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**Prospective Associations Between Childhood Victimization and
Body Image in Early Adulthood**

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Prospective Associations Between Childhood Victimization and Body Image in Early Adulthood

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Previous research indicates that peer victimization is linked to children's body image dissatisfaction. The present study investigated whether there is also prospective associations between childhood peer victimization and different dimensions of body image in early adulthood (body-esteem, drive for leanness, drive for muscularity). Participants were 330 Swedish girls/women and 277 boys/men examined first at age 10 and then at age 21. Results indicated that peer victimization had long-term associations with body-esteem that persists into early adulthood. Results also presented a totally new finding, namely a prospective link between childhood victimization and drive for muscularity among young adult males. The findings offer continued support that negative peer relations may have long term involvement in body image development.

“To lose confidence in one's body is to lose confidence in oneself.”

— Simone de Beauvoir

Early adolescence is a crucial period in a person's development, and it presents itself with a plethora of challenges. Concern over one's body and appearance, one among these challenges, seem to be par for the course for most children and adolescents growing up in Western societies (Thomas, Ricardelli, & Williams, 2000). Discontent with one's body is sometimes even referred to as being normative, at least among females (Smolak, 2004). Bullying and peer victimization, also, seems to be a regrettably integral part of growing up (Newman, Holden & Delville, 2005; Mackay, Carey & Stevens, 2011). According to a broadly accepted definition by Olweus (as cited in Dake, Price & Telljohann, 2005), a student is bullied “when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other students”. Peer victimization, close in definition, can be said to be harm inflicted unto someone by one or more peers (Rigby, 1999; Finkelhor, 2008). Researchers studying peer victimization further distinguish between a number of different forms, including being a victim of physical attacks, being overtly verbally abused, being a target of indirect verbal aggression, and being purposefully excluded from social activities (Rigby, 1999).

Bullying and peer victimization may undermine psychological well being in a number of ways, leading to low self esteem, anxiety, loneliness, and depression (Hawker & Boulton, 2000; Rigby, 2000; Gini, Carli & Pozzoli, 2009; Craig, 1997). Those affected are also at a much greater risk of psychological problems and poorer physical health later on in life (Paul & Cillessen, 2003; Lien, Green, Welander-Vatn & Bjertness, 2009) and some even exhibit symptoms of posttraumatic stress disorder (Mynard, Joseph & Alexander, 2000). Prevalence statistics for bullying and peer victimization vary considerably

throughout the research literature, but overall, statistics indicate that peer victimization and bullying are widespread phenomenon in schools (Mackay et al, 2011). For example, a 2009 international survey study comprising 35 nations by Due et. al reported prevalence rates for bullying in middle schools (11-15 year old school children) ranging from 5 to 34%. An especially relevant finding for the current study was that Swedish students reported the lowest prevalence rates (5.7%). There was also a slight disparity between the genders, with males on average reporting higher levels of bullying. Another study reporting data from *The Global School-based Student Health Survey* examined the prevalence of victimization in middle school in 19 low- and middle-income countries (Fleming & Jacobsen, 2009). Of the over hundred thousand surveyed students, 34% reported having been bullied some time in the last month. These findings indicate that bullying is a global phenomenon, transgressing geographic, cultural and economic boundaries. For the purpose of this study and for clarity, the operationalized concept of peer victimization (an aggregated measure of physical abuse, overt- and indirect verbal abuse and social exclusion) will be used instead of bullying.

Body image and gender

Body image refers to evaluative and affective aspects of one's body and physical appearance (Cash, 2004). As hinted by the Beauvoir quote prefacing this study, body image ties in to, and could even be argued to be, a specific domain of self-esteem (Smolak & Levine, 2001). When referring to an individual's emotional evaluation of his or her own body the term body esteem is often used. According to Mendelson, Mendelson and White (2001) there are at least three dimensions of body esteem: feelings about one's weight, feelings about one's general appearance, and evaluations attributed to others about one's body and appearance.

