
Article:
Duarte, C, Pinto-Gouveia, J and Stubbs, RJ orcid.org/0000-0002-0843-9064 (2017) The prospective associations between bullying experiences, body image shame and disordered eating in a sample of adolescent girls. Personality and Individual Differences, 116. pp. 319-325. ISSN 0191-8869

https://doi.org/10.1016/j.paid.2017.05.003

The prospective associations between bullying experiences, body image shame and disordered eating in adolescent girls

Abstract

Objective: The current analysed the prospective effect of bullying on body image shame and disordered eating symptomatology in adolescent girls. **Method:** The study was conducted with 290 adolescent girls, and involved three waves of data collection assessing over time victimization experiences, body image shame and disordered eating symptomatology. At the beginning of the study, the participants average age was 13.73 years (SD = 0.78). Latent growth models were used to fit the data to identify the effect of bullying on the outcomes. Path analysis examined the mediator effect of body image shame on the association between bullying and disordered eating. **Results**: Bullying had a significant effect on the initial status of both body image shame and disordered eating. Body image shame and disordered eating growth was stable over time. Body image shame significantly mediated the relationship between bullying and disordered eating symptomatology. **Conclusions**: Findings suggest that programmes aimed at preventing bullying and associated shame could decrease the risk of initially developing body image issues and disordered eating.

Keywords:

Bullying; body image shame; disordered eating symptomatology; adolescence; longitudinal

1. Introduction

Bullying, including being excluded, ridiculed, name-called or even physically abused is a common experience (Nansel et al., 2001; Smith & Brain, 2000), with its peak occurring in early adolescence (Smith, Madsen, & Moody, 1999). There is consistent evidence that persistent victimization by peers is related to mental health problems in adolescence (Cunha, Matos, Faria, & Zagalo, 2012; Gilbert & Irons, 2009; Hawker & Boulton, 2000; Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000; Rubeis & Hollenstein, 2009; Smokowski & Kopasz, 2005) and can have deleterious enduring effects into adulthood (Matos & Pinto-Gouveia, 2010; Pinto-Gouveia & Matos, 2011; Rigby, 2001). Physical appearance is often the cause of peer victimization, which may lead to body image and eating-related problems, especially among adolescent girls (Frisén, Holmqvist, & Orcarsson, 2008; Menzel et al., 2010). Nonetheless, despite the pervasive nature of such victimization experiences in adolescence, not all adolescents who experience these negative interactions develop body image or disordered eating difficulties. Thus, it is important to understand how victimization experiences may become associated with body image and eating psychopathology in this critical developmental period.

Body image as an indicator of social attractiveness

Negative body image has received empirical support as a risk factor for disordered eating (Fairburn, Cooper & Shafran, 2003; Stice, Marti, & Durant, 2011). Body image dissatisfaction increases with the onset of adolescence (Bearman, Presnell, Martinez, & Stice, 2006; Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Cusumano & Thompson, 2001) and is considered a widespread phenomenon among women (Thompson,

Heinberg, Altabe, & Tanleff-Dunn, 1999). Physical maturation associated with the onset of puberty, characterized by the development of curves and by an increased regional deposition of body fat is not always consistent with the socially valued physical appearance. This inconsistency may help explain why many adolescent girls become increasingly dissatisfied with their physical appearance (Ricciardelli, McCabe, Holt, & Finemore, 2003) and may engage in efforts to alter their physical appearance to become closer to the social representation of the ideal female appearance (e.g., thinness Allen & Land, 1999; Gilbert & Irons, 2009).

It has been suggested that having traits believed to be valued by others, within a certain social and cultural context, is associated with positive social outcomes (e.g., thinness is often equated with attractiveness, power and success in modern Western societies; Ferreira, Pinto-Gouveia, & Duarte, 2013; Pinto-Gouveia, Ferreira, & Duarte, 2014) and is important for one's sense of safeness and self-worth (Gilbert, 1989, 1997; Kurzban & Leary, 2001). Concerns that one lacks such qualities or has certain traits or attributes that others might disapprove or do not value can be perceived as threatening, which may give rise to perceptions of inferiority and inadequacy. In extremis these perceptions characterize the painful emotion of shame.

Body image shame

Shame is a complex self-focused social emotion that involves evaluations that the self is inferior or flawed, negatively viewed by others, criticized or judged, and thus vulnerable to social exclusion, rejection or even attacks (Gilbert, 1998; Lewis, 2003; Tangney & Dearing, 2002; Tracy & Robins, 2004). Several studies have demonstrated that shame can have negative effects on psychological adjustment (e.g., Kim, Thibodeau, & Jorgensen, 2011; Matos & Pinto-Gouveia, 2010).

One's body image is a domain of self in the context of self and others' evaluation. Ones' body image can stimulate either a positive image of the self through being valued, included and accepted by others or be perceived as a source of ostracism, devaluation or rejection by one's social context. Body image shame has been conceptualized as involving negative self-evaluations that one is seen as an unattractive, undesirable social agent because of one's physical appearance (Gilbert, 1998, 2002). Body image shame has been linked to a range of psychopathologies, especially eating disorders (Bessenoff & Snow, 2006; Castonguay, Brunet, Ferguson, & Sabiston, 2012; Duarte, Pinto-Gouveia, Ferreira, & Batista, 2015; Duarte, Pinto-Gouveia, & Rodrigues, 2015; McKinley, 1998). It has been suggested that disordered eating behaviours may operate as a proximal maladaptive mechanism of attempted coping with the distressing affective experience of shame (Ferreira et al., 2013). Ultimately, however this attempt at coping may lead to a further sense of being devalued, flawed and be associated with poor psychological adjustment (Pinto-Gouveia et al., 2014).

