

Original quantitative research

Body-related shame and authentic pride are independently associated with self-rated health in young adults

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Abstract

Introduction: Although body weight has been positioned as a strong predictor of physical and mental health, positive and negative body-related psychosocial factors may also be important. Further, both theoretical tenets and empirical evidence suggest that these associations may differ by gender. Our objectives were to examine the associations between body-related self-conscious emotions (body shame, body authentic pride) and physical and mental health in young adults, and to identify potential differences in these associations by gender.

Methods: Data for this cross-sectional study were drawn from the Nicotine Dependence in Teens (NDIT) study for 799 young adults (M [SD] age = 33.6 y [0.5]; 43.9% male). We estimated the associations between each of body shame and body authentic pride (i.e. the exposures) and both self-rated physical and self-rated mental health (i.e. the outcomes) in linear regression models that controlled for age, education and body mass index, and we examined potential gender differences in these associations by conducting gender-stratified analyses.

Results: In females, self-rated health and mental health decreased by 0.37 and 0.38, respectively, with each unit increase in body shame. Self-rated health and mental health increased by 0.25 and 0.23, respectively, for each unit increase in body authentic pride. In males, self-rated health and mental health decreased by 0.35 and 0.45, respectively, with each unit increase in body shame, and increased by 0.32 and 0.21, respectively, with each unit increase in body authentic pride.

Conclusion: Interventions that focus on body weight to the exclusion of body-related self-conscious emotions may side-step a key contributor to self-rated health.

Keywords: *self-conscious emotions, young adults, body mass index, body shame, body pride, health, weight*

Introduction

The weight-normative approach to health, which dominates Western society, is driven by numerous assumptions, including that weight alone is a key indicator of health, that weight is controllable and that

weight loss is sustainable and safe.¹ At its core, the normative approach views weight as a central consideration in health and health care,² using the terms “overweight” and “obese” widely and equating “obesity” to a disease that needs to be eradicated.³ Aligned with this terminology

Highlights

- The weight-normative approach to health assumes that body weight is a stand-alone indicator of health.
- We assessed whether body-related self-conscious emotions are independently associated with self-rated health and mental health in young adults.
- Both females and males who reported greater body shame and lower body authentic pride perceived their health and mental health more negatively, even after adjusting for body mass index (BMI).
- The findings underscore the importance of considering psychosocial contributors to self-rated health, in addition to physical attributes such as BMI.
- Interventions that focus on weight to the exclusion of body-related self-conscious emotions may side-step a key contributor to self-rated health and mental health.

is the common use of body mass index (BMI) as an indicator of “overweight” in clinical practice and research, despite criticism of the BMI indicator for its inability to discriminate lean mass from body fat percentage,⁴ and its disregard of race, gender and age.^{5,6}

The relationship between BMI and health is generally difficult to study because it

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may be confounded or mediated by multiple adiposity-related factors that can also impact health, including socioeconomic status, weight cycling, physical activity and weight bias.^{3,7} Further, reliance on BMI (and, implicitly, the weight-normative approach) is criticized on the basis that the narratives and stereotypes perpetuated by reliance on BMI have negative effects on health, perhaps even more so than the physical challenges associated with excess weight.^{1,2}

It is broadly recognized that weight is a critical component of an individual's social status and acceptance by others. Higher-weight individuals are often perceived as sloppy, lazy, less likable, less kind, less successful, less attractive and as having lower self-esteem.^{8,9} The notion that thinness is superior is propagated through numerous sociocultural channels, including traditional and social media, government policy, environment and space design and interpersonal conversations and relationships.⁹⁻¹¹ Individuals recognize that being higher-weight is a social identity that is devalued by society. Viewing oneself as a member of this higher-weight group may trigger psychosocial (e.g. need for belonging) and biological (e.g. hypothalamic-pituitary adrenal axis) processes that diminish health.^{12,13} Simply the perception of being higher-weight, independent of actual BMI, is associated with higher levels of depressive symptoms, suicidality¹⁴ and poorer perceived health.¹⁵ Therefore, a more nuanced understanding of psychosocial factors related to weight is needed to inform effective, ethically sound weight- and health-related practices and policy.^{2,16}

Body-related shame is a psychosocial factor related to weight that may contribute to diminished health. Specifically, body shame is an intense self-conscious emotion experienced when people feel that they do not meet a societal or personal body shape, weight or appearance ideal because of an uncontrollable and fundamental personal flaw (e.g. I am an unattractive person^{17,18}). Prominent theories suggest that both social and evaluative threats from others¹² and negative self-evaluations¹⁸ can elicit body-related shame. Being higher-weight,¹⁹ perceiving oneself as higher-weight²⁰ and perceiving large discrepancies between one's actual and ideal weight²¹ are all associated with greater body shame.