Historically, the study of body image has largely been interested in women (Cash, 2004). Sociocultural emphasis on physical attractiveness being especially important for females has routinely been given as justification for this gender bias in research and suggestions that girls are more socialized to connect their self-worth with their appearance gives additional weight to that notion (Fredrickson & Roberts, 1997). While it is true that research indicates that girls/women are usually more dissatisfied with their bodies than boys/men (Chrisler & McCreary, 2010; Lunde, Frisén & Hwang, 2007; Penkal & Kurdek 2007; Lokken, Ferraro, Kirchner & Bowling, 2010), one could argue that a majority of scales that are used to measure body image have been designed in such a way that they fail to capture the body image concerns that are specifically relevant to males. Not being muscular enough could be given as an example of a body image concern highly relevant to males but of little interest to females (Smolak, 2004), and as a result it was for long overlooked in the body image field of research. Recently however, there has been a growing interest in broadening research to include other aspects of body image, and especially in relation to gender (Chrisler & McCreary, 2010).

Societal standards in regards to beauty tend to fluctuate and differ between cultures, and the western voluptuous female ideal of the 50s and 60s has been replaced by an

inordinately strong emphasis on thinness (Tillmann-Healy, 1996). Male standards of beauty currently also emphasize body shape, but in the form of a muscular v-shaped upper body coupled with narrow hips and a flat stomach (Wagner-Oehlhof, Musher-Eizenman, Neufeld & Hauser, 2009; Dixon, Halliwell, Wignarajah & Andersson, 2002). Not surprisingly, the desire to develop a muscular physique has emerged as an important motivating force for young males (McCreary & Sasse, 2000). This drive for muscularity has since become an all-consuming and unhealthy obsession for a subset of young males (Olivardia, Pope & Hudson, 2000), and it has been linked with the potentially dangerous use of anabolic steroids (Parent & Moradi, 2011), eating disorders, body dysmorphic disorder, depression, and especially low body esteem (Hallsworth, Wade & Tiggemann, 2005; Olivardia, Pope, Borowiecki, & Cohane, 2004; Jones, 2004). Apart from a muscular physique, current ideals also dictate the need for both men and women to be lean (to have low body fat percentage), and for men to show striations and abdominal muscles. The concept of leanness has been suggested to be a distinct component of body image relevant to both genders (Smolak & Murnen, 2008), especially since differences between sexes in drive for leanness seem less pronounced than in drive for thinness or muscularity (Tod, Hall & Edwards 2012; Tod, Edwards & Hall, 2013).

Peer victimization and body image

As previously touched upon, overt and indirect verbal abuse is a common form of peer victimization, and negative comments often concern the victim's body and appearance (Berne, Frisén, & Kling, 2014). It is not far fetched to think that these experiences may have a defining and lasting effect on the body image of the victim. Indeed, studies interested in the relationship between appearance-related victimization and body esteem have found some links between the two (Frisén & Holmqvist, 2010; Lunde, Frisén, & Hwang, 2006; Sweetingham & Waller, 2008). However, much of previous research has relied on retrospective data and/or has been designed around cross-sectional or correlational design methods, and has not examined how peer victimization is longitudinally related to body image (Smolak, 2004). Longitudinal designs, while time consuming and often expensive, allow one to track developmental pathways and assess and describe both stability and change over time, aspects especially important to establish casual and prospective relationships.

It is only recently that researchers have begun to look for correlates between adolescents' experiences of peer victimization and their body image. The few studies available do suggest there is a long-term link (Sweetingham & Waller, 2008; Lunde, et. al, 2007; Lundé, Frisén & Hwang, 2009). In the only two longitudinal investigations of victimization and body image that I know of (part of the same project as the current study), Lunde et al. (2007) and Lunde and Frisén (2011) demonstrated that children who had been frequent targets of a broad range of peer victimization experiences consistently reported poorer body esteem later on. First, Lunde et al. (2007) investigated prospective associations between 874 10-year-old girls and boys' experiences of peer victimization and body esteem at age 13. Results indicated that having experienced peer victimization at age 10 was

associated with low body esteem at age 13, even when controlling for body mass index (BMI). BMI was controlled for since girls and boys with higher BMI tend to be less satisfied with their bodies (Stice & Whitenton, 2002), and adolescents with an above average BMI are more likely to be targets of peer victimization (Pearce, Boergers & Prinstein, 2002). Consequently, effects of body composition need to be controlled for beforehand in order to draw any valid conclusions on the lasting effects of childhood victimization on body image.