Peer bullying as a shame-eliciting experience in adolescence

Adolescence is characterized by key psychosocial transformations that make the adolescent particularly sensitive to social messages and signals that indicate what is attractive and acceptable to the social group (Gilbert & Irons, 2009; Irons & Gilbert, 2005; Wolfe & Mash, 2006). During this critical period there is a tendency to rely less on attachment figures (e.g., parents) and more on the peer group as a source of support and as a reference to estimate one's self-worth (Allen & Land, 1999). At this developmental phase, there is increases in concerns with self-presentation, self-evaluation of attributes or characteristics that are socially valued, and also increased fears of rejection, disapproval, or potential attacks by the peer group (Gilbert & Irons, 2009).

Peer bullying can therefore be a potentially shame provoking experience. Bullying is often focused in physical appearance, especially among adolescent girls (Frisén, Holmqvist, & Orcarsson, 2008; Menzel et al., 2010). Nonetheless, there is cross-sectional and retrospective evidence to suggest that even when the victimization is not specifically focused on the domain of physical appearance, the experience of victimization itself may become associated with perceptions of unattractiveness and inferiority and also with eating psychopathology (Kaltiala-Heino, Rissanen, Rimpela, & Rantanen, 1999; Matos, Ferreira, Duarte, & Pinto-Gouveia, 2014; Striegel-Moore, Dohm, Pike, Wilfley, & Fairburn, 2002). A recent cross-sectional study of a large sample of adolescent girls suggested that the association between peer bullying experiences and disordered eating was influenced by the extent to which these experiences were associated with body image shame and self-criticism (Duarte, Pinto-Gouveia, & Rodrigues, 2015). Associations in this study highlighted possible pathways (shame and self-criticism) by which bullying experiences may influence eating psychopathology in adolescence. This suggests that susceptibility to shame and self-criticism may interact with the environmental trigger of peer victimisation to promote eating disordered symptomology.

Longitudinal studies have investigated the directional nature of the relationship between victimization experiences within the peer group context and changes in subsequent body image and eating difficulties (Engström & Norring, 2002). These studies suggest that (i) early peer victimization is prospectively related to increased appearance monitoring and body image shame in adolescent girls in comparison to adolescent boys (Lunde, Frisén, & Hwang, 2006); (ii) adolescents who experienced bullying were at increased risk for eating psychopathology symptoms (Copeland et al., 2015; Mamun, O'Callaghan, Williams, & Najman, 2013). Nonetheless, no study to date has investigated the prospective associations between victimization experiences and disordered eating symptoms, mediated by body image shame. It should be emphasised that victimization experiences are a pervasive phenomenon in

adolescence (Nansel et al., 2001) but their impact on adolescents' mental health is not ubiquitous. Thus, it is important to understand the mechanisms through which victimization experiences may become associated with body image and eating psychopathology. As in adolescence concerns about whether one is stimulating positive affect and a positive image of oneself in others increase, it is plausible that negative interpersonal experiences (e.g., criticism, rejection, or attacks) become associated with shame feelings (Gilbert & Irons, 2009). Disordered eating symptoms and attempts to change the body may then become a means to cope with shame and to be accepted by others, and avoid such social threats (Duarte, Pinto-Gouveia, Ferreira, & Batista, 2015; Duarte, Pinto-Gouveia, & Rodrigues, 2015; Ferreira et al., 2013; Pinto-Gouveia et al., 2014).

This study

The current study prospectively examined the longitudinal relationship between victimization experiences, body image shame and disordered eating symptomology. We examined individual differences in the longitudinal trajectories of these outcomes over three years in a sample of 290 adolescent girls using latent growth curve models. Taken together theoretical and empirical contributions (Gilbert, 2002; Duarte, Pinto-Gouveia, & Rodrigues, 2015; Gilbert & Irons, 2005; Ferreira et al., 2014), we hypothesized that (i) victimization experiences would be predictive of earlier levels of body image shame, (ii) that body image shame would in turn predict later developmental trajectories in disordered eating symptomatology and (iii) that body image shame mediated the longitudinal effect of bullying experiences on disordered eating symptomatology.

2. Method

2.1. Participants

This study is part of a wider project examining the effect of interaction experiences on self-evaluation, emotion regulation, body image and eating-related difficulties in adolescence. The sample of this study comprised adolescent girls and was collected in private (1) and public schools (13) of the central region of Portugal, over three years. Participation rate in each school ranged from 44% to 100%. Participants attended schools located in urban (38.67%), semi-urban (46.15%) and rural (15.8%) areas; 99.18% of the participants were Caucasian. Equidistant measurement was assured at every 12 months. A total of 481 adolescent girls (M_{Age} = 13.73, SD = 0.78), completed the assessment at year 1 when attending the 8th and 9th grades; 395 participants (M_{Age} = 14.50, SD = 0.75) completed the assessment at year 2; and 290 (M_{Age} = 15.63, SD = 0.68) completed the assessment at year 3. The attrition rate (17.88% at year 2 and 26.58% at year 3) was primarily due to students transferring out of the schools in the study catchment during the 9th grade transition from middle to secondary school. Thus 191 students were lost to follow-up. No differences were found between the participants that completed the study and those who did not regarding the study variables at the start of the study ($t_{(479)BMI}$ = 0.29, p = .774; $t_{(479)Bullying}$ = 1.16, p = .249; $t_{(479)BodyShame}$ = 0.40, p = .690; $t_{(479)DisorderedEating}$ = 0.19, p = .985).

2.2. Measures

Body Mass Index. Participants' BMI was calculated by dividing self-reported weight (in Kg) by self-reported height squared (in m).

