Role of visual social networking, hypersensitive narcissism, and anxiety sensitivity in online compulsive buying

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Abstract

The impact of hypersensitive narcissism and anxiety sensitivity on online compulsive buying were examined. These transdiagnostic personality factors have not previously received attention in virtual, as opposed to real-world, contexts, and the study explored their interaction with the use of visual and textual social media platforms for online buying. The present study sampled 440 participants (264 female; 174 male), aged 18 – 37 years. Participants completed an online survey comprising: Online Edwards Compulsive Buying Scale Revised, Hypersensitive Narcissism Scale, and the Anxiety Sensitivity Index-3. Visual social networking usage was a risk factor for online compulsive buying, and there were significant positive relationships between both hypersensitive narcissism, and anxiety sensitivity, with online compulsive buying. Anxiety sensitivity mediated the relationship between hypersensitive narcissism and compulsive online buying when the dominate form of social media use was textual, but not when it was visual.

Keywords: online compulsive buying; social networking; anxiety sensitivity; hypersensitive narcissism

1. Introduction

The emerging clinical phenomena of online compulsive buying has received minimal research attention, despite having characteristics akin to offline compulsive buying (Harvanko et al., 2013). Compulsive buying is a destructive activity, economically and psychologically, with a significant psychosocial impact, such as excessive personal debts, with inability to meet payments leading to criminality, clinical levels of guilt, lack of social and familial conflict, depression and anxiety (Maraz et al., 2016). Prevalence of offline compulsive buying range from 3.4% to 6.9% amongst adults, and 5.9% to 11.5% for university samples, with females having a higher prevalence than males (Kuss et al., 2013; Harvanko et al., 2013). The heightened prevalence amongst young adults can be explained by developmental variability in cognitive control and boundary-setting skills (Kuss et al., 2013), making this cohort vulnerable to behavioural addictions. Once established in adolescence online buying is likely to be maintained into adulthood (Coffey et al., 2003).

While the core characteristics of online and offline compulsive buying are the similar, the contexts are different; research prioritisation should be given to online buying as the online sector is a faster growing market than conventional offline buying (Zheng et al., 2020). However, understanding the clinical antecedents of online compulsive buying lags behind the significant media coverage of the issue, despite its similar characteristics with offline compulsive buying (Spada, 2014; Yeun & Han, 2016). Individuals have uncontrollable urges to purchase items to relieve negative affect; the act of purchasing, not the products, has an anxiolytic effect (Harnish et al., 2019). As such, online compulsive buying is considered either a behavioural addiction, impulse-control problem, or part of the spectrum of obsessive-compulsive phenomenology (Gallagher et al., 2017; Mestre-Bach et al., 2017).

The development of efficient logistical networks has improved consumer cost-efficiency, and opportunity to compare items online has changed consumer behaviour, with

consumption progressively initiating on online platforms (Mohsin, 2020). Alongside reduction of consumer cost-efficiency, technological developments, such as buy-now-pay-later schemes, may increase the ease of enacting online compulsive buying. Therefore, investigating transdiagnostic psychological factors implicated in real-world compulsive buying seems a logical step, whilst identifying unique contributors stemming from the online environment.

An emerging area of research is the consequences of social networking usage. Individuals with an internet addiction have a vulnerability to compulsive buying, and social networking sites are extremely popular amongst young adults (Sharif & Knahekhrab, 2017). These platforms are particularly alluring as they offer opportunities to construct social identities in multiplex formats, and communicate to connected individuals through a variety of media functions (Orbest et al., 2017). The varied methodology of presentation and communication, including posting and receiving text, articles, imagery, instant messaging, and video stories, may have different psychological implications that lead to behavioural addictions like online compulsive buying. Visual social networking platforms involve sharing images and videos, in which textual commentaries are initiated from the visual content (e.g., Facebook, Instagram, Tumblr, Snapchat). Textually-based social networking platforms are focussed on individuals sharing ideas and articles, in which commentaries are created based on the textual content uploaded (e.g., Twitter, Redditt, LinkedIn).