A few years later, Lunde and Frisé (2011) conducted the most long-term investigation between victimization and body image up to date. The investigation concerned the link between peer victimization at age 10 and appearance monitoring (constant checking of one's appearance) and body shame (the subjective feeling of not measuring up to cultural standards of beauty) at age 18. Main findings were that being the target of peer victimization at age 10 was linked to both appearance monitoring and body shame at age 18. What can be inferred from these studies is that victimization experiences are influential in the shaping of adolescent boys and girls' body image, and that this influence has a lasting effect. More studies are however warranted to validate these findings.

There are also a few limitations with previous studies that need to be addressed. One concerns the time frame used being perhaps too narrow. Developmental pathways into adulthood need to be established by expanding the time frame. Another limitation concerns the body image measurements used. In 2007, Lunde et al. called for the utilization of measures that encompass factors critical for both girls' and boys' body satisfaction. Previous studies have not examined how peer victimization is longitudinally related to different dimensions of body image, such as drive for leanness and drive for muscularity. Given the importance of muscularity in the shaping of a male body image (Smolak, 2004), its association with peer victimization needs to be examined among males.

The aspect of gender in the relationship between victimization and body image was also raised in a cross-sectional study that found victimization to be related to different dimensions of body-esteem depending on gender (Lunde et al., 2006). Appearance-related victimization was found to be associated with girls' poorer body esteem in terms of general appearance and beliefs of others' views of their appearance. For boys links were found on all body esteem dimensions. This finding suggests that associations between victimization and body image might be moderated by gender.

Aim

The aim of this current study was to investigate the prospective associations between childhood peer victimization and different dimensions of body image in early adulthood (body-esteem, drive for leanness, drive for muscularity) while also controlling for BMI. The following hypotheses guided the analysis:

Hypothesis 1: Peer victimization in childhood is related to lower body-esteem in early adulthood

Hypothesis 2: Peer victimization in childhood is related to higher drive for leanness in early adulthood

Hypothesis 3: Peer victimization in childhood is related to higher drive for muscularity in early adulthood (among men).

As previous research has shown that victimization can be related to different dimensions of body-esteem depending on gender (Lunde et al., 2006), I will test gender as a moderating variable in the relationship between victimization and all body image dimensions; however, this is mainly exploratory in nature and no hypotheses were formed in regards to this.

Method

Participants

The data for this study originates from a large longitudinal project conducted in Gothenburg, the second largest city of Sweden. The participants were originally recruited to the study at age 10 ($M: 10.4, SD=.53$) when the research team administered a questionnaire about body image and bullying in 53 4th grade classes in different socioeconomic areas of the city. Participants have thereafter contributed data to the study at age 13, 16, 18/19, and 21 (see, e.g., Erling & Hwang, 2004; Frisé, Lunde, & Berg, 2015; Frisé & Holmqvist, 2010; Holmqvist, Lunde & Frisé, 2007; Lunde & Frisé, 2011; Lunde et. al, 2006, 2007). Sixty-three per cent ($N=607$) of the original sample at age 10 ($N=960$) participated at age 21 ($M: 21.3, SD=.51$), 330 females and 277 males.

Procedure

A trained research assistant visited the 4th grade students during the original point of data gathering in 2000. Participants were at this point made aware that participation in the study was fully voluntary, and that their answers would be treated with the utmost discretion and never be shared with a third party. The research assistant then administered individual questionnaires to the students who had given their consent to participate in the study and whose parents had given their prior consent (an information letter as well as a consent form was distributed to the children's parents prior to their participation). The research assistant was present while the participants filled out the questionnaires, offering to assist if any difficulties were to arise. No compensation was offered for participation.

