Attachment anxiety, disinhibited eating, and body mass index in adulthood.

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Abstract

Several studies report a relationship between body mass index (BMI) and disinhibited eating (a failure to restrict intake and to overeat). However, the aetiology of disinhibited eating has received scant attention. In this study we consider a role for 'attachment orientation,' a trait that reflects the quality of bonding in early life and remains stable throughout adulthood. Participants (N= 200, females= 135, BMI range from 17.4 – 41.1) completed measures of disinhibition and attachment orientation. 'Attachment anxiety' was a good predictor of disinhibited eating (p< .001). Furthermore, mediation analysis confirmed that it is through this relationship that attachment anxiety also predicts BMI (p= .02). These findings are consistent with other studies showing an association between attachment orientation and other disinhibited behaviours, including alcohol and substance abuse. Our interpretation is that disinhibited eaters engage in 'external affect regulation.' In so doing, they seek to mitigate the anxiety associated with poor interpersonal attachments.

Key words: Attachment anxiety, attachment avoidance, BMI, disinhibited eating, mediation analysis

Introduction

'Disinhibited eating' is characterised by a propensity to engage in periodic overeating (1) and a failure to maintain dietary restriction. Typically, disinhibited eating is measured as a trait using the disinhibition subscale of the Three-Factor Eating Questionnaire (TFEQ) (2). This subscale assesses a number of factors, including an inability to resist encouragement to eat and overeating in response to negative shifts in emotion and self esteem (2). Disinhibited eating is important because it is a potent risk factor for overweight and obesity (3). Indeed, relative to other psychological variables, disinhibited eating is the single best predictor of BMI (4) and this relationship is evident in groups with different socioeconomic status, weight history, and dieting status (see (5) for review). Importantly, disinhibited eating predicts future weight gain (4), suggesting that it plays a causal role in overweight and obesity.

Typically, studies have focused on specific social and environmental correlates of disinhibited eating. However, the reason why individual differences exist has remained unclear. In this regard, it may be relevant that other types of 'disinhibited behaviour,' such as those related to smoking, alcohol consumption, substance abuse, or sexual promiscuity (see (6) for review), have been associated with an insecure 'attachment orientation.' Attachment orientation has been explored extensively over the last 40 years and is associated with a range of psychopathologies (7). It describes a representational model of personal relationships (benefits and reciprocal expectations) and it reflects early-life interactions with primary caregivers (8). Critically, measures of attachment

orientation remain highly stable into and throughout adulthood (although moderate shifts may occur in response to "attachment-related stressful life events" (9)).

Attachment orientation is assessed in terms of two orthogonal dimensions ('anxiety about abandonment' and 'avoidance of intimacy') that are measured using separate subscales (attachment anxiety and avoidance) on the Experiences in Close Relationships questionnaire (ECR) (10). A high score on one or both of these dimensions is taken as evidence of an insecure attachment orientation (usually resulting from inconsistent caregiver behaviour in early life) (10). (Note attachment orientation can be assessed 'globally' (general approach to relationships) or 'specifically' (approach to a particular relationship) - the ECR measures 'global' attachment orientation (10)).

Previously, relationships between disinhibition (involving substances other than food) and attachment have been attributed to individual differences in the need for 'external affect regulation.' An external affect regulator is a behaviour or substance that alters an individual's emotional state - it soothes, distracts, or excites (6). In particular, attachment anxious individuals tend to experience poor emotional control (the hyperactivation of the attachment system leads individuals to focus on distressing attachment cues) (11). Therefore, they tend to rely on external affect regulators for emotional control. By contrast, individuals who have high attachment avoidance tend to repress and control internal emotions (the deactivation of the attachment system allows individuals to disregard distressing attachment cues) (11). Thus, they may have less need for external affect regulation.

