

## **Reconsidering a role for attachment in eating disorder management in the context of paediatric diabetes**

### **Abstract**

We suggest a reconsideration of the role of 'attachment orientation' in the context of eating disorders and paediatric diabetes. Attachment orientation is a psychological construct that describes a relatively stable set of expectations and behaviours an individual relies upon in managing relationships. There is considerable evidence of an association between attachment orientation and the development and maintenance of disordered eating in individuals without diabetes, though evidence is more scant in populations with diabetes. We discuss the underpinning theory and critically examine the existing literature for the relationship between attachment orientation and disordered eating in paediatric diabetes. Finally, we draw on adjacent literatures to highlight potential future directions for research should this area be revisited. Overall, we contextualise our discussion in terms of patient-centred, holistic care that addresses the mind and body (i.e., our discussion of attachment orientation assumes a psycho-biological approach).

## **Introduction**

Preventing and improving the response to eating disorders amongst paediatric patients with diabetes is imperative, and research that can support this goal is a priority. Previously, a small number of research studies have explored the possibility that there is an influence of 'attachment orientation' (reflecting individuals' beliefs and expectations about personal relationships) on outcomes (e.g., onset) related to eating disorders in this population. Despite promising initial results, little research has built on these findings.

Here we build an argument that this area of research warrants further study. We first discuss the prevalence and aetiology of eating disorders amongst paediatric patients with diabetes. Second, from a theoretical and empirical perspective, we discuss how attachment is related to outcomes in health and diabetes in general, as well as the relationship between attachment and eating disorders. Third, we review the small literature that has triangulated the factors of interest; attachment, paediatric diabetes and eating disorders. Finally, we critically discuss how research could build on these findings and draw on adjacent literatures to elucidate potential implications for this research on clinical practice.

## **Eating disorders in paediatric diabetes**

Eating disorders and disordered eating are more common in individuals with diabetes compared to the general population. In one recent study (Purset, Hay, Bussey, Trompeter et al, 2020) which surveyed secondary school students, disordered eating behaviours were considerably more common in individuals with diabetes (13.5 %) compared to without diabetes (4.7 %), though the authors did not distinguish between type 1 and type 2 diabetes. It is worth noting that while type 1 diabetes (an autoimmune condition leading to lack of insulin production) has historically been far more common in paediatric patients, the prevalence of type 2 diabetes (associated with modifiable lifestyle factors as well as genetic factors, and leading to insulin resistance rather than lack of production) is steadily increasing (Botero & Wolfsdorf, 2005).

In individuals with type 1 diabetes, eating disorders appear to occur at approximately twice the rate observed in those without diabetes (Clery, Stahl, Ismail, Treasure, & Kan, 2017; Jones, Lawson, Daneman, Olmsted, & Rodin, 2000). In individuals with type 1 diabetes, eating disorders and disordered eating tend towards inappropriate compensatory/ purging weight-loss behaviours, including, but not restricted-to, insulin dose reduction, delay or omission (Pinhas-Hamiel, Hamiel, & Levy-Shraga, 2015; Wisting,

Frøisland, Skrivarhaug, Dahl-Jørgensen, & Rø, 2013). In terms of diagnosis, presentations of disordered eating tend to cluster around Bulimia Nervosa or Other Specified Feeding or Eating Disorder (purging disorder) diagnostic categories, at clinical or sub-clinical thresholds (Herpertz et al., 1998; Jones et al., 2000; Mannucci et al., 2005; Pinhas-Hamiel et al., 2015), though Binge Eating Disorder and Anorexia Nervosa presentations also occur in individuals with type 1 diabetes (Herpertz et al., 1998).

In individuals with type 2 diabetes, presentations consistent with a diagnosis of Binge Eating Disorder are by far the most prevalent, though Bulimia Nervosa and Eating Disorders Not Otherwise Specified are also found to a lesser extent (Herpertz et al., 1998; Pinhas-Hamiel & Levy-Shraga, 2013). In a study including 678 10-17 year-olds with type 2 diabetes, 6 % were identified as having Binge Eating Disorder, and 20 % as having sub-clinical Binge Eating Disorder (Wilfley et al., 2011). In another study, in a sample of 11 adolescents aged 11-17 years old, 3 met criteria for binge eating disorder, and a further 6 had 'notable characteristics' of binge eating disorder, though did not meet full diagnostic criteria (Pinhas-Hamiel et al., 1999).