At age 21, the participants were contacted by postal mail or e-mail, depending on the contact details they had provided at the last point of data gathering. These postal mails or emails included information about the study and an Internet link to an online questionnaire (using Limesurvey). Participants were then expected to fill out the questionnaire from the comfort of their own homes. Once completed, as compensation for their continued participation in the study, they were offered a movie ticket or a national lottery ticket.

Measures

Victim scale (Rigby, 1999) was used at age 10 to evaluate the level of perceived peer victimization of the participants. The Victim scale consists of five items, each of which refers to a different form of victimization, namely being teased in an unpleasant way, being called hurtful names, being left out of things on purpose, being threatened with harm, and being hit or kicked. Respondents indicate their level of agreement on a three point Likert scale, with the following response categories: *never* (1), *sometimes* (2) and *often* (3). The five items are then averaged to create an individual total victimization score ranging from 1 to 3, with higher scores indicative of more frequent exposure to peer victimization. This scale has been shown to have adequate reliability in a sample of high school students: for boys $\alpha = .83$ and for girls $\alpha = .77$ (Rigby, 1999). In the present sample, reliabilities (Cronbach's alphas) were $\alpha = .71$ for girls and $\alpha = .77$ for boys.

Body Mass Index (BMI). The BMI for each participant was calculated by dividing their self reported body mass given in kilograms by the self reported square of their height given in centimeters ($\text{Weight}(\text{kg}) / \text{Height}(\text{cm}^2)$).

Body Image Measures in Adulthood

Body Esteem Scale for Adults and Adolescents (BESAA) (Mendelson et al., 2001) was used to measure participants' body esteem. The scale has three subscales: BE-Appearance (general feeling about appearance; e.g., "I'm pretty happy about the way I look") (10 items), BE-Weight (weight satisfaction; e.g., "I am satisfied with my weight") (5 items), and BE-Attribution (evaluations attributed to others about one's body and appearance; "People my own age like my looks.") (8 items). Respondents indicate their level of agreement on a five point Likert scale ranging from 0 (*never*) to 4 (*always*). Items are then summed and averaged to create a total score (for this current study only the aggregated score comprising all three subscales was used) ranging from 0-4, and a lower score on the BESAA scale is indicative of lower body esteem. In the present sample, the scale proved to be highly reliable with Cronbach's alpha coefficients $\alpha = .94$ for women and $\alpha = .91$ for men.

Drive for Leanness (DL) (Smolak & Murnen, 2008) is a psychometric scale consisting of 6 items designed to assess participants' subjective drive to have relatively low body fat and toned, physically fit muscles. The scale consists of 6 items (e.g. "I think the best looking bodies are well-toned", "Athletic looking people are the most attractive people"). Respondents indicate their level of agreement on a six point Likert scale ranging from 1 (*never*) to 6 (*always*). Items are then summed and averaged to create a total score ranging from 1-6, and a higher score on the DL scale indicates a higher drive for leanness. Smolak and Murnen (2008) found the scale to be adequately consistent and reliable within a large sample ($N=232$) of college-aged students, with a Cronbach's alpha coefficient of α

=.77. In the present sample, the scale proved to be reliable with Cronbach's alpha coefficients $\alpha = .89$ for women and $\alpha = .88$ for men.

Drive for Muscularity scale (DM) (McCreary & Sasse, 2000) was used to measure drive for muscularity. The DM represents the participants' perception that he/she is not muscular enough, and therefore must add muscle mass to his or her body. The scale consists of 15 items (e.g. "I think I would feel more confident if I had more muscle mass", "I drink weight-gain or protein shakes"). Respondents indicate their level of agreement on a six point Likert scale ranging from 1 (always) to 6 (never). Items are then first reversed, summed and averaged to create a total score ranging from 1-6, and a higher score on the DM scale indicates a higher drive for muscularity. The DM has been shown to have good internal consistency and test-retest stability for both men (Cafri & Thompson, 2004) and high school boys (McCreary & Sasse, 2002). In a 2004 study by Cafri and Thompson on the drive for muscularity among young adult men, Cronbach's alpha coefficients were $\alpha = .84$ for men and $\alpha = .78$ for women. In the present sample, the scale proved to be reliable with $\alpha = .87$ for men. In the current study, data on the DM was only collected from the male participants.