Based on the above, we hypothesised that attachment orientation (in particular attachment anxiety) might explain individual differences in BMI. Rather than predicting

BMI directly (see dashed line in Figure 1), we reasoned that attachment orientation might influence the tendency to engage in disinhibited eating, and in turn, this 'mediator' (12) might promote an elevated BMI (see continuous line in Figure 1). In testing this proposition, we sought to identify attachment orientation as a potentially important antecedent of disinhibited eating and disinhibited eating as a process by which insecure attachment leads to weight gain.

Methods

Participants

Two-hundred participants (mean age= 22.4, s.d.= 6.9 years) assisted with this study. Of these, 135 were female. Participants were recruited by email from the student population of the University of Bristol. All were advised that they should not volunteer if they have been diagnosed previously with an eating disorder. The protocol for this study was approved by the local Faculty of Science Human Research Ethics Committee.

Measures

Attachment orientation was quantified using the 36-item ECR questionnaire (10). This comprised two 18-item subscales, one for attachment anxiety (Cronbach's alpha = .91) and a second for attachment avoidance (Cronbach's alpha = .91). On a seven-point scale ranging from "disagree strongly" (1) to "agree strongly" (7), participants rated their level of agreement with statements about their experiences of interpersonal relationships. Disinhibited eating was assessed using the 16-item disinhibition subscale (Cronbach's

alpha = .75) of the TFEQ (2). Items on this subscale refer to overeating and loss of dietary control, and responses included true/false categories and ratings on a five-point scale (never (0) to always (4)). All alpha values reported were recorded in the current study.

Procedure

Participants read an information sheet outlining the basic procedure. They were told that a measure of height and weight would be taken and that they would be required to answer questions about dietary habits and attitudes towards relationships. No reference was made to the specific aims and objectives of the study. Participants then signed a consent form, and completed the ECR followed by the TFEQ-disinhibition scale. A measure of bodyweight and height was then taken (by the experimenter) using a digital balance scale and a stadiometer, respectively.

Mediation analysis

A potential 'mediating relationship' was investigated using a procedure outlined by Baron and Kenny (12). Briefly, a relationship of this kind is confirmed when two criteria are met. First, significant relationships must exist between the predictor and the outcome (criterion 1), the predictor and the mediator (criterion 2), and the mediator and the outcome (criterion 3). Second, when the mediator is included (controlled for) alongside the predictor in an analysis of the outcome variable, then the beta value relating the predictor to the outcome no longer remains significant (criterion 4). In our analysis we

entered attachment as a 'predictor,' disinhibited eating as a 'mediator,' and BMI as the 'outcome.'

All relationships were explored using multiple regression. The significance of the indirect (mediated) relationship was confirmed using a procedure outlined by Sobel (13). The unstandardized regression coefficients and standard errors of the two paths (path a= attachment anxiety to disinhibition and path b= disinhibition to BMI) in the 'mediating chain' are used to calculate the path coefficient ($b_a b_b$) and its standard error ($^s b_a b_b$). A *t* ratio is then computed by dividing the path coefficient by its standard error. If the *t* ratio exceeds +/-1.96 then the indirect path is significant and the role of the mediator is confirmed.

Results

Preliminary analysis

All participants were included in our analysis. Our sample had a mean BMI of 23.0 with a range from 17.4 to 41.1 (s.d.= 3.19). The mean attachment avoidance score was 2.92 (s.d.= .97) and a mean attachment anxiety score of 3.5 (s.d.= 1.02). The mean disinhibited eating score was 7.23 (s.d.= 3.48).

Age significantly correlated with both disinhibited eating (r = -.171, p= .02) and BMI (r= .225, p= .001), and disinhibited eating scores differed significantly across males and females ($t(198)$= 2.36, p= .019). Therefore, we controlled for these participant characteristics in our regression analyses.

Relationship between disinhibited eating, attachment orientation, and BMI

In the first instance we calculated the intercorrelation between measures in our study (see Table 1). This revealed a significant positive correlation between BMI and disinhibited eating. Attachment anxiety correlated significantly with disinhibited eating and with BMI. By contrast, the correlations between attachment avoidance and these variables failed to reach significance. For this reason, we focused on attachment anxiety scores in a subsequent mediation analysis.