There have been few studies of whether differential variants of social networking have unique relationships to online compulsive buying. For example, whether social networking is conducted primarily through visual or textual means has been noted to impact psychological characteristics differently (Panger, 2014; Reed et al., 2018), which may impact compulsive buying. Drawing from social-comparison theory, it has been reported that Facebook is associated with more upward social comparisons, which could lead to adverse emotional and

psychological consequences, if self-perceptions and self-evaluations are undermined (Schmuck et al., 2019). This is likely if individuals present their ideal self, and not their actual self (Liu et al., 2017; Liu et al., 2019), and resulting negative affect occurs frequently on social networking sites (Ozimek et al., 2018; Yoon et al., 2019). Therefore, it can be theorised that visual social networking could be a independent risk factor for online compulsive buying, in contrast to textual-based social networking platforms.

A few studies have examined which characteristics of websites advertising products impact impulsive buying (rather than compulsive shopping). Adelaar, Chang, Lancendorfer, Lee, and Morimoto (2003) studied the effect of three formats for webpages on impulse buying. They noted that text-based sites (lyrics of a song) produced a greater intent to buy than those containing images (the music video or still images from the video). However, this study was conducted in a particular music-based context, it was prior to the advent of the mass use of social media and the webpages did not include personalised advertisements from a specific cookie extraction history which many social networking platforms have included. Additionally, other content which could contribute towards online compulsive buying. Given this, it may have limited generality to the current research question. In a review, Xu, Wu, and Li (2020) noted that the attractiveness of the site, and the 'para-social' interactive features, both increased impulsive buying through their effects on cognitive and arousal mechanisms. This effect as also noted by Parboteeah, Valacich, and Wells (2009) for the effect of websites. However, none of these studies has examined the impact of particular forms of platform on compulsive buying. Thus, it is currently unknown whether the preferred forms of social networking have any impact on economically-related behaviours, although these forms may well interact with the psychological characteristics of the social media users, such as their narcissism and anxiety.

Narcissism has been found to predict real-world compulsive buying (Jung & Yi, 2014; Pilch & Górnik-Durose, 2017; Rose, 2007; Zerach, 2016). Most research has examined grandiose or overt narcissism in relation to real-world compulsive buying, rather than hypersensitive narcissism (but see Zerach, 2016), with very little research of either type being conducted concerning online compulsive buying. This is surprising, as hypersensitive narcissists experience a great deal of negative affect (Huprich et al., 2012; Jung & Yi, 2014; Zerach, 2016), which is a risk-factor for compulsive buying (Pilch & Gornik-Durose, 2017; Zerach, 2016). Hypersensitive narcissists operate covertly on visual social networking platforms, posting highly edited images, allowing for social feedback to regulate the self (Wang, 2019; Ozimek et al., 2018), and appear to be more reinforced by this activity (Ahn et al., 2015; Ozimek et al., 2018). This self-regulatory behaviour has led researchers to theorise that hypersensitive narcissists are more prone to social networking addiction (Ozimek et al., 2018), with this contributing towards lower self-esteem (Blanchnio et al., 2016; Casale et al., 2016), which would suggest a risk for compulsive buying, especially on visually-based social media.

In addition, anxiety sensitivity could act as a mechanism maintaining compulsive buying (Gallagher et al., 2017). This transdiagnostic factor is an established risk factor for psychopathology, and is characterised by negative affect, as individuals have a lower perceived threshold for distress intolerance (Smits et al., 2019). Lower anxiety thresholds could enact behavioural coping responses, such as compulsive buying (Brunelle & Grossman, 2022; Gallagher et al., 2017), although little work has been conducted into online compulsive buying. The nature of the social networking environment (visual or textual) may promote differential concerns relating to anxiety sensitivity. Visually-based social networking platforms could enhance concerns from the uploaded visual content (Hetz et al., 2015), especially in those making social comparisons (Kong, Wang, Zhang, Li, & Sun, 2021).