Strategy for statistical analysis

Preliminary assumption testing on the dataset was conducted to check for linearity, multicollinearity, singularity and homoscedasticity, and homogeneity of variance-covariance matrices. Given that large sample sizes negate the effects of multicollinearity (Tabachnick & Fidell, 2007), no serious violations were noted. Mahalanobis distance scores were calculated for each participant to check for multivariate normality, and two outliers ($N=2$) were detected when compared to critical values, df 16.27 (Pallant, 2010) which were excluded from the dataset. Missing data was handled using pairwise deletion.

A one-way between-groups multivariate analysis of variance (MANOVA) was then performed to investigate gender differences on all study variables for which there was available data (victimization age 10, BMI age 10, body esteem and drive for leanness age 21).

Hierarchical multiple regression was then used to test the study hypotheses, one model for each body image measure, while simultaneously entering the independent variables to assess their predictive power. The predictor variables used in these models were all collected at baseline (age 10) and include participants' BMI, gender, victimization and a gender x victimization interaction.

In line with suggestions by Afshartous and Preston (2011), the interaction variable was centered prior to regression analyses in order to avoid problems with multicollinearity. I was unable to control for body image at age 10, because most of the outcome variables (drive for muscularity, and drive for leanness) were added to the study after it was first initiated in 2000.

For all initial analyses, alpha levels were set at 0.05.

Results

Descriptive statistics (means and standard deviations) for study variables are reported in Table 1. Correlation coefficients (by Pearson's r) for study variables are reported in Table 2. Results of regression analyses for body image variables are reported in Table 3.

Table 1

Descriptive statistics (means and standard deviations) for study variables

	Total			Girls			Boys		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
BMI	524	17.26	2.28	288	17.34	2.36	236	17.15	2.20
Victimization	585	1.46	.39	319	1.42	.37	266	1.49	.41
Body esteem	562	2.56	.65	306	2.42	.68	256	2.73	.58
DL	597	3.47	1.04	327	3.38	1.06	270	3.57	1.01
DM							258	2.50	.80

Note. DL = drive for leanness. DM = drive for muscularity. Victimization and BMI measured at age 10. Body esteem, DL and DM measured at age 21.

Gender differences in study variables

The results from the MANOVA calculation showed a statistically significant difference between males and females on the combined dependent variables, $F(4, 524) = 12.18, p < .001$; Pillai's Trace = .09; partial eta squared = .09. When the results for the dependent variables were considered separately, with a Bonferroni adjusted alpha level of .0125, body esteem, $F(1, 524) = 30.93, p < .001$, partial eta squared = .06 was significantly different between genders. Females reported slightly lower levels of body esteem than men (see Table 1). There were no gender differences as regards victimization, $F(1, 524) = 5.18$ at $p = .023$ DL, $F(1, 524) = 5.33$ at $p = .021$, and BMI, $F(1, 524) = 0.89$ at $p = .345$.

For the remaining analyses of this current study, all of the individual Victim scale items were recoded into dummy-coded variables and then summed to avoid the skewed nature of the three-point distribution. This was done as follows: have not been exposed to victimization (0) versus have been exposed to victimization (1).

The dummy coding of the Victim Scale showed that 75.2% of the girls, and 77.8% of the boys had experienced some kind of victimization either *often* or *sometimes* during 4th grade. The high percentage reported is in part attributed to the dummy encoding procedure, which removes some of the resolution of the data.