Improving support for individuals with diabetes and co-occurring eating disorders is an important focus given the considerable impact that eating disorders have on all aspects of a person's life, including relationships, self-esteem, mood, socialising, work and education, and physical health. In individuals with type 1 diabetes, risks to physical health due to eating disorders are significant (for a discussion of these in adult women, see Goebel-Fabbi et al, 2008). Eating disorders are also particularly difficult to treat in individuals with type 1 diabetes using existing interventions (Treasure et al., 2015; see also Oldham-Cooper & Semple, this issue, for consideration of children and adolescents in particular).

Comparable data on treatment of eating disorders in individuals with type 2 diabetes are scarce: Kenardy, Mensch, Bowen, Green & Walton (2002) reported that group CBT was effective in reducing binge eating over a three-month follow-up period in a sample of adult women, though the authors are not aware of any published research documenting treatment outcomes in children or adolescents with type 2 diabetes. Moreover, eating disorders and disordered eating occurring in the context of diabetes must be considered from a psychobiological perspective, taking a holistic view of the mind and body, given the complex and multifactorial nature of the development and maintenance of disordered eating. A framework worthy of consideration in this context, given its basis in psychobiology and broad explanatory power (Diamond & Hicks, 2004), is attachment theory (Bowlby, 1969).

### **What is attachment and how does it relate to health?**

Attachment orientation is a psychological construct that conceptualises individuals' expectations and beliefs around personal relationships (Bowlby, 1960, 1969, 1982). It is developed in early childhood in response to interactions with caregivers (Bowlby, 1969) and whilst there is room for deviation, it generally persists into adulthood, acting as a template or prototype for adult attachment (Chopik, Edelstein, & Grimm, 2017; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000).

When caregiving is sensitive and responsive, the child learns effective ways to act in personal relationships and comes to expect this pattern from others (attachment security). In the seminal assessment for infant attachment 'The Strange Situation' (Ainsworth, Blehar, Waters, & Wall, 1978), attachment security is denoted by a child missing the caregiver when separated, greeting the caregiver when reunited and settling quickly back to an activity. Where interactions are in response to a threat, when a caregiver responds they teach the child how to cope with adverse experiences and the emotions that these experiences give rise to (Mikulincer & Shaver, 2019). Consequently, attachment constitutes a key behavioural system that, when activated by a threat or stressor, triggers a predictable set of responses that ideally lead to proximity to others who can support and protect from a threat (Mikulincer & Shaver, 2003).

By contrast, when caregiving is not sensitive and responsive, including inconsistency or neglect, it results in attachment insecurity. In the 'Strange Situation' infant attachment assessment (Ainsworth et al., 1978) there are two categories of insecurity; 'insecure-avoidant' which is indicated by an absence of distress when separated from the caregiver and avoidance of the caregiver when they return. 'Insecure-ambivalent/ resistant' is indicated by great distress when the child is separated from the caregiver, a clear desire for reunion, but upon reunion there is difficulty settling the child or the child may be resistant to being settled.

Insecure attachment results in alternative ways of coping with threats/ stressors and their associated emotions (emotion regulation) (Mikulincer and Shaver 2019). Indeed, in assessments of concepts around avoidant/ dismissing attachment beyond infancy (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998; Hazan & Shaver, 1987)\*, this category/ orientation of attachment is associated with the deactivation of the attachment system, fear of intimacy (Brennan et al., 1998) and the inhibition of negative emotional states (Mikulincer & Florian, 1998). In assessments of concepts around ambivalent/ anxious/ pre-occupied attachment beyond infancy (Bartholomew & Horowitz, 1991; Brennan et al., 1998; Hazan & Shaver, 1987), this category/ orientation of attachment is associated with the hyperactivation of the attachment system, fear of abandonment (Brennan et al., 1998) and, when proximity is

sought in the face of a negative threat, further distress is caused due to characteristic fears of abandonment (Mikulincer & Florian, 1998).

In adults, attachment orientation has been shown to be associated with health outcomes (Maunder & Hunter, 2001) as a consequence of influence on emotion regulation (and management of resultant affect). A review of empirical studies by Feeney (2000), suggested that attachment relationships are associated with health outcomes in children. Centrally, it is argued that attachment affects the way that children are able to manage pain, physical illness and negative emotion (which each represent 'threats', as discussed above). Feeney (2000) also acknowledges that the reverse relationship might exist, whereby health and illness may affect attachment orientation (for example, due to parental response to the child's illness/ health), although empirical evidence is mixed.