Mediation analysis was conducted according to the steps outlined above. Figure 1 shows the *p* and *ß* values associated with tests of the four criteria. Significant relationships were confirmed between attachment anxiety and BMI (criterion 1), between attachment anxiety and disinhibited eating (criterion 2), and between disinhibited eating and BMI (criterion 3). When disinhibited eating was included alongside attachment anxiety then attachment no longer predicted BMI (criterion 4). Finally, the *t* ratio associated with the mediator was significant ($t= 3.47$, $p<.05$). Therefore, all criteria for mediation were met, suggesting that attachment anxiety influences BMI via a relationship with disinhibited eating.

Discussion

Consistent with our hypothesis, disinhibited eating is associated with attachment anxiety (a form of attachment orientation), and disinhibited eating mediates a relationship between attachment anxiety and BMI. Individuals who have a high score on the attachment-anxiety scale tend to have ongoing concerns about the quality of their

relationships with family and friends (11). As noted earlier, these individuals compensate with a tendency to seek out 'external affect regulators,' including alcohol and drugs of abuse. Our findings suggest that anxious attachment is also evident in eating behaviour, specifically the tendency to seek comfort through overeating. Over time, this leads to a positive energy balance and an increase in BMI.

Consistent with this idea, individuals with high attachment anxiety exhibit greater psychological and physiological reactivity (cortisol levels) to environmental stressors (14). Further, individuals with high levels of attachment anxiety are more likely to self-report higher levels of stress and to exhibit heightened reactivity, especially to negative life events (*e.g.*, marital divorce) (15). In relation to food intake, it may be relevant that significant life events appear to coincide with shifts in BMI. For example, rapid weight gain is associated with leaving the parental home and starting university (the 'Freshman 15' phenomenon) (16), and similar shifts in BMI are observed in inmates who have recently entered prison (17). It may also be relevant that after a weight-loss programme, dietary relapse is often attributed to unexpected stressful events (18). Our data indicate that anxiously attached individuals may be more sensitive to these events. Therefore, attachment anxiety should be included as a predictor of weight gain in future studies.

Affective priming refers to a process in which an individual is exposed to multiple subliminal stimuli. In the context of attachment orientation this might involve exposure to the names of 'supportive people' that represent 'security' in a participant's life (see (19) for a number of examples). After exposure, the participant reports a temporary shift in mood that is consistent with these primes (19). In the short term, this approach might help to militate against the need for compensatory eating.

To our knowledge this is the first study to relate attachment anxiety to disinhibited eating and BMI. The prospect that disinhibition is determined by early-life social interactions is consistent with recent evidence that this behaviour has a low underlying heritability (5). It may also be relevant that dietary environment (*e.g.*, parental restriction and pressure to eat) is related to the emergence of 'protodisinhibited eating' (20) in young children. It remains unclear whether these behaviours predict patterns of disinhibited eating throughout adulthood. However, evidence based on retrospective recall suggests this is plausible (20). In future, causal relationships need to be established in longitudinal studies and the role of childhood attachment would obviously merit scrutiny. In this context, future studies might also incorporate i) additional behavioural assessments (of disinhibited eating and aberrant attachment) to consolidate our findings based on self-report questionnaires and, ii) measures of current mood and anxiety (to eliminate or estimate potential state-based interference effects).

Conflict of Interest

The authors declare no conflict of interest.

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Tables

Table 1: Associations between attachment avoidance, attachment anxiety, BMI, and disinhibited eating. Pearson's correlation coefficients (*df* = 196) are reported.

	Attachment avoidance	Attachment anxiety	BMI
Disinhibited eating	.038	.278***	.450***
BMI	-.063	.147*	
Attachment anxiety	.227**		

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

Figure heading

Figure 1: Disinhibited eating as a mediator of the relationship between attachment anxiety and BMI. Standardized β, p and R^2 values are shown (values associated with criterion 4 (when the mediator is included alongside the predictor in the analysis of the outcome variable) are shown in brackets).