Textually-based platforms could manifest enhanced social concerns, as individuals routinely scrutinize the validity of informational hyperlinks (Holton et al., 2014), although may not provoke such ready social comparison as photographic content (Panger, 2014).

Thus, there are many current gaps in the knowledge related to impact of social media on online compulsive buying. For example, the relationship between the type of social networking platform used (visual or textual) with online compulsive buying is unclear, and may interact with levels of underlying psychological traits. Given this, this study investigates the roles of two important variables in real-world compulsive buying: hypersensitive narcissism (Jung & Yi, 2014; Pilch & Górnik-Durose, 2017; Rose, 2007; Zerach, 2016), and anxiety sensitivity (Gallagher et al., 2017; Harnish & Bridges, 2015), in contributing towards online compulsive buying. In addition, it examines whether the form of social networking most commonly employed (visual or textual) exerts a moderating impact over these relationships, as it does in other psychological contexts (Reed et al., 2018). In this regard, although hypersensitive narcissism and anxiety sensitivity impact real-world compulsive buying, their impacts in an online environment are unclear. These considerations suggest that a number of hypotheses may be usefully explored:

H1: There should be a positive relationship between hypersensitive narcissism and online compulsive buying, as there is for real-world compulsive buying (Jung & Yi, 2014; Pilch & Górnik-Durose, 2017).

H2: There should be a positive relationship between anxiety sensitivity and online compulsive buying, as there is in real-world settings (Harnish & Bridges, 2015).

H3: Anxiety sensitivity should mediate the relationship between narcissism and online compulsive buying, by lowering stress thresholds and triggering coping mechanisms such as compulsive buying (Brunelle & Grossman, 2022; Gallagher et al., 2017).

H4: These relationships may be moderated by the nature of the social network used, with visually-based sites being a stronger influence of hypersensitive narcissists (Ozimek et al., 2018), and those with higher anxiety sensitivity (Kong et al., 2021).

To this end, the current study will test a moderated mediation model (see Figure 1), examining whether the type of social networking used (visual or textual) moderates a relationship between hypersensitive narcissism and compulsive online buying, which is mediated by anxiety sensitivity.

---- Figure 1 ----

2. Method

2.1 Participants & Sampling

Participants were recruited by adverts placed on social media platforms. Participants were required to be native English speakers, and below the age of 40. Exclusion criteria included previous psychiatric diagnosis of bipolar disorder, experience of manic symptomology, as individuals with bipolar diagnosis engage in 'buying sprees' when in a manic state (Kesebir, Isitmez & Gundogar, 2012), and individuals who recorded a partial response to the survey ($< 90\%$). Ethical approval was granted from Swansea University Ethics Committee, and all participants gave informed consent for the study.

The present study sampled 440 participants (264 female; 174 male), with a mean age of 22.01 ($\pm$ 3.34 SD; range $= 18 - 37$) years. The sample was predominantly White (376, 86%), with 48 (11%) Asian, and 3% Black, self-identified ethnicity. Of the sample, 242 (55%) were employed, and 198 (45%) were unemployed. The average monthly living expenses were: £1-499 $= 192$ (43%); £500-749 $= 136$ (31%); £750-999 $= 76$ (17%); £1000+ $= 30$ (7%). Participants spent the following time (hours per day) on social media according to the screen shots of their activity in the last week: 0-2 $= 22$ (5%); 2-4 $= 144$ (33%); 4-6 $=$

180 (41%); 6-8 = 44 (10%); 8-10 = 40 (9%); 10+ = 8 (2%). Of the participants, 204 (46%) were primarily textual-based users of social media (e.g., Twitter, Reddit), and 236 (54%) were primarily visual users of social media (e.g., Instagram, TokTok), based on the screen shots of their activity in the last week.