Peers Relations Questionnaire (PRQ; Rigby & Slee, 1993) is a 20-item self-report measure that includes a subscale (Victim - 5 items) used to assess victimization experiences inflicted by peers. Items are rated on a 4-point scale (ranging from 1 = never to 4 = very often). The scale presents good psychometric properties in the original study (Rigby & Slee, 1993) and in the Portuguese validation study (Silva & Pinheiro, 2010). In this study, the subscale Victim (e.g., "I get called names by others"; "I get picked on by others") was used to assess bullying experiences, which presented a Cronbach's alpha of .84 in the Portuguese validation study (Silva & Pinheiro, 2010).

Body Image Shame Scale – Adolescents Version (BISS-A; Duarte & Pinto-Gouveia, 2014; Duarte, Pinto-Gouveia, Ferreira, & Batista, 2015) is a 9-item scale that assesses body image shame, including perceptions that others negatively evaluate and criticize the self because of one's body image, and body image-focused negative self-evaluations (e.g., "My physical appearance makes me feel inferior in relation to others"; "I feel uncomfortable in social situations because I feel that people may criticize me because of my body shape"). Participants are asked to rate the items using a 5-point scale (ranging from 0 = never to 4 = almost always). The original scale (Duarte, Pinto-Gouveia, Ferreira, & Batista, 2015) and the adapted version for adolescents (Duarte & Pinto-Gouveia, 2014) present good psychometric properties.

Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) includes 36 items assessing disordered eating behaviours and attitudes (e.g., "Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?"; "Have you had a definite fear of losing control over eating?"; Has your shape influenced how you think about (judge) yourself as a person?") over the past 28 days (score ranges between 0 and 6). The EDE-Q presented good psychometric

properties in the original (Fairburn & Beglin, 1994) and in its Portuguese version (Machado et al., 2014). The global score of the questionnaire was used the current study.

2.3. Procedure

The required local authorities and ethics committees (General Direction of Innovation and Curricular Development; Portuguese Data Protection Authority) approved the study. The boards of schools of the central region of Portugal that comprised 'school clusters' (i.e., schools where students complete their primary and secondary education) were contacted to take part in the study. All contacted schools (N = 14) approved the study, and invited the respective female students (attending 8th and 9th grades) to participate. Participants and their parents/legal tutors provided their written informed consent to voluntarily participation at the three yearly assessment points. Each school subsequently scheduled the day and a class period for the questionnaires completion. The teacher in charge introduced the researchers to the students who provided the written informed consent and left the classroom. The researchers gave standardized instructions to all participants, emphasised that their participation was voluntary and that all data collected would be confidential, anonymised and used only for research purposes. The self-report questionnaires took approximately 45 minutes to complete. The questionnaires were administered during the nominated class period in groups that comprised 5 to 36 participants; this variability was due to the number of participants in each class, in each respective school, that consented to take part in the study.

2.4. Analytic strategy

Descriptive statistics and correlation analyses were calculated using SPSS (v.21 SPSS; Armonk, NY: IBM Corp.). Differences between participants with significant levels of eating psychopathology (determined using the EDE-Q cut-off score ≥ 4; Carter, Stewart, & Fairburn,

2001) at both T2 and T3 and the remaining participants, on bullying experiences (at both T1 and T2), were calculated through Student t-tests.

Longitudinal relationships between the study variables were analysed through Latent Growth Curve Modelling. This technique incorporates initial levels of study variables (intercept mean), the inter-variability in these levels (intercept variance), the average rate at which individuals change (slope mean), and the inter-individual variability in that rate (slope variance (Selig & Preacher, 2009). Unconditioned latent growth curve models were calculated to examine the growth of bullying experiences, body image shame and disordered eating. To examine the effect of bullying experiences on the longitudinal relationships between body image shame and eating psychopathology a conditioned latent growth curve model was tested using baseline assessment (year 1) of self-reported bullying experiences (independent variable). To assess the change (slope) in the outcome variables (body image shame and eating psychopathology) from baseline we used the observations from year 1, 2 and 3.

BMI at baseline was controlled for in the models as a covariate to account for its effect on outcomes.

Analyses were conducted using the Maximum Likelihood estimation method. The plausibility of the examined models was assessed using the following model fit indices: the Chi-square (χ^2), which indicates a very good model fit when nonsignificant; the Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI), with higher levels (above .95) indicating very good fit; the Root Mean Square Error of Approximation (RMSEA), with 90% confidence intervals, with values below .08 indicating reasonably good fit (Kline, 2005; Tabachnick & Fidell, 2013).

3. Results

3.1. Descriptives and correlations

Preliminary analyses indicated no extreme outlers, no severe violation normality and no evidence of multicollinearity (Kline, 2005).

Means and standard deviations of the study variables (reported in Table 1) were similar to those obtained in previous studies with community samples (Duarte, Pinto-Gouveia, & Rodrigues, 2015; Luce, Crowther, & Pole, 2008; Rigby & Slee, 1993). Participants' mean BMI was within the normal weight range and the BMI distribution was similar to prior studies (De Onis et al., 2007). Considering a cut-off score of ≥ 4.0 on the EDE-Q score to indicate clinical significance, 3.8% of the sample in year 1, 4.8% in year 2 and 4.8% in year 3, scored in the clinical significant range (Carter, et al., 2001). Student t-test results indicated that participants who presented scores above the EDE-Q ≥ 4.0 cut-off score at T2 presented significantly higher scores of bullying experiences (M = 9.00, SD = 3.09) at the T1, in comparison to the remaining participants (M = 6.43, SD = 2.06; $t_{(288)} = 3.19$, p = .006). Moreover, participants who scored above the EDE-Q ≥ 4.0 cut-off score at T3, reported significantly higher scores of bullying experiences (M = 9.00, SD = 3.09) at T2, in comparison to participants who scored below the cut-off score (M = 6.43, SD = 2.06; $t_{(288)} = 3.19$, p = .006).