Correlations

Table 2

Correlations (Pearson's r) for study variables

	1	2	3	4
1. BMI	-	.17**	-.24**	-.09
2. Victimization	.06	-	-.22**	.01
3. Body esteem	.01	-.20**	-	-.09
4. DL	-.02	-.02	.04	-
DM	-.07	.16*	-.18**	.54**

Note. DL = Drive for Leanness. DM = Drive for Muscularity. BMI = Body Mass Index. Values above the diagonal are correlations for females; values below are correlations for males.

* $p < .05$; ** $p < .01$

Correlations for study variables were examined using Pearson product-moment correlation coefficient (see Table 2).

There was a small but significant negative correlation between victimization and body esteem for both men and women, explaining 3.4% and 4.1% percentage of variance between variables respectively (higher levels of victimization indicated lower levels of body esteem). For BMI and victimization there was only a significant correlation for women, explaining 2.4% variance (higher BMI scores correlated with more victimization). Similar findings were found for BMI and body esteem, with significant correlations shown only for women (higher BMI scores indicated lower body esteem) explaining 6.2% of variance between the two measurements. The DM scale, for which female participants had been omitted at the outset of this study, correlated significantly with victimization, body esteem and the DL scale for the male participants. The strongest correlation was between DM and DL, with 27.8% of shared variance.

Predicting body image from earlier peer victimization experiences

Table 3

Results of regression analyses to predict young adults' body image (age 21) based on BMI, gender, and peer victimization (age 10).

Body image variables	Beta	SE	t	p
Model 1:				
<i>F(4, 538) = 17.80***, R²=.12, adj r²=.11</i>				
Body esteem				
BMI	-.16	.01	-3.88	.000***
Gender	.23	.05	5.67	.000***
Victimization	-.19	.02	-4.57	.000***
Gender x victimization	.03	.03	.70	.485
Model 2:				
<i>F(4, 568) = 1.75 R²=.012, adj r²=.01</i>				
Drive for leanness				
BMI	-.06	.02	-1.52	.130
Gender	.09	.09	2.05	.041*
Victimization	-.00	.03	.10	.917
Gender x victimization	-.02	.05	-.46	.645
Model 3:				
<i>F(2, 244) = 4.12*, R²=.03, adj r²=.03</i>				
Drive for muscularity				
BMI	-.09	.02	-1.44	.151
Victimization	.17	.03	2.63	.009**

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

Victimization and body esteem

The regression model predicting body esteem was significant ($p < .001$), explaining approximately 11% of the variance in the outcome (see Table 3). Unique contributions to the model were represented by gender (partial $r = .06$), victimization (partial $r = .04$), and age 10 BMI (partial $r = .03$). Participants who had been victimized at age 10, and participants with higher BMI, reported significantly lower body esteem at age 21. The strongest contributing factor, however, was gender, with females reporting significantly

lower body esteem at age 21. The gender x victimization interaction variable failed to provide any added prospective power to the model.

Victimization and drive for leanness

The regression model predicting drive for leanness failed to provide any significant results for the total model ($p > .137$).

Victimization and drive for muscularity

The regression model predicting drive for muscularity was significant ($p < .05$), explaining approximately 3% of the variance in the outcome (see Table 3). The only significant contribution to the model was represented by victimization (partial $r = .03$), with participants who had been victimized at age 10 showing a higher drive for muscularity at age 21.

Discussion

The aim of this study was to investigate the prospective associations between childhood peer victimization and different dimensions of body image in early adulthood (body-esteem, drive for leanness and drive for muscularity). Results indicate there is a long-term link between victimization and body image, although weak, and only for some dimensions of body image.

Gender differences in study variables

The only measure on which I found gender differences was that of body esteem, which is in line with previous research and only further solidifies an already stable finding (Erling & Hwang, 2004; Frisé & Holmqvist, 2010). Girls are on average more dissatisfied with their bodies.

Somewhat unexpected, level of exposure to peer victimization did not differ between boys and girls. Due et al. (2009) reported a slight disparity between genders for bullying in 11-15 year olds, with boys reporting higher levels. However, Due et al. had a sample consisting of over 160.000 students, which can make even the smallest differences significant.