Shame is recognized as a powerful emotion that diminishes physical and mental health,^{2,13,22} as evidenced by its association with physiological indicators (e.g. cortisol reactivity,²³ depressive symptoms,^{24,25} self-esteem²⁴). Further, body shame may also indirectly impact physical and mental health through avoidance of physical activity,^{20,26} social withdrawal,²⁶ elevated health care-related stress²⁷ and prioritizing improvements in appearance at the expense of health.²⁸ Body shame may therefore have a significant influence on perceived health.

Positive body-related emotions may also influence physical and mental health. More positive body-related emotions are associated with a lower risk of mortality²⁹ and higher levels of well-being.³⁰ Body authentic pride (henceforth referred to as "body pride") is a positively valenced self-conscious emotion that occurs when people attribute a positive achievement to their own efforts.^{17,18} Related to the body, it can involve efforts that lead to congruence between one's perceived appearance with a personal or societal ideal (e.g. being proud of efforts to maintain one's appearance).^{17,31}

Being higher-weight¹⁹ and perceiving a discrepancy between actual and idealized weight are associated with lower body pride in men and women.^{21,31} Since perceived acceptance by others fosters positive body emotions,³² socially perpetuated strict body ideals and ingrained biases against higher-weight bodies may diminish feelings of body pride through a lack of acceptance by others or perceived deviation from the societal ideal.¹⁸ Higher body pride is associated with higher self-esteem, flourishing, and lower depressive, anxiety and disordered eating symptoms,^{24,33} and higher engagement in positive health behaviours.³⁴ Therefore, body pride may underpin perceptions of health.

Our objectives in this study were to assess whether body shame or body pride is independently associated with self-rated health in young adults after taking BMI into account. Young adults constitute an age group of considerable interest in health-related research because they experience numerous major life transitions as they establish their social, educational and work identities, and yet they may still be highly amenable to lifestyle and health-related intervention.³⁵ We conducted gender-stratified

analyses in part because males are rarely studied in this realm of research, and in part because of documented differences in body shame¹⁹ and perceived health³⁶ across gender. Consistent with theoretical tenets,^{13,18,31} we hypothesized that higher body shame and lower body pride are associated with lower self-rated health and mental health in both females and males.

Methods

Ethics approval

The Nicotine Dependence in Teens (NDIT) study was approved by ethics committees at the Montréal Department of Public Health and McGill University (2007-2384, 2017-6895). Informed parental consent and participant assent were obtained in cycle 1 of the NDIT study (described later). Participants (who had attained legal age) provided consent in the post-high school data collections, including the data collection that generated data for the current analysis. The NDIT study is currently approved by the Centre de recherche du centre hospitalier de l'Université de Montréal (CRCHUM) Ethics Committee (ND 06.087). Participants provided informed consent in cycle 23.

Study sample

Data were drawn from the NDIT study,³⁷ for which 1294 participants aged 12 to 13 years in Grade 7 were recruited in 1999 to 2000 using a school-based sampling strategy. Specifically, 13 high schools in or near Montréal were selected in consultation with local school boards and school principals to include a mix of (i) French- and English-language schools; (ii) urban, suburban and rural schools; and (iii) schools located in neighbourhoods of high, moderate and low socioeconomic status. All students in Grade 7 were considered eligible to participate, and data were collected in 20 cycles from Grades 7 to 11 among those who agreed to participate. Post-high school data were collected in 2007 to 2008 (cycle 21), 2010 to 2012 (cycle 22), 2017 to 2020 (cycle 23) and 2020 to 2021 (cycle 24), when the mean age of participants was 20.4, 24.0, 30.5 and 33.6 years, respectively. In cycle 1 (i.e. at NDIT inception), several participant characteristics were comparable to those reported for same-age students participating in the 1999 provincially representative Québec

Child and Adolescent Health and Social Survey.³⁷

Except for BMI, all data for the current analyses were collected from 2017 to 2020 in cycle 23 (i.e. the only cycle to date in which body-related self-conscious emotions were measured), when the mean age of participants was 30.5 years. A total of 799 participants (43.9% male) completed the cycle 23 questionnaire. To avoid using a value of BMI that was on the causal pathway between the “exposures” (i.e. body shame, body pride) and the “outcomes” (i.e. self-rated health, self-rated mental health), we used BMI data from cycle 22. Overall, however, we consider this study to be cross-sectional, since most data were drawn from cycle 23.