There were moderate positive correlations between bullying experiences and both body image shame and disordered eating symptomology in year 1, 2 and 3 (Table 1). There were strong positive correlations between body image shame and disordered eating symptomology at the three assessment points. BMI was not significantly associated with bullying experiences, but revealed small-to-moderate positive associations with body image shame and disordered eating symptomology.

Insert Table 1 here

3.2. Unconditional latent growth curve modelling

Three unconditional latent growth models were first conducted for bullying experiences, body image shame and eating psychopathology. Plausibility estimates for bullying experiences revealed a very good model fit ($\chi^2_{(1)} = .007$, p = .935; CFI = 1.00; TLI = 1.00; RMSEA = .00 [.00, .00], p = .989). The means for the intercept and slope factors were estimated to be 6.56 (p < .001) and -.15 (p = .003). Moreover, there were significant variance estimates for both the intercept (3.69, p < .001) and slope (.46, p = .006), indicating that there was substantial individual variability around both the mean starting point and the mean rate of change over time. Also, there was a significant correlation between the intercept and slope factors (-.35; p = .019). These results indicated that although the pattern for the sample as a whole suggested that scores on this variable declined over time, this rate of decline was less steep for individuals with high levels of bullying at baseline.

For body image shame the model also showed a very good model fit ($\chi^2_{(1)} = 2.20$, p = .138; CFI = 1.00; TLI = .99; RMSEA = .06 [.00, .18], p = .273). The mean of the intercept was .84 (p < .001), while the mean slope was nonsignificant (-.02; p = .437). There were significant variance estimates for the intercept (.79, p < .001) and for the slope (.14, p < .001), suggesting significant individual variability for the mean starting point and progression over time. The correlation between the intercept and slope factors was significant (-.42, p < .001) indicating less steep increases of body image shame.

The unconditioned model for disordered eating symptomology revealed a very good model fit ($\chi^2_{(1)} = .181$, p = .670; CFI = 1.00; TLI = 1.00; RMSEA = .00 [.00, .12], p = .765). The mean of the intercept was significant (1.35, p < .001), there was a nonsignificant mean estimate for the slope (-.04; p = .105). Variance estimates were significant for the intercept (1.39, p < .001) and for the slope (.16, p < .001), indicating that for disordered eating

symptomology the growth is not homogeneous between individuals. The correlation between the intercept and slope factors was -.18 ($p < .033$), indicating less steep increases over time.

3.3. Conditional latent growth curve modelling

A conditional latent growth model was conducted to analyse the relationships between body image shame and disordered eating symptomology and whether bullying experiences were associated with those relationships (Figure 1). The model revealed a very good fit ($\chi^2_{(10)} = 18.163$, $p = .111$; CFI = 1.00; TLI = .99; RMSEA = .04 [.00, .08], $p = .589$). Bullying experiences had a significant effect on the initial levels of both body image shame ($\beta = .42$, $p < .001$) and disordered eating symptomology ($\beta = .47$, $p < .001$), but it did not significantly impact the slope of these variables ($\beta = .09$, $p = .148$; and $\beta = .06$, $p = .314$, respectively). The correlation between body image shame and disordered eating symptomology intercept factors was .66, and the correlation between the two variables slope factors was .59, indicating that the initial status of body image shame was similar to the initial status of disordered eating symptomology and that the change over time of these variables was also similar. Initial levels of body image shame had a significant effect of -.22 ($p < .001$) on the growth of disordered eating symptomology over time, and the initial levels of disordered eating symptomology also had a significant effect on the growth of body image shame over time ($\beta = -.14$, $p = .021$), which indicates that higher initial levels of body image shame and disordered eating symptomatology are associated with less steep growth (i.e., smaller magnitude of change) of the other construct. Results also revealed a significant indirect effect of bullying experiences on the slope factors of disordered eating symptomology (-.09; CI = -.02, -.01; $p < .001$) and body image shame (-.07; CI -.02, -.001; $p = .032$) and, mediated by the intercept factors of body image shame and disordered eating symptomology, respectively. The tested relationships

were preserved after controlling for the effect of BMI at baseline ($\chi^2_{(16)} = 45.34$, $p < .000$; CFI = .98; TLI = .97; RMSEA = .08 [.05, .11], p = .038).

Insert Figure 1 here

4. Discussion

The current study examined the longitudinal trajectories of self-reported victimization experiences, body image shame and disordered eating symptomology in a sample of adolescent girls over a 3-year period. Results of the correlation analyses were in agreement with previous findings that victimization experiences are associated with body image difficulties and disordered eating symptomatology (Engström & Norring, 2002; Kaltiala-Heino et al., 2000; Lunde et al., 2006) and that body image-focused perceptions of inferiority and inadequacy are linked to symptoms of disordered eating, both cross-sectionally and longitudinally. This raised hypothetical questions about the prospective relationships between the study variables and whether the association between victimization experiences and disordered eating symptomology was mediated by body image shame. Moreover, results indicated that participants who presented clinically significant levels of eating psychopathology at the second and third assessment moments, reported going through bullying experiences in the previous years more frequently than the remaining participants.

A series of unconditional latent growth curve models explored the patterns of change in victimization experiences, body image shame and disordered eating symptomology, as well as the individual variability in both the starting point and the change in these variables. Regarding peer victimization experiences, the significant decrease in the mean of victimization experiences from the first assessment (year 1) to the last assessment (year 3), is consistent with

the peer victimization literature, which notes that the peak in peer victimization occurs in early adolescence (Smith et al., 1999). In regard to body image shame and disordered eating symptoms, prior evidence has demonstrated significant increases in disordered eating symptoms from late childhood to young adulthood (Slane, Klump, McGue, & Iacono, 2014). This change in overall levels of body image shame and disordered eating symptomology was not evident in the 3-year time window of the current study. But, when looking at the potential heterogeneity within the sample, results suggested that there was significant individual variability in the starting point and in the longitudinal change of body image shame and disordered eating symptomology over time. Given this variability in the growth trajectories of body image shame and disordered eating symptomatology we then examined whether the addition of bullying experiences to an explanatory model would contribute to better understand this variance and the relationship between these constructs.