Attachment orientation is also associated with body mass index (BMI), with anxious attachment predictive of higher BMI in adults (Wilkinson et al, 2020; Wilkinson et al, 2018) and insecure attachment towards mother predictive of BMI (adjusted for baseline taken 1 year prior) in 8 -11 year old children (Goosens, Braet, Van Durme, Decaluwé, & Bosmans, 2012). In addition, attachment insecurity in both mothers and fathers was also predictive of higher child BMI in children referred to an obesity clinic (Mazzeschi, Pazzagli, Laghezza et al, 2014).

This relationship between attachment and health outcomes has also been shown to extend to diabetes. For example, in adults, studies have shown that a dismissing (avoidant) attachment orientation relates to poorer diabetes-related self-care and associated outcomes, and that this relationship is mediated by the patient-provider relationship (Ciechanowski et al., 2004). Of particular interest here is the demonstration of the influence of attachment in children and adolescents with diabetes; for example, Rosenberg and Shields (2009) showed that parent-adolescent attachment was a predictor of glycaemic control for adolescent patients with type 1 diabetes. Furthermore, attachment orientation of parents of children with diabetes has been shown to impact parenting stress and the perception that the child's condition is a burden (Moreira & Canavarro, 2016).

### **Attachment and eating disorders**

The relationship between attachment orientation and disordered eating has been well established in adults (Pearlman, 2005; Tasca, 2019; Tasca & Balfour, 2014; Zachrisson & Skårderud, 2010). A recent systematic review and meta-analysis synthesised 21 studies and showed that attachment (insecurity) was associated with greater likelihood and severity of disordered eating (Cortes-Garcia, Takkouche, Seoane, & Senra, 2019). This association was significantly mediated by "maladaptive emotion regulation" and depression (which were the

strongest mediators tested) as well as body dissatisfaction, neuroticism, perfectionism, mindfulness and social comparisons.

Moreover, the relationship between attachment orientation and disordered eating seems to endure across diagnoses; Illing, Tasca, Balfour & Bissada (2010) examined attachment in patients with Anorexia Nervosa Restricting sub-type, Anorexia Nervosa Binge-Purge sub-type and Bulimia Nervosa and found that higher attachment anxiety was associated with greater symptom severity and poorer treatment outcomes (having controlled for diagnosis). Notwithstanding this, they found some differences in attachment across diagnoses, with Anorexia Binge-Purge sub-type being associated with higher attachment avoidance than the other diagnoses examined, and higher attachment anxiety than Bulimia Nervosa.

Consistent with the adult literature examining the relationship between attachment and eating disorders, a systematic review of child and adolescent eating pathology has also provided support for a relationship between attachment and disordered eating (Jewell et al., 2016). Indeed, of the 15 studies examined, all found a relationship between these factors, 14 of the studies found a positive relationship between attachment insecurity and eating pathology, and with some notably high quality studies (e.g., Goossens, Braet, Van Durme, Decaluwé, & Bosmans, 2012) within the review. The authors note that the evidence suggests insecure attachment is a correlate and risk factor for disordered eating, though there is a limited evidence to imply causality. Furthermore, a very recent study by Cortés-García, McLaren, Vanwoerden et al (2020) found evidence that the association between attachment insecurity and eating disorders in adolescents could be mediated by impaired mentalizing (e.g. the ability to understand the behaviour of ourselves and others in terms of emotional states).

### **Attachment, diabetes and eating disorders**

Given the relationships between diabetes and eating disorders, attachment orientation and health, and attachment orientation and eating disorders (discussed above), we were concerned to examine studies that brought these factors together and investigated whether attachment orientation related to eating disorders in paediatric patients with diabetes. A small number of studies have investigated these relationships in the context of type 1 diabetes (discussed below) but there are, to our knowledge, no studies investigating attachment and disordered eating in the context of type 2 diabetes in children or adolescents. It is important to note that the following studies were all conducted by the same core research team, included samples that might be considered below the appropriate size for mediation analysis, and utilized outcome measures that in some cases necessitated the dichotomization of samples, which can limit statistical analysis options and statistical power. These issues are discussed further in the Implications for Research section below.