Measures

Body shame and body pride

Body shame and body pride were measured with subscales of the Body and Appearance Self-Conscious Emotions Scale (BASES).²⁴ Evidence of concurrent, convergent, incremental and discriminant validity have been reported for the BASES.²⁴ In addition, both measures are relatively stable over time—the intraclass correlation coefficients (95% confidence intervals [CIs]) assessing two-week test-retest reliability were 0.93 (0.85, 0.97) for body shame, and 0.88 (0.72, 0.95) for body pride. In the NDIT sample, internal consistency was $\alpha = 0.88$ for body shame and $\alpha = 0.91$ for body pride. The four items in the body shame subscale (e.g. questions such as, “How often do you feel ... ashamed of the way you look?”) and the four items in the body pride subscale (e.g. questions such as, “How often do you feel ... proud that you have achieved your appearance goals?”) were scored from 1 (never) to 5 (always). Items in each subscale were averaged to create continuous scores ranging from 1 to 5.

Self-rated health

Self-rated health was measured by asking, “In general, how would you rate your health?” Response options were “poor,” “fair,” “good,” “very good” and “excellent” (scored 1 to 5). This item was used as a continuous variable in the analyses. Self-rated health has been consistently associated with objective health status³⁸ and is a strong predictor of mortality.³⁹

Self-rated mental health

Self-rated mental health was measured by asking, “In general, how would you rate

your mental health?” Response options were “poor,” “fair,” “good,” “very good” and “excellent” (scored 1 to 5), and this item was also considered continuous in the analyses. Self-rated mental health was moderately correlated ($r = 0.45$ – 0.48) with several well-known mental health measures,⁴⁰ and higher self-rated mental health scores are associated with higher mental health functioning and fewer symptoms of psychological distress.⁴¹

BMI

Height and weight were measured by trained technicians according to a standardized protocol,³⁷ either onsite in the NDIT offices in Montréal, Canada, or in participants’ homes. BMI was computed as weight in kilograms divided by height in metres, squared ($BMI = kg/m^2$) and was used as a continuous variable in the analyses. We used the value of BMI in cycle 22, rather than in cycle 23, to ensure that BMI (which could be a mediator of the associations of interest in addition to a potential confounder) did not block the associations of interest. In females, the mean BMI was 23.8 (standard deviation [SD] 4.7) in cycle 22 and 25.4 (SD 5.8) in cycle 23 ($r = 0.80$). In males, the mean BMI was 25.1 (SD 4.4) in cycle 22 and 26.3 (SD 4.6) in cycle 23 ($r = 0.80$). The correlation between BMI in cycle 22 and cycle 23 was 0.80 in females and 0.80 in males.

Sociodemographic characteristics

Participants reported their age, gender, whether they were born in Canada (“yes,” “no”), language spoken most often at home in cycle 1 (French, English, other), whether their mother was university-educated (“yes,” “no”) and whether participants were university-educated in cycle 23 (“yes,” “no”). We used the value of participant education in cycle 23 because education is relatively time-invariant at age 31.

Data analysis

Preliminary analyses

The data were screened for normality, outliers⁴² and missing data. Descriptive data for continuous variables were reported as means and SDs, and categorical variables were reported as frequencies and percentages. Pearson product moment correlation coefficients were computed to describe the associations among the main study variables. Although the correlation between body shame and body pride was low (i.e. $r = -0.179$ in females and $r = -0.009$ in

males), we developed models for each exposure separately to avoid overadjustment related to possible mediation of one variable by the other.

Univariable and multivariable analyses

All modelling was undertaken separately in gender-stratified models. We first modelled the association between each exposure variable (body shame, body pride) and each outcome variable (self-reported health, self-reported mental health) in unadjusted (i.e. univariable) linear regression models. We then conducted multivariable linear regression models adjusting for age, participant education and BMI. The parameters of interest were the beta coefficients for body shame and body pride, for which the 95% CIs excluded the null value in the multivariable models.

Results

Table 1 compares selected characteristics of participants retained and not retained (i.e. lost to follow-up, did not provide data in 2017–2020) for analysis. Of 670 females in cycle 1, 448 (66.9%) provided data in cycle 23. Of 623 males in cycle 1, 351 (56.3%) provided data in cycle 23. Participants retained were younger on average than those not retained, relatively more were born in Canada and more had university-educated mothers. BMI and speaking French were similar among those retained compared to those not retained for analysis.

Table 2 reports values for the main study variables in females and males in cycle 23. Females had higher scores for body shame than males (mean [SD] = 2.1 [0.8] vs. 1.8 [0.8]). Self-rated mental health scores were higher in males than females (mean [SD] = 3.4 [0.9] vs. 3.2 [0.9]). There was little difference in body pride scores or in self-rated health across gender.

Table 3 shows Pearson correlation coefficients between the main study variables in females and in males. Results from the univariable and multivariable