Therefore, we modelled this observed variability in a conditioned latent growth model to explore the predictive effect of victimization experiences on body image shame and disordered eating symptomology and how these two phenomena could interact over time. According to our first hypothesis, adolescents who reported going through more frequent victimization experiences presented both higher initial levels of body image shame and disordered eating symptomology. Previous studies have found that victimization experiences are associated with indicators of poorer mental health in adolescence (e.g., Cunha et al., 2012; Gilbert & Irons, 2009; Hawker & Boulton, 2000; Irons & Gilbert, 2005; Kaltiala-Heino et al., 2000), including difficulties related to body image and disordered eating symptoms (e.g., Copeland et al., 2015; Duarte, Pinto-Gouveia, & Rodrigues, 2015; Kaltiala-Heino et al., 1999; Menzel et al., 2010). The current study extended these findings by highlighting the potential effect of victimization as a trigger of negative self-evaluations and disordered eating symptomology.

Moreover, results supported our second hypothesis that body image shame was significantly associated with later disordered eating symptomatology, with higher initial levels of body image shame being associated with less steep growth trajectories in disordered eating symptomology. The effect of disordered eating symptomology on body image shame was smaller but revealed the same trend. These findings suggest that the initial status of body image shame and, to a lesser extent, disordered eating symptomatology, may be predictive of later changes in the other construct, but that changes in these outcomes are small, i.e., tend to be stable over time.

Also, results suggested that victimization experiences have a significant indirect effect on later disordered eating symptomatology via body image shame. Victimization experiences also had a significant effect on body image shame via disordered eating, but the effect was smaller. These associations remained significant when controlling for the effect of BMI. These results indicated that even though the reported frequency of victimization experiences decreased over time, when they seem to be at their peak these experiences may impact adolescents' levels of body image shame and indirectly affect disordered eating symptomology. The engagement in disordered eating, in turn, may increase the focus on body image and reinforce shame feelings (Fairburn et al., 2003; Goss & Allan, 2009). The data from this study may suggest that once these relationships are established, they appear relatively stable fuelling a potential cycle of shame feelings about the self-focused on the body, which activate the engagement in maladaptive attitudes towards body image and eating behaviour. These relationships appear to present stability even when accounting for the effect of BMI. This may suggest that it is not the actual physical characteristics (e.g., body weight/size) that may have an impact on self-evaluations based on physical appearance and on the engagement in disordered eating, but that it is the subjective evaluation that one's body may cause others to view the self negatively or reject/attack the self that may be important in these associations

(Duarte, Pinto-Gouveia, Ferreira & Batista, 2015; Duarte, Pinto-Gouveia & Rodrigues, 2015; Gilbert, 2002).

Results supported our third hypothesis and extended results obtained in prior cross-sectional research, suggesting that negative peer interactions, such as bullying experiences may become associated with shame feelings related to perceptions that one's body image may create self-perceptions of inadequacy and inferiority in the eyes of others (Duarte, Pinto-Gouveia, Ferreira, & Batista, 2015; Duarte, Pinto-Gouveia, & Rodrigues, 2015; Gilbert & Irons, 2009). These results contribute to research that empirically supports the theoretical suggestion that shame can play a role in the development and maintenance of the disordered eating continuum (Duarte, Pinto-Gouveia, & Rodrigues, 2015; Gilbert, 2002; Goss & Allan, 2009; Pinto-Gouveia et al., 2014). In this conceptual model, cognitive and behavioural symptoms of eating psychopathology possibly serve as a defensive albeit maladaptive function of attempting to mould the self to fit into socially prescribed patterns (e.g., thinness; Gilbert, 2002; Gilbert & Thompson, 2002; McKinley, 1998). Nonetheless, the engagement in disordered eating may increase the focus on body image and the importance of this dimension for self-evaluation (Fairburn et al., 2003). Perceptions of failing on reaching such patterns may then be associated with greater shame (Gilbert, 2002; Goss & Allan, 2009), which may contribute to the development or maintenance of body image and disordered eating problems in this life period.

The current study highlights therefore potential links between bullying, body image shame and tendencies towards disordered eating patterns and suggests that prevention of bullying early in adolescence may be beneficial for subsequent self-evaluation and eating behaviour patterns. The current study has possible implications for the development of etiological models and possible preventive strategies regarding body image problems and eating psychopathology. Strengths include the longitudinal design and the focus on a critical developmental time period and population to assess the study variables. Nonetheless, there are

important limitations that need to be considered. Firstly, these results should be replicated in a larger sample as the sample size of this study may have influenced the strength of the associations detected. Secondly, the study time-window of 3 years may have limited the detection of changes over larger time periods. Future research with extended assessments (i.e., beginning at an earlier age and extending the study to young adulthood) is important to confirm the suggestions derived from the current data. Thirdly, the parsimonious models examined in the current study were incomplete as they excluded other emotional, cognitive, social and physiological variables that have been implicated in the development and maintenance of body image difficulties and eating psychopathology (Slane et al., 2014; Stice et al., 2011). Future studies should attempt to consider how these variables interact to influence the development of body image and eating-related problems in adolescents. Finally, the current study focused solely on girls. Additional research that explores gender differences and cause-effect relationships between victimisation experiences, body image shame and emotional and behavioural indicators of degree of psychological adjustment are required.