In an early study, Maharaj et al (1998) assessed attachment and disordered eating in 113 female adolescents with type 1 diabetes aged 11-19 years. Attachment (as an aspect of family functioning) was assessed using the Inventory of Parent and Peer Attachment (IPPA), the Family Environment Scale, and the Acceptance vs. Rejection and Independence vs. Overprotection subscales of the Mother-Father-Peer Scale. Disordered eating assessment was based on two self-report scales, the Eating Disorder Inventory (EDI) and the Diagnostic Survey for Eating Disorders DSED, both slightly modified to increase their relevance to individuals with type 1 diabetes. On nearly every measure of family functioning, an association was found between poorer family functioning and disordered eating. In terms of attachment, both Mother and Father relationships were rated as significantly more negative, with poorer quality communication, lower trust, and higher levels of alienation/ lower levels of perceived acceptance by individuals with more disordered eating. In those with greater disordered eating, families were rated by adolescents as having higher conflict, lower cohesion and greater emphasis on independence. Mother ratings of family functioning were similar to the above in relation to levels of disordered eating.

Maharaj and colleagues (2001,2003) also reported on data from a sample of 88 adolescent females with type 1 diabetes, aged 11-19, linking mother-daughter relationships in particular to disordered eating. In the first study (Maharaj, Rodin, Connolly, Olmstead & Daneman, 2001), the authors provided evidence that interactions between mothers and daughters that 'constrained the expression of intimacy and autonomy' simultaneously (as assessed using videotaped interactions during problem-solving tasks and rated using the Autonomy and Intimacy Rating System (AIRS)) were associated with the presence of disordered eating (as assessed by the EDI and DSED-Modified, including diabetes-specific items). In the second study (Maharaj, Rodin, Olmstead, Connolly & Daneman, 2003), the authors provided evidence that mother-daughter relationships, as assessed by adolescent self-report on the IPPA and observed interactions based on the AIRS (as above), were significantly associated with disordered eating, as measured by the EDI and DSED-Modified, together with maternal weight and shape concerns. The authors presented a model suggesting that both maternal shape and weight concerns and impaired mother-daughter relationships increase risk of disordered eating via the mediating factor of Self-concept deficits (Maharaj et al, 2003).

Colton et al (2007) assessed attachment and disordered eating in 106 females with type 1 diabetes aged 9-13 years in a longitudinal study, with assessments made at Time 1 and one year later (Time 2). Attachment was assessed using the Parent sections of the IPPA. Disordered eating was assessed using the children's Eating Disorder Examination (cEDE) diagnostic interview, with additional questions around insulin dose manipulation or omission as a weight control strategy. The authors reported that attachment to mother at

Time 1 accounted for significant variance in predicting new-onset disordered eating at Time 2 when comparing the group with no disordered eating behaviour and the group (N = 10) with new-onset disturbed eating behaviour. Attachment to father at Time 1 was also significantly correlated with disordered eating at Time 2, as assessed by the cEDE. In both cases, less secure attachments to each parent were associated with greater disordered eating. However, in another more recent longitudinal study, (Olmsted, Colton, Daneman, Rydall, & Rodin, 2008) with the same sample described by Colton et al (2007), attachment, as measured by the IPPA Parent attachment scales, was not significantly associated with onset of disordered eating behaviour, as assessed by the modified cEDE, after including BMI percentile, weight and shape concern subscales of the cEDE, physical appearance and self-worth subscales of the Self-Perception Profile for Children and Children's Depression Inventory score, over a 5-year study period.

### **Implications for research: What needs to be done?**

This small literature of studies concerned with attachment and disordered eating in female paediatric patients with type 1 diabetes is promising but not without limitations. These limitations potentially provide clear directions for future research concerned with the value of understanding attachment orientation in the context of paediatric diabetes and eating disorders.

First, future studies are likely to require complex data analysis approaches that go beyond multiple linear or logistic regression, such as mediation/ moderation analyses or structural equation modelling/ path analysis. This approach would allow for the exploration of potential 'confounders' which Jewell et al. (2016) have suggested may undermine the relationship between attachment and eating disorders, such as self-esteem and depression. Given theoretical pathways, these potential 'confounders' might be more appropriately considered as mediators within a more complex model (as in Cortes-Garcia et al., 2019). This may be particularly relevant to Olmsted et al. (2008)'s findings, which saw the elimination of variables assessing attachment's influence on onset of disturbed eating due to statistical redundancy in the final regression model. One possibility is that these variables were rendered redundant due to the inclusion of other factors which are actually mediators (e.g., shape concern) (see Baron & Kenny, 1986 for discussion on identifying mediators within the context of regression).

