022



New research from @SwanseaPsych academics reveals how social media may be threatening the future of the Welsh language and the psychological health of its speakers.

...

0

1

0

Impressions ⓘ

**1,428**

Engagements ⓘ

**23**

Detail expands ⓘ

**11**

New followers ⓘ

**0**

Profile visits ⓘ

**3**

Link clicks ⓘ

**7**