4.1. Conclusions

The current study suggests that (i) victimization experiences predict initial levels of body image shame and disordered eating symptoms, (ii) body image shame predicts disordered eating symptoms (the opposite is also true but the effect is smaller) and (iii) the prospective effect of bullying experiences on disordered eating symptoms is not direct, but indirect, mediated by body image shame. These results have implications for prevention strategies that may ameliorate the development of eating psychopathology during the critical developmental stage of adolescence.

References

Allen, J. P., & Land, D. (1999). Attachment in adolescence. In J. Cassidy & P. Shaver (Eds.), Handbook of attachment theory and research. New York: Guilford.

Bearman, S. K., Presnell, K., Martinez, E., & Stice, E. (2006). The skinny on body dissatisfaction: A longitudinal study of adolescent girls and boys. Journal of youth and adolescence, 35(2), 217-229. doi: 10.1007/s10964-005-9010-9

Bessenoff, G., & Snow, D. (2006). Absorbing society's influence: Body image self-discrepancy and internalized shame. Sex Roles, 54(9-10), 727-731. doi:10.1007/s11199-006-9038-7

Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. Body image, 10(1), 1-7. doi: 10.1016/j.bodyim.2012.09.001

Carter, J. C., Stewart, D. A., & Fairburn, C. G. (2001). Eating Disorder Examination Questionnaire: Norms for young adolescent girls. Behaviour Research and Therapy, 39, 625–632. doi:10.1016/S0005-7967(00)00033-4

Castonguay, A. L., Brunet, J., Ferguson, L., & Sabiston, C. M. (2012). Weight-related actual and ideal self-states, discrepancies, and shame, guilt, and pride: Examining associations within the process model of self-conscious emotions. Body Image, 9(4), 488-494. doi:10.1016/j.bodyim.2012.07.003

Copeland, W., Bulik, C., Zucker, N., Wolke, D., Lereya, S., & Costello, E. (2015). Does childhood bullying predict eating disorder symptoms? A prospective, longitudinal analysis. International Journal of Eating Disorders, 48, 1141–1149. doi:10.1002/eat.22459

Cunha, M., Matos, M., Faria, D., & Zagalo, S. (2012). Shame memories and psychopathology in adolescence: The mediator effect of shame. International Journal of Psychology and Psychological Therapy, 12(2), 203-218.

Cusumano, D. L., & Thompson, J. K. (2001). Media influence and body image in 8–11-year-old boys and girls: A preliminary report on the multidimensional media influence scale. International Journal of Eating Disorders, 29, 37-44. doi:10.1002/1098-108X(200101)29:1<37::AID-EAT6>3.0.CO;2-G

De Onis, M., Onyango, A. W., Borghi, E., Siyam, A., Nishida, C., & Siekmann, J. (2007). Development of a WHO growth reference for school-aged children and adolescents. Bulletin of the World Health Organization, 85(9), 660-667. doi:10.2471/BLT.07.043497

Duarte, C., & Pinto-Gouveia, J. (2014). The psychometric properties of the Body Image Shame Scale for Adolescents (BISS-A). *Revista de Saúde Pública, 48*, 190-281.

Duarte, C., Pinto-Gouveia, J., Ferreira, C., & Batista, D. (2015). Body image as a source of shame: A new measure for the assessment of the multifaceted nature of body image shame. Clinical Psychology & Psychotherapy, 22(6), 656-666. doi:10.1002/cpp.1925

Duarte, C., Pinto-Gouveia, J., & Rodrigues, T. (2015). Being bullied and feeling ashamed: Implications for eating psychopathology and depression in adolescent girls. Journal of Adolescence, 44, 259-268. doi:10.1016/j.adolescence.2015.08.005

Engström, I., & Norring, C. (2002). Estimation of the population ‘‘at risk’’ for eating disorders in a non-clinical Swedish sample: A repeated measure study. Eating and Weight Disorders 7, 45–52. doi:10.1002/erv.404

Fairburn, C., & Beglin, S. (1994). Assessment of eating disorders: Interview or self-report questionnaire? International Journal of Eating Disorders, 16(4), 363-370. doi:10.1002/1098-108X(199412)16:4<363::AID-EAT2260160405>3.0.CO;2-#

Fairburn, C., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: a "transdiagnostic" theory and treatment. Behaviour Research and Therapy, 41(5), 509–528. doi:10.1016/S0005-7967(02)00088-8

Ferreira, C., Pinto-Gouveia, J., & Duarte, C. (2013). Physical appearance as a measure of social ranking: The role of a new scale to understand the relationship between weight and dieting. Clinical Psychology & Psychotherapy, 20(1), 55-66. doi:10.1002/cpp.769

Frisén, A., Holmqvist, K., & Orcarsson, D. (2008). 13-year-olds' perception of bullying: definitions, reasons for victimisation and experience of adults' response. Educational Studies, 34(2), 105-117. doi:10.1080/03055690701811149

Gilbert, P. (1989). Human nature and suffering. Hove: Lawrence Erlbaum Associates.

Gilbert, P. (1997). The evolution of social attractiveness and its role in shame, humiliation, guilt and therapy. British Journal of Medical Psychology, 70(2), 113-147. doi:10.1111/j.2044-8341.1997.tb01893.x

Gilbert, P. (1998). What is shame? Some core issues and controversies. In P. Gilbert & B. Andrews (Eds.), Shame: Interpersonal behaviour, psychopathology and culture (pp. 3-36). New York: Oxford University Press.

Gilbert, P. (2002). Body shame: A biopsychosocial conceptualisation and overview with treatment implications. In P. Gilbert & J. Miles (Eds.), Body shame: Conceptualisation, research and treatment (pp. 3-54). New York: Brunner Routledge.

Gilbert, P., & Irons, C. (2009). Shame, self-criticism, and self-compassion in adolescence. In N. Allen (Ed.), Psychopathology in adolescence. Cambridge: Cambridge University Press.