We note that this approach would afford researchers more 'integrated' or 'holistic' models that could incorporate a range of intervening variables and outcome measures (related to both mental and physical health) that impact paediatric diabetes settings (see Deeb, Akle, Al Ozairi, & Cameron, 2018). Two example variables that may be of particular interest are as follows. (1) perfectionism, which has been shown to be related to



attachment and eating disorders (Cortes-Garcia et al., 2019) and has also been notably included in studies concerned with disordered eating in paediatric diabetes that have included measures related to family functioning but not specifically attachment (Wilson, Smith, Coker, Hobbis, & Acerini, 2015). (2) Mentalization, as discussed above in terms of attachment and eating disorders (Cortes-Garcia et al., 2020), may be considered in the specific context of paediatric diabetes.

Second, future studies would benefit from careful consideration of the most appropriate outcome measure with a view to avoiding dichotomisation/ sub-grouping of samples (which limit analysis options and statistical power). Measurement selection should also account for the documented over-sensitivity of traditional measures of disordered eating when used with individuals with diabetes (Markowitz et al., 2010). A number of relevant outcome measurement options have become available more recently which may lend themselves to more powerful complex analyses (as discussed above). For example, the Diabetes Eating Problems Survey-revised (Markowitz et al., 2010) and the modified 'SCOFF' eating disorders questionnaire (Zuijdwijk et al., 2014). However, an important criticism of these measures is their potential to suggest problematic behaviours to patients during screening (Powers, Richter, Ackard, & Craft, 2016). Considering this, an additional measure has been developed and validated which avoids this issue, the Screen for Early Eating Disorder Signs – 'SEEDS' (Powers et al., 2016). Overall, in order to build consensus within an evidence base, researchers should be mindful of cross-study measurement-consistency to aid comparability.

Third, existing studies have tended to focus on female individuals with type 1 diabetes. In order to make study findings more generalisable it is important to consider including participants across genders. Studies of disordered eating in individuals with T1D appear to reflect the findings from the general population (i.e. while eating disorders occur at a higher rate in females compared to males, eating disorders nonetheless do occur in males), and we should continue to take this into account in research and clinical practice (Hanlan, Griffith, Patel & Jaser, 2013). An important demonstration of this was the finding that males with diabetes report greater 'drive for thinness' compared to males without diabetes (Svensson, Engstrom & Aman, 2003). Studies might also consider a focus on type 2 diabetes, given the literature on attachment, overeating behaviours and BMI (e.g., Wilkinson, Rowe, Robinson, & Hardman, 2018). This could reveal pathways from attachment to outcome that are distinct from samples including participants with type 1 diabetes only. In addition, studies investigating influences of attachment on outcomes tend to be biased towards 'organised' forms of attachment; this is problematic because this bias may fail to capture the experience of attachment 'disorganised' patients who are most vulnerable to psychopathology (Paetzold, Rholes, & Kohn, 2015). However, a new adult measure has been developed (Paetzold et al., 2015), that has already been used in the area

of attachment and eating psychopathology (Wilkinson, Rowe, & Millings, 2020). Researchers might consider adapting for the participant group of interest, in this case paediatric patients with diabetes.

Finally, as with many studies across scientific domains, future studies would benefit from appropriate sample size planning in order to have adequate statistical power to detect effects – for example, Fritz and McKinnon (2007) suggest that 462 participants are required in order to detect small effect sizes in the commonly used bias-corrected bootstrap mediation analysis. Studies would also benefit from observing the principles of open science (Munafò et al., 2017). In this context we highlight a particular need for independent replication of effects reported here, as the few studies that have focussed on attachment and eating disorders individuals with diabetes have been conducted by the same core research team.

### **Implications for practice**

The evidence that exists around the role of attachment, paediatric diabetes and disordered eating, whilst sparse, is promising and we believe that the topic merits further scrutiny. Here we discuss potential implications for practice and draw on evidence from other domains where attachment-informed practice has been examined.

Within the domain of eating disorders more generally, studies have shown that certain existing treatments are particularly effective for individuals with a given attachment orientation (Tasca, 2019). For example, Tasca et al. (2006) longitudinally assessed patients with Binge Eating Disorder who were undertaking either group cognitive behavioural therapy (GCBT) or group psychodynamic interpersonal psychotherapy (GPIP). At 12-month follow-up, patients high in attachment anxiety experienced a greater improvement in symptoms following the GPIP treatment. Conversely, patients low in attachment anxiety experienced a greater improvement in symptoms following the GCBT treatment.

