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Body image emotions, perceptions, and cognitions distinguish physically active and inactive smokers

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ABSTRACT

Objectives. To determine if body image emotions (body-related shame and guilt, weight-related stress), perceptions (self-perceived overweight), or cognitions (trying to change weight) differ between adolescents characterized by smoking and physical activity (PA) behavior.

Methods. Data for this cross-sectional analysis were collected in 2010–11 and were available for 1017 participants (mean (SD) age = 16.8 (0.5) years). Participants were categorized according to smoking and PA status into four groups: inactive smokers, inactive non-smokers, active smokers and active non-smokers. Associations between body image emotions, perceptions and cognitions, and group membership were estimated in multinomial logistic regression.

Results. Participants who reported body-related shame were less likely (OR (95% CI) = 0.52 (0.29–0.94)) to be in the active smoker group than the inactive smoker group; those who reported body-related guilt and those trying to gain weight were more likely (2.14 (1.32–3.48) and 2.49 (1.22–5.08), respectively) to be in the active smoker group than the inactive smoker group; those who were stressed about weight and those perceiving themselves as overweight were less likely to be in the active non-smoker group than the inactive smoker group (0.79 (0.64–0.97) and 0.41 (0.19–0.89), respectively).

Conclusion. Body image emotions and cognitions differentiated the active smoker group from the other three groups.

Introduction

Negative body image is common in children and adolescents (Littleton and Ollendick, 2003). Based on theory and practice, body image is a multidimensional construct consisting of perceptions, cognitions, emotions, and behaviors pertaining to one's appearance, body shape and size (Cash and Pruzinsky, 2002). Negative body image is reflective of unfavorable perceptions, negative thoughts and feelings, and may trigger maladaptive actions or health-risk behaviors driven by body-related self-evaluation (Bane and McAuley, 1998). Maladaptive actions, including substance use and unhealthful physical activity (PA), are sometimes used to cope with negative body image. For example, both smoking and PA are used concurrently as weight control strategies among weight-conscious individuals (Lowry et al., 2002; Tomeo et al., 1999; Winter et al., 2002). Several dimensions of negative body image including emotions (e.g., weight dissatisfaction), perceptions (e.g., perceiving oneself as being overweight), and cognitions (e.g., trying to lose or control weight) have been associated with both smoking and PA (Forrester-Knauss and Zemp Stutz, 2012; Lowry et al., 2002; Neumark-Sztainer et al., 2006; Paxton et al., 2004; Tomeo et al., 1999; Winter et al., 2002). Furthermore, body-related self-conscious emotions such as shame and guilt, are modifiable factors that may also be associated with smoking and PA. Guilt is a motivating factor for PA in adolescent girls (Gillison et al., 2009). In adult females, body shame is positively associated with smoking to control appetite and weight (Fiissel and Lafreniere, 2006). Sabiston

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et al. (2007) found that body-related anxiety was related to engagement in or withdrawal from PA and smoking. Drawing from body image theories related to objectification (Fredrickson and Roberts, 1997), social comparison (Festinger, 1954), and self-discrepancy (Higgins, 1987), body-related emotions, perceptions, and cognitions may represent modifiable determinants of smoking and PA. In spite of the well-defined multidimensional nature of body image, researchers seldom explore all dimensions when studying health behavior outcomes. Instead, research has tended to focus on disordered eating at the expense of understanding other arguably more prominent maladaptive behaviors such as smoking and unhealthful levels of PA.

No study to date has compared body image-related correlates of levels of PA in adolescent smokers and non-smokers. Research has focused primarily on socio-demographic determinants of PA and smoking among adults (deRuiter et al., 2008; Gauthier et al., 2012; Ward et al., 2003). Given the potential health implications of unhealthful levels of PA and smoking behaviors, understanding how adolescents cope with negative body image is important to the development of effective intervention programs aimed at improving health through optimal PA and smoking abstinence. The objective of this study was to determine if body-related emotions (i.e., body-related shame, body-related guilt, weight-related stress), perceptions (i.e., self-perceived overweight), and cognitions (i.e., trying to change one's weight) in adolescents differed across four groups characterized by smoking and PA status. Given the theoretical propositions and empirical evidence (Festinger, 1954; Higgins, 1987; Fredrickson and Roberts, 1997; Sabiston et al., 2007; Tylka and Sabik, 2010), it was expected that more negative scores on all dimensions of body image would differentiate individuals with less favorable health behaviors. On the other hand, negative body image is also potentially associated with motivation to improve one's condition (i.e., Sabiston et al., 2007; Pila et al., 2014) and hence certain dimensions of body image may also be associated with more favorable health behaviors.