Drive for leanness, one of the body image variables in part included to improve this study's content validity, did not differ between the boys and girls in our sample when subjected to multivariate analysis of variance, but one of the subsequent regression models did single out gender as a small but predictive factor. Given the extremely small effect size (partial eta squared = .01) this finding should be interpreted with caution.

Predicting body image from earlier peer victimization experiences

Victimization predicting body esteem. In line with my first hypothesis, I found a link between childhood victimization and early adulthood body esteem. Effect sizes for predicting body esteem were small at $r^2 = .11$ for the combined effect of our predictor variables, and the unique contribution of the victimization predictor was consequently even less than that. However, considering that 11 years had passed since the victimization was experienced, detecting any significant associations at all is remarkable. This study offers continued support that peer victimization has a long-term association with body image, and the lasting effects established in previous studies (Lunde et al., 2007; Lunde & Frisé 2011) seem to persist all the way into adulthood.

Victimization predicting drive for leanness. Contrary to what was hypothesized, the regression model for this study failed to find any prospective links between childhood victimization and drive for leanness in early adulthood. One possible explanation could be that the DL instrument operationally measures something other than intended, at least in the current sample and cultural context. Example items include “When a person’s body is hard and firm, it says they are well-disciplined” and “Athletic looking people are the most attractive people”. Perhaps one could argue that participants agreeing with these statements are motivated by a healthy drive for athleticism, rather than an unhealthy obsession with current cultural ideals of beauty, and that drive for leanness therefore constitutes a more healthy aspect of body image than I first hypothesized. Victimization as demonstrated by this study and those preceding it, is linked to negative aspects of body image (i.e. low body esteem), which in part explains why no prospective links could be established. More research is needed to examine when and for whom the drive for leanness might be related with positive health behavior, and when and if it is indicative of unhealthy body dissatisfaction and problematic body change strategies. At least for some people, drive for leanness may reflect an interest in a healthy body that is functionally strong and capable.

Victimization predicting drive for muscularity. In line with my third hypothesis, I found a link between childhood victimization and drive for muscularity among young adult males. The unique variance accounted for by the peer victimization predictor was small but significant. Considering the time lapsed between data points it is an interesting finding.

Influential researchers in the body image field have for years stressed the importance of muscularity in the shaping of a male body image (Smolak, 2004). However, prior to this study it had not been included as a body image measure when looking at the associations with peer victimization (Lunde et al., 2007). With the results from this current study one possible conclusion is that, at least for some boys, early peer victimization experiences are associated with a drive for muscularity in adult life.

Further studies are called for to explore the relationship between victimization and drive for muscularity in more detail: e.g. how it relates to different forms of victimization and other dimensional aspects of body image that this current study failed to capture. Another limitation to this current study was the omission of the DM scale for female

participants age 21. Future studies will need to address this limitation, and move beyond the male vs. female dichotomy in the body image field of research.

We already know DM to be associated with anabolic steroid abuse (Parent & Moradi, 2011) eating disorders, body dysmorphic disorder, depression, and low body esteem (Hallsworth, et al., 2005; Olivardia, et al., 2004; Jones, 2004). With the now known association to peer victimization in childhood, and the possibility of serious consequences in young adulthood, researchers, teachers, and policy makers would be well served to consider these results in the ongoing efforts to reduce peer victimization and bullying in our schools.

Interaction effects for all body image variables. The victimization x gender interaction variable failed to improve the predictive power of any of the specified models. Prior research suggested boys to be victimized more often (Due et al., 2009), and girls in general to be more body-dissatisfied (Chrisler & McCreary, 2010; Lunde et al., 2007; Penkal & Kurdek 2007; Lokken et al., 2010). In addition, a cross-sectional study found victimization to be related to different dimensions of body-esteem depending on gender (Lunde et al., 2006). As a result, it was possible that my body image outcome measurements would be moderated by gender in some way. This was not the case, even though I found significant gender differences in the study variables. Perhaps the suggestion by Afshartous and Preston (2011) to center variables prior to analysis removed some of the power of the interaction. But it is also possible that the association between victimisation and body image works similarly regardless of gender.