2.2 Measures

2.2.1 Online Edwards Compulsive Buying Scale Revised- Adapted (ECBS-R; Maraz et al., 2015) is a 16-item self-report questionnaire measuring compulsive online buying. Each item is rated on a 5-point Likert scale (1 = *never*; 5 = *very often*), with a total score from 16-80. Higher scores indicate greater online compulsive buying, with a cut off score of 42 indicating the individual can be classified as a compulsive buyer. The internal consistency (Cronbach α) for the present sample was .897.

2.2.2 Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997) is a 10-item self-report questionnaire used to assess vulnerable narcissism. Each item is rated on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). The scores range from 10-50, with higher scores indicating higher levels of vulnerable narcissism. Cronbach α was .759 in the current study.

2.2.3 Anxiety Sensitivity Index-3 (ASI-3; Taylor et al., 2007) is an 18-item self-report questionnaire measuring the tendency to fear anxiety and arousal-related symptomology. Each item is rated on a 5-point Likert scale (0 = *strongly disagree*, to 4 = *strongly agree*), with a total score from 0-62. Higher scores indicate greater anxiety. Cronbach α was .892 for the current study.

2.2.4 Social Media Use. Social media use was gauged through emailed screenshots of participants usage from the past week. Most participants owned an iPhone, so their average weekly screentime could easily be found in their 'Settings' application. Owners of other

smartphones were asked to download an application called 'YourHour' to record their screentime. This gave the use time. It could also be used to classify the users as primarily textual (if their main usage was for Twitter, Reddit), or primarily visual users (if their main usage was Facebook, Instagram, TokTok).

2.3 Procedure

Advertisements were placed on social media sites, to which participants could respond. This took them to a site giving details of the study, and a consent form. Consenting took participants to the online survey, comprising three questionnaires, and demographic questions. They were then asked to upload and send a screen shot of their social media use times from their device for the last week. Data collection occurred during July-September, 2021.

3. Results

The mean compulsive buying score for the sample was 34.30 ($\pm$ 10.84; range = 17 – 64), with 112/440 (25%) participants scoring higher than the cut-off for compulsive online buying. The difference in compulsive buying between unemployed (36.84 $\pm$ 10.93) and employed (35.41 $\pm$ 10.59) was not significant, $t(438) = 1.12, p = .226, d = .133[95\%CI = -.082:.349]$. There was a small significant positive Spearman correlation between compulsive buying and monthly living expenses, $\rho = .156, p < .001$, and between compulsive buying and time spent on social media, $\rho = .130, p = .006$. There was a significantly greater compulsive shopping score for those primarily using visual (35.72 + 10.75) rather than textual (32.64 + 10.75) social media, $t(438) = 3.00, p = .003, d = .287[.098:.475]$.

---- Table 1 ----

Table 1 displays the means (standard deviations) for the hypersensitive narcissism and anxiety sensitivity scales, along with their Pearson correlation with compulsive buying, and with each other. All the correlations were positive and significant.

---- Figure 2 ----

Figure 2 shows the mean compulsive buying scores for textual and visual social media users at one standard deviation below the mean (low), at the mean (medium), and one standard deviation above the mean (high) hypersensitive narcissism. These data show that compulsive buying scores were higher for visual than for textual social media users. Hypersensitive narcissism was positively related to compulsive buying for textual users, but not for visual users, with high hypersensitive narcissists using textual social media scoring as highly as high hypersensitive narcissists using visual social media.

PROCESS model 59 (v3.5 in SPSS v.26), with bias-corrected 95% confidence intervals ($n = 50000$), was used to test the significance of the indirect (mediated) effect of hypersensitive narcissism on compulsive buying, mediated by anxiety sensitivity, and moderated by type of social media use (i.e. conditional indirect effects). This model tests the moderating effect on the direct path (predictor to outcome), and both indirect paths (predictor to mediator, and mediator to outcome). An index of moderated mediation was used to test the significance of the moderated mediation (i.e. the difference of the indirect effects across levels of language. Significant effects are supported by the absence of zero within the confidence intervals. The overall moderated mediation model was supported with the index of moderated mediation = -1.036 (*95%CI* = -1.522:-.627); as zero was not within the CI, this indicates a significant moderating effect of social media type on the indirect effect of hypersensitive narcissism on compulsive buying via anxiety sensitivity. The conditional direct effect of the moderator on the indirect effect was absent in textual social media users (effect = .032, Bse = .202, 95%CI = -.365:.429), but was present in visual social media users

(effect = .520, Bse = .115, 95%CI = .293:.746). In contrast, the conditional indirect effect of the moderator was present in textual users (effect = 1.110, Bse = .218, 95%CI = .728:1.583), but absent in visual social media users (effect = .073, Bse = .061, 95%CI = -.035:208).