Second, Sockalingam and Hawa (2016) have made their bariatric surgery service more attachment-informed overall. For example, ensuring an emphasis on consistency and empathic care from all team members (including those who have nothing to do with psychology) and tailoring the medium of support to patient attachment orientation – e.g., for those who are highly attachment avoidant, using telephone or online services rather than group or face-to-face contacts.

In addition, it is noteworthy that a body of literature suggests that attachment itself can be manipulated. This involves priming ‘a sense of’ attachment security in adults (Mikulincer & Shaver, 2020). This can involve the implicit or explicit presentation of material associated with attachment security (Mikulincer & Shaver, 2007). The approach has notably

been tested in the context of depression, with results showing that repeated security priming resulted in reduced anxiety and depression symptoms compared to a control after a 10-day protocol (Carnelley, Bejinaru, Otway, Baldwin, & Rowe, 2018). Furthermore, a recent study has successfully adapted a security priming protocol for children aged 6 -7 years old (Stupica, Brett, Woodhouse, & Cassidy, 2019). In addition, mentalization capacity is thought to be associated with attachment orientation: the ability to understand behaviour in terms of mental states being learned via attachment relationships (Fonagy et al 2002). Therefore, it is possible that mentalization capacity may be a useful target for intervention as an intermediary, particularly given evidence, discussed previously, that mentalization capacity may mediate the relationship between attachment and eating disorders in adolescents (Cortés-García et al, 2020) and also given early evidence that mentalization capacity relates to diabetic control in children with type 1 diabetes (Costa-Cordella, Luyten, Cohen et al, 2020).

Taken together, from a prevention and early intervention perspective, within paediatric diabetes teams we could also emphasise consistency and empathic care from all team members, supported by team psychologist if possible. This might include allocation of a key worker within the team who can be available for regular contacts such as clinic reviews, offering the same diabetes consultant as much as possible, and placing emphasis on empathic and person-centred care as a guiding principle for the team, facilitated by regular training and supervision. Additionally, the team may begin to take into account differential attachment relationships (e.g., Bosmans, Goossens, & Braet, 2009) in their interactions with the family: this could give rise to tailored communication as in Socklingham and Hawa (2016), for example use of group/ face-to-face, or online/ telephone support and education. This could also aid the team in their interactions with the whole family (for an interesting discussion of ‘attachment as a model to understand and manage parent-doctor relationships’, see Swanepoel, 2019). Future studies may also begin to explore attachment orientation as a factor in eating disorders treatments: for example, making use of attachment priming (e.g. Mukulincer & Shaver, 2020) and adapting treatment protocols to suit individuals with particular attachment styles (e.g. Tasca et al, 2006). Finally, Oldham-Cooper and Semple (this issue) have argued for the importance of prevention and early intervention of eating disorders in this population: in future, paediatric diabetes teams may wish to consider routine screening approaches that include attachment measures as well as disordered eating assessments.

## **Conclusion**

In this article we have proposed that attachment orientation in relation to the development of disordered eating in paediatric diabetes should be re-visited. We reviewed a small number of studies that have addressed this question in female adolescents with type 1

diabetes, with overall promising findings: the majority of studies report a significant association between attachment and disordered eating. However, despite theoretically plausible relationships and adjacent evidence (e.g., between attachment and child BMI) no studies, as far as we are aware, have investigated the association between attachment and disordered eating in individuals with type 2 diabetes, and no study has, to our knowledge, included males in its sample. Future high quality studies may provide a stronger foundation on which this line of research could build. We have suggested that future studies could build upon the existing evidence by, i) paying attention to issues around statistical analysis; ii) making use of more recent developments in assessment tools for disordered eating in this population; iii) increasing the scope of studies to include a focus on males and those with type 2 diabetes, and, finally, making use of appropriate sample size planning. Other services, such as bariatric surgery services (e.g. Sockalingam & Hawa, 2016) have used an attachment model to shape their service provision: with improvements to the evidence base in eating disorders and paediatric diabetes, we consider this to be an exciting potential future direction for paediatric diabetes services.

#### **Declaration of Conflicting Interests**

The Authors declare that there is no conflict of interest

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Footnote:

\*For a review of different models of attachment see (Fraley, Hudson, Heffernan, & Segal, 2015)