Gilbert, S., & Thompson, J. K. (2002). Body shame in childhood and adolescence: Relations to eating disorders and general psychological functioning. In P. Gilbert & J. Miles (Eds.), Body Shame. New York: Brunner-Routledge.

Goss, K., & Allan, S. (2009). Shame, pride and eating disorders. Clinical Psychology & Psychotherapy, 16, 303-316. doi:10.1521/ijct.2010.3.2.141

Hawker, D. S., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maltreatment: A meta-analytic review of cross sectional studies. Journal of Child Psychology and Psychiatry and Allied Disciplines, 41, 441-455. doi:10.1111/1469-7610.00629

Irons, C., & Gilbert, P. (2005). Evolved mechanisms in adolescent anxiety and depression symptoms: The role of the attachment and social rank systems. Journal of Adolescence, 28, 325-341. doi:10.1016/j.adolescence.2004.07.004

Kaltiala-Heino, R., Rimpelä, M., Rantanen, P., & Rimpelä, A. (2000). Bullying at school: An indicator of adolescents at risk for mental disorder. Journal of Adolescence, 23(6), 661-674. doi:10.1006/jado.2000.0351

Kaltiala-Heino, R., Rissanen, A., Rimpela, M., & Rantanen, P. (1999). Bulimia and bulimic behaviour in middle adolescence: More common than thought? Acta Psychiatrica Scandinavica, 100, 33–39. doi:10.1111/j.1600-0447.1999.tb10911.x

Kim, S., Thibodeau, R., & Jorgensen, R. (2011). Shame, guilt, and depressive symptoms: A meta-analytic review. Psychological Bulletin, 137(1), 68-96. doi:10.1037/a0021466

Kline, R. B. (2005). Principles and practice of structural equation modeling (2nd ed.). New York: The Guilford Press.

Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. Psychological Bulletin, 127(2), 187-208. doi:10.1037/0033-2909.127.2.187

Lewis, M. (2003). The role of the self in shame. Social Research: An International Quarterly, 70(4), 1181-1204.

Luce, K. H., Crowther, J. H., & Pole, M. (2008). Eating Disorder Examination Questionnaire (EDE-Q): Norms for undergraduate women. International Journal of Eating Disorders, 41(3), 273-276. doi:10.1002/eat.20504

Lunde, C., Frisén, A., & Hwang, C. (2006). Is peer victimization related to body esteem in 10-year-old girls and boys? Body Image, 3(1), 25–33. doi:10.1016/j.bodyim.2005.12.001

Machado, P., Martins, C., Vaz, A., Conceição, E., Bastos, A., & Gonçalves, S. (2014). Eating Disorder Examination Questionnaire: Psychometric properties and norms for the Portuguese population. European Eating Disorders Review, 22(6), 448-453. doi:10.1002/erv.2318

Mamun, A., O'Callaghan, M., Williams, G., & Najman, J. (2013). Adolescents bullying and young adults body mass index and obesity: A longitudinal study. International Journal of Obesity, 37(8), 1140-1146. doi:10.1038/ijo.2012.182.

Matos, M., Ferreira, C., Duarte, C., & Pinto-Gouveia, J. (2014). Eating disorders: When social rank perceptions are shaped by early shame experiences. Psychology and Psychotherapy: Theory research and practice. doi:10.1111/papt.12027

Matos, M., & Pinto-Gouveia, J. (2010). Shame as a traumatic memory. Clinical Psychology and Psychotherapy, 17, 299-312. doi:10.1002/cpp.659

McKinley, N. M. (1998). Gender differences in undergraduates' body esteem: The mediating effect of objectified body consciousness and actual/ideal weight discrepancy. Sex Roles, 39, 113–123. doi:10.1023/A:1018834001203

Menzel, J. E., Schaefer, L. M., Burke, N. L., Mayhew, L. L., Brannick, M. T., & Thompson, J. K. (2010). Appearance-related teasing, body dissatisfaction, and disordered eating: A meta-analysis. Body Image, 7, 261−270. doi:10.1016/j.bodyim.2010.05.004

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behavior among U.S. youth: Prevalence and association with psychosocial adjustment. Journal of the American Medical Association, 285, 2094-2100. doi:10.1001/jama.285.16.2094

Pinto-Gouveia, J., Ferreira, C., & Duarte, C. (2014). Thinness in the pursuit for social safeness: An integrative model of social rank mentality to explain eating psychopathology. Clinical Psychology & Psychotherapy, 21(2), 154-165. doi:10.1002/cpp.1820

Pinto-Gouveia, J., & Matos, M. (2011). Can shame memories become a key to identity? The centrality of shame memories predicts psychopathology. Applied Cognitive Psychology, 25, 281-290. doi:10.1002/acp1689

Ricciardelli, L., McCabe, M., Holt, K., & Finemore, J. (2003). A biopsychosocial model for understanding body image and body change strategies among children. Journal of Applied Developmental Psychology, 24(4), 475-495. doi:10.1016/S0193-3973(03)00070-4

Rigby, K. (2001). Health consequences of bullying and its prevention. In J. Juvonen & S. Graham (Eds.), Peer harassment in school: The plight of the vulnerable and victimized (pp. 310-331). New York: The Guilford Press.

Rigby, K., & Slee, P. T. (1993). Dimensions of interpersonal relating among Australian school children and their implications for psychological well-being. Journal of Social Psychology, 133(1), 33-42. doi:10.1080/00224545.1993.9712116

Rubeis, S., & Hollenstein, S. (2009). Individual differences in shame and depressive symptoms during early adolescence. Personality and Individual Differences, 46, 477-482. doi:10.1016/j.paid.2008.11.019

Silva, S., & Pinheiro, R. (2010). Portuguese version of the The Peers Relations Questionnaire – PRQ. Unpublished manuscript. University of Coimbra.