4. **Discussion**

The present research assessed the risk factor of hypersensitive narcissism, and the contribution variants of social media, on online compulsive buying, which has not been studies in detail relative to real-world buying. It also examined the transdiagnostic factor of anxiety sensitivity across visual and textual social media platforms in relation to online compulsive buying. Visual social networking usage was a risk factor for online compulsive buying, and there were significant positive relationships between hypersensitive narcissism and online compulsive buying (H1), and between anxiety sensitivity and online compulsive buying (H2). Anxiety sensitivity mediated the relationship between hypersensitive narcissism and compulsive online (H3), and this was greater when the dominate form of social media use was textual, but not when it was visual (H4).

Previous research has noted an association between grandiose or overt narcissism and compulsive buying (Rose, 2007), and the current findings extend this to hypersensitive narcissism. One previous study has noted a similar association between hypersensitive narcissism and compulsive buying (Zerach, 2016). These finding suggest both forms of narcissism are risk factors for excessive shopping activity, although the reasons for these associations may differ. Certainly, hypersensitive narcissists experience high negative affect, and high levels of anxiety, which are predictors for compulsive buying (Huprich et al., 2012; Pilch & Gornik-Durose, 2017).

There was a positive relationship between anxiety sensitivity and online compulsive buying, which is a novel finding, and extends previous findings relating to real-world

compulsive buying (Harnish & Bridges, 2015). The relationship with real-world compulsive buying is often explained by suggesting compulsive buying mitigates perceptions of negative affectivity (Gallagher et al., 2017). The current extension to online behaviours extends the literature base, but suggest similar personality and transdiagnostic factors operate in both real-world and virtual contexts.

The current data suggest that the nature of social media platforms contributes strongly to compulsive online buying; visual social networking platforms are associated with higher levels of compulsive buying than more textual-based usage. Moreover, the direct effect of hypersensitive narcissism on compulsive online buying was mediated by anxiety sensitivity for textual users, but not for visual social media users. This is important as the type of content exposure can expose individuals to an array of emotional consequences, such as increasing positive affect (Parboteeah, et al., 2009; Xu et al., 2020), which can have a unique relationship with online compulsive buying (Panger, 2014; Xu et al., 2020). This suggests that any future study of online compulsive buying needs to consider precise details of the social media use, and the psychological characteristics of the users in arriving at any conclusions.

This novel fining is intriguing as it indicates the factors contributing towards online compulsive buying are unique, or have stronger valence, on visual social networking platforms. Hypersensitive narcissists may be highly sensitive to visual aspects of social networking platforms; for example, they often post highly edited images in the hope that positive social feedback will bolster the self (Ozimek et al., 2018; Wang, 2019). This online self-regulatory behaviour has led to suggestions that hypersensitive narcissists are especially prone to social networking addiction when these are visual in nature (Casale et al., 2016; Blanchnio et al., 2016), and this sensitivity to visual aspects of social media may override any effect of anxiety sensitivity. If this is the case, then anxiety sensitivity may only have scope

to exert a mediating effect in the context of textual social media. Of course, there could be many possible explanations of this relationship that warrant further investigation. Schmuck et al. (2019) suggested that visual usage through Facebook is associated with enhanced upward-social comparison orientation, it may be that perceived discrepancies between self and others are magnified when using visual media. Visual cues may sensitise individuals to fear physical and cognitive concerns of anxiety, which can enact online compulsive buying. Additionally, it would be interesting to investigate the effects of differential types of content on visual social networking sites on online compulsive buying to investigate what content contributes to the emotional dysregulation on visual social networking platforms. This could provide the basis of an informed self-managed intervention for individuals who find it difficult to disengage from visual social networking platforms to attempt to limit the content that heightens the risk to online compulsive buying.