Limitations

In 2000, when this longitudinal study was first initiated, not all of the variables that I have used as body image measurements were available. Because of this I was unable to control for body image at age 10, and as a result it is not possible to unequivocally say that there is a causal association between the predictor variables and body image at age 21. Future research efforts would benefit from controlling for body image also at baseline.

Another limitation concerns how some of the variables were transformed prior to statistical analysis. A binary split of the victimization predictor variable was done to avoid the skewed nature of the three-point distribution. Transformations such as these might however have some caveats, most notably a loss of power and residual confounding (Royston, Altman & Sauerbrei, 2005). The victimization variable consisted of an ordinal scale with three levels (*never*, *sometimes* and *often*), and the distribution in my sample was also positively skewed (many of the 10 year old respondents had fortunately never experienced peer victimization). My conclusion was consequently that measurements were coded imprecisely, and a dichotomized variable would provide a more reliable measure. Lunde et al. (2006) had a similar line of reasoning, and also opted to dummy code variables instead of performing sophisticated scale transformation techniques known to sometimes skew results. Another suggestion by Lunde et al. (2006) is to use frequency indexes (how often victimization occurs) instead of binary variables when examining the relationship

between appearance teasing and body image. More research is needed to examine if that is a better predictor of body image than the mere presence or absence of victimization.

Another limitation concerns the BMI predictor variable. The rationale for controlling for body composition had solid scientific backing. We know that children with higher body mass as quantified by BMI are less satisfied with their bodies, and they are also more likely to be targets of peer victimization (Stice & Whitenton, 2002; Pearce et. al., 2002). The decision to use age 10 BMI instead of BMI in adulthood was also a valid one given that I wanted to be able to control for its known prospective effect. Results showed, however, that BMI had little influence on my outcome variables. Only in one of the regression models could BMI explain some of the variance (body esteem). One possible explanation to this has to do with the nature of the relationship between BMI and body esteem for girls and boys. Frisén, Lunde and Nilsson-Kleiberg (2013) summarize research that suggests it might be a linear relationship for girls and a curvilinear relationship for boys. Underweight girls are often content with their bodies, while heavier set girls are more dissatisfied. Boys on the other hand are most discontent when they are either overweight or underweight. Drive for leanness and muscularity are two body image aspects that could reasonably be expected to show such a relationship to BMI (e.g. boys striving to become muscular might be more satisfied if heavier). Controlling for body composition not just by BMI, but grouping participants according to cut-points for under- normal- and overweight as done by Frisén et al. (2013) in a related study is for this reason likely a better course of action that could improve future research.

Much of current peer victimization research is also being conducted in the Scandinavian cultural sphere. Previous research has shown that the influence of culture on body ideals and body image is significant (Yam, 2103), and that patterns of body dissatisfaction differ across cultures (Holmqvist & Frisén, 2010). Consequently, international replications of the current study could be valuable.

In closing, the predictor variables used in this study were modest at best in terms of overall prospective power, which means there are other stronger correlates for body image that this study did not include. Research on the etiology of body image dissatisfaction usually focuses on multifactorial models. One social influence model that has been studied rather extensively is the tripartite influence model (Thompson, Coover, & Stormer, 1999). This model proposes three primary core sources of influence — parents, peers and the media. We already know parents and the media to be two influential early socialization factors for values regarding body image (Gillen & Lefkowitz, 2009). Considering this, findings are powerful predictors for the peer influence part of the model.

Conclusions

The current study indicates that peer victimization has long-term associations with body image that persists all the way in to young adulthood. It also presents a totally new finding, namely a prospective link between childhood victimization and drive for muscularity among young adult males. This demonstrates the importance of including factors critical for both boys' and girls' body image when examining the relationship

between victimization and body image. In closing, this study offers continued support for the strength of peer victimisation as a prospective risk factor for body image concerns.

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