Selig, J., & Preacher, K. (2009). Mediation models for longitudinal data in developmental research. Research in Human Development, 6(2-3), 144-164. doi:10.1080/15427600902911247

Slane, J., Klump, K., McGue, M., & Iacono, W. (2014). Developmental trajectories of disordered eating from early adolescence to young adulthood: A longitudinal study. International Journal of Eating Disorders, 47(4), 793-801. doi:10.1002/eat.22329

Smith, P. K., & Brain, P. (2000). Bullying in schools: Lessons from two decades of research. Aggressive Behavior, 26, 1-9. doi:10.1002/(SICI)1098-2337(2000)26:1<1::AID-AB1>3.0.CO;2-7

Smith, P. K., Madsen, K. C., & Moody, J. C. (1999). What causes the age decline in reports of being bullied at school? Towards a developmental analysis of risks of being bullied. Educational Research, 41(3), 267-285. doi:10.1080/0013188990410303

Smokowski, P. R., & Kopasz, K. H. (2005). Bullying in school: An overview of types, effects, family characteristics, and intervention strategies. Children & Schools, 27(2), 101-109. doi:10.1093/cs/27.2.101

Stice, E., Marti, C. N., & Durant, S. (2011). Risk factors for onset of eating disorders: Evidence of multiple risk pathways from an 8-year prospective study. Behaviour Research and Therapy, 49(10), 622-627. doi:10.1016/j.brat.2011.06.009

Striegel-Moore, R., Dohm, F., Pike, C., Wilfley, D., & Fairburn, C. (2002). Abuse, bullying, and discrimination as risk factors for binge eating disorder. American Journal of Psychiatry, 159, 1902-1907. doi:10.1176/appi.ajp.159.11.1902

Tabachnick, B., & Fidell, L. (2013). Using multivariate statistics, (6th ed.). Boston: Pearson.

Tangney, J., & Dearing, R. (2002). Shame and Guilt. New York: Guilford.

617 Thompson, J. K., Heinberg, L., Altabe, M., & Tanleff-Dunn, S. (1999). Exacting beauty:
618 Theory, assessment, and treatment of body image disturbance. Washington, DC:
619 American Psychological Association.
620 Tracy, J. L., & Robins, R. W. (2004). Putting the self into self-conscious emotions: A
621 theoretical model. Psychological Inquiry, 15(2), 103-125.
622 doi:10.1207/s15327965pli1502_01
623 Wolfe, D., & Mash, E. (2006). Behavioural and emotional disorders in adolescents London:
624 Guilford Press.

Table 1.

Means (M), Standard Deviation (SD), Cronbach's alpha estimates (α), and product-moment Pearson correlation coefficients between the three assessment moments (Time 1, 2 and 3) of the study variables (N = 290). Partial correlations controlling for the effect of BMI presented in subscript.

	M	SD	α	1	2	3	4	5	6	7	8	9	10	12
1. Bullying_T1	6.56	2.20	.79	1										
2. Bullying_T2	6.41	2.22	.78	$.67^{***}_{67***}$	1									
3. Bullying_T3	6.26	1.96	.75	$.65^{***}_{.65***}$	$.75^{***}_{.75***}$	1								
4. BISS_T1	.83	.91	.93	$.39^{***}_{.40***}$	$.29^{***}_{.32***}$	$.28^{***}_{.30***}$	1							
5. BISS_T2	.86	.94	.93	$.40^{***}_{.41***}$	$.33^{***}_{.34***}$	$.30^{***}_{.31***}$	$.77^{***}_{.76***}$	1						
6. BISS_T3	.80	.93	.93	$.40^{***}_{.40***}$	$.33^{***}_{.34***}$	$.38^{***}_{.39***}$	$.61^{***}_{.60***}$	$.76^{***}_{.75***}$	1					
7. EDE_T1	1.35	1.23	.95	$.44^{***}_{.46***}$	$.28^{***}_{.31***}$	$.29^{***}_{.32***}$	$.68^{***}_{.64***}$	$.60^{***}_{.58***}$	$.54^{***}_{.52***}$	1				
8. EDE_T2	1.33	1.28	.96	$.43^{***}_{.45***}$	$.34^{***}_{.37***}$	$.31^{***}_{.34***}$	$.60^{***}_{.57***}$	$.70^{***}_{.69***}$	$.67^{***}_{.66***}$	$.84^{***}_{.81***}$	1			
9. EDE_T3	1.29	1.26	.96	$.41^{***}_{.42***}$	$.32^{***}_{.34***}$	$.35^{***}_{.37***}$	$.56^{***}_{.51***}$	$.65^{***}_{.63***}$	$.71^{***}_{.69***}$	$.79^{***}_{.77***}$	$.91^{**}_{.90***}$	1		
10. BMI_T1	20.48	3.29	-	.03	-.01	-.01	$.32^{***}$	$.19^{**}$	$.18^{**}$	$.37^{***}$	$.34^{**}$	$.28^{***}$	1	
11. BMI_T2	20.81	3.03	-	-.01	-05	-.03	$.25^{***}$	$.21^{***}$	$.23^{***}$	$.36^{***}$	$.34^{**}$	$.31^{***}$	$.81^{***}$	1
12. BMI_T3	20.89	2.90	-	.04	-.03	-.04	$.20^{***}$	$.19^{**}$	$.16^{**}$	$.29^{**}$	$.30^{**}$	$.30^{***}$	$.66^{***}$	$.78^{***}$

Note: *** p < .001; ** p <. 010.

Bullying= Victimization subscale of the Peer Relationships Questionnaire; BISS = Body Image Shame Scale; EDE = Eating Disorder Examination Questionnaire

Figure 1. Standardized parameter estimates of the multivariate conditional latent growth model between body image shame and disordered eating symptomatology regressed on victimization experiences (N = 290).