Services are investing in personalisation analytics services, extracting cookies from browsing habits to be shared to third-party services, which respond with personalised advertisements to provide a tailored experience (Puglisi et al., 2017). Alongside personalised advertisements, credit-norm use is changing, with buy-now-pay-later schemes operating for common commodities such as clothing (Klarna), and influencing consumer compulsive purchasing ability (Alotoum, 2016). Combining these technological developments may increase the ease of enacting online compulsive buying. Therefore, raising awareness of the negative effects of engaging in buy-now-pay-later schemes for common commodities should be prioritised. Individuals can obtain excessive personal debts, with inability to meet payments leading to forced criminality, experience clinical levels of guilt, social and familial conflict, depression and anxiety (Maraz et al., 2016).

In summary, it is clear that online compulsive buying is greater when using predominantly visual social networking. When using textual media, the anxiety sensitive is

also a major contributor to the effect, and there were significant positive relationships between both hypersensitive narcissism, and anxiety sensitivity, with online compulsive buying. Anxiety sensitivity mediated the relationship between hypersensitive narcissism and compulsive online buying when the dominate form of social media use was textual, but not when it was visual.

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Table 1: Means (standard deviations) for hypersensitive narcissism and anxiety sensitivity scales, along with their Pearson correlation with Compulsive buying, and with each other.

	Mean (SD)	Compulsive Buying	Anxiety Sensitivity
Hypersensitive Narcissism (HSNS)	28.81 (5.63)	.438***	.621***
Anxiety Sensitivity (ASI-3)	29.28 (13.89)	.438***	

*p<.05; **p< .01; ***p< .001

Figure 1: Hypothesised model relating hypersensitive narcissism and online compulsive buying, through anxiety sensitivity (mediator), and the type of social networking used (moderator).
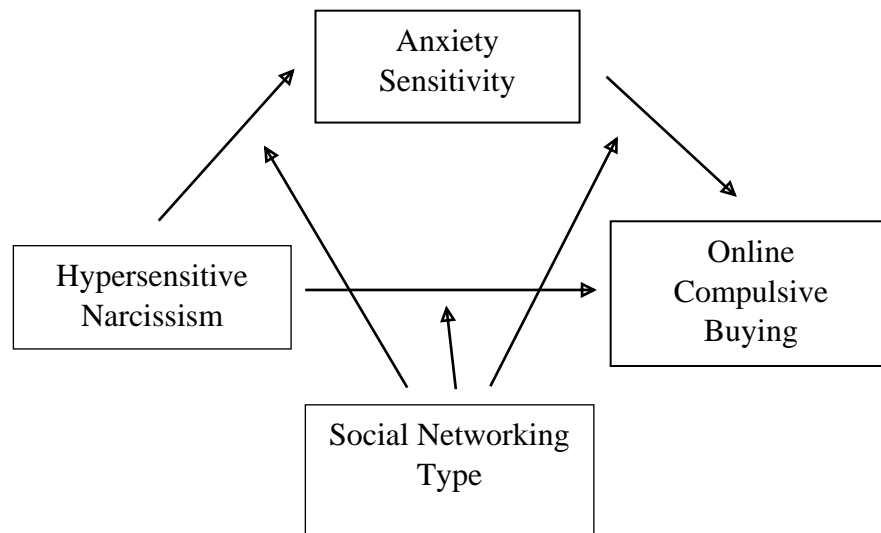
Figure 2: Mean compulsive buying scores for textual and visual social media users at one standard deviation below the mean (low), at the mean (medium), and one standard deviation above the mean (high) hypersensitive narcissism.

Chart Control

Compulisve Buying

━ Textual ━ Visual