Material and methods

AdoQuest is a prospective longitudinal investigation of 1843 grade 5 Montreal students aged 10.8 (SD = 0.5), on average, at cohort inception in 2005. Details on AdoQuest have been published elsewhere (Low et al., 2012). The study received ethics approval from the Centre de Recherche du Centre Hospitalier de l'Université de Montréal. Data for this cross-sectional analysis were collected in 2010–11 when students were aged 16.8 (SD = 0.5) on average and in grade 10 or 11, in mailed self-report questionnaires completed by 1243 of the original 1843 participants (67%). Data on mother's education were collected in self-report questionnaires completed by 1435 parents in 2006 and/or 2009 (78% of those eligible).

Study variables

Participants were categorized as ever smokers if they answered "yes" to: "In your lifetime, have you ever smoked a cigarette, even just a puff?" Average number of cigarettes smoked in the last month was calculated from data on cigarette consumption for the preceding month, including number of days on which they had smoked and average number of cigarettes smoked per day (on days when they smoked). These two measures were multiplied to produce an estimate of average past month cigarette consumption.

Physical activity was assessed with the short self-administered International Physical Activity Questionnaire (IPAQ-SF) (Craig et al., 2003) which demonstrates reliability and validity against objective measures in adults (Craig et al., 2003) and adolescents (Rangul et al., 2008). Vigorous, moderate, and light PA were each measured in 2 items: "During the last 7 days, on how many days did you do vigorous/moderate/light physical activities?" and "On the days that you did vigorous/moderate/light physical activities, how many minutes did you usually do per day?" Minutes of light, moderate, and vigorous PA were multiplied by the number of days to create weekly totals of light, moderate and vigorous PA. Values for number of minutes of light, moderate, and vigorous PA exceeding 180 min per day were truncated at 180 min, in accordance with recommendations in the Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ) (2005). Participants were classified as meeting current moderate-to-vigorous physical activity (MVPA) recommendations if they reported engaging in at least 420 min of MVPA per week (Canadian Society for Exercise Physiology, 2010). For ease of presentation, participants who met or did not meet MVPA recommendations are hereafter labeled "active" and "inactive", respectively.

The Weight- and Body-Related Shame and Guilt Scale (WEB-SG) (Conradt et al., 2007) includes 6 items measuring shame (e.g., "I am ashamed of myself when others get to know how much I really weigh") and 6 items measuring guilt (e.g., "When I can't manage to work out physically, I feel guilty"). Response choices range from 1 (never) to 5 (always). An average score was calculated for the shame and guilt subscales. The internal consistency of the WEB-SG subscale scores (Cronbach alpha coefficients range: 0.86–0.92), and the convergent and discriminant validity have been demonstrated (Conradt et al., 2007). Cronbach alpha coefficients for the shame and guilt subscales scores in the current sample were 0.88 and 0.93, respectively. Guilt differs from shame in that it reflects a negative evaluation of one's specific behavior, whereas shame reflects a negative evaluation of the self. In addition, shame and guilt are distinguished by their adaptiveness, such that guilt has the potential to motivate behavior change but shame is reliably maladaptive (Tangney and Dearing, 2002). Due to the high correlation between these constructs, guilt and shame were examined by statistically partialling out shared variance using regression analysis, leaving constructs labeled shame-free guilt and guilt-free shame (Tangney and Dearing, 2002). Shame-free guilt represents the behavior-focused, adaptive and psychological adjustment aspects of guilt that are thought to distinguish it from shame, while guilt-free shame represents the self-focused maladaptive aspects of shame that distinguish it from guilt (Tangney and Dearing, 2002).

Self-perceived overweight was assessed by: "Do you consider yourself to be: (i) too thin, (ii) normal weight, (iii) a little overweight, or (iv) very overweight?" Self-perceived overweight was dichotomized and coded "yes" for participants who responded "a little overweight" or "very overweight," and "no" for participants to responded "too thin" or "normal weight."

Trying to change weight (Rosen, 1987) was assessed by: "At this point in time, are you trying to: (i) maintain your weight, (ii) lose weight, (iii) gain weight, or (iv) do nothing about your weight". Trying to change weight was coded "no" (for participants who responded "maintain weight" or "do nothing about your weight,"), "lose weight," and "gain weight."

Weight-related stress (Deschesnes, 1997) was measured by: "In your lifetime, have you experienced changes in your weight or physical appearance that you did not like?" Participants who experienced changes in their weight or physical appearance that they did not like were asked to rate the level of stress that this caused them on a 5-point scale ranging from (1) not at all stressful to (5) extremely stressful. All other participants who did not report having experienced changes in their weight or physical appearance that they did not like were coded 0.

Covariates included participant's Body Mass Index (BMI), sex, and mother's education. BMI was calculated using data on self-reported height and weight collected in 2006 and 2009. To reduce missing data, 2006 data on height and weight were used among 26 (2.6%) participants for whom 2009 data were not available. BMI, calculated by dividing weight in kilograms by height in meter squared, was transformed to sex- and age-specific BMI percentiles according to the 2000 Centers for Disease Control and Prevention (CDC) growth charts (Kuczmarski et al., 2002). BMI percentiles computed using 2006 data were adjusted for average percentage change in BMI percentile from 2006 to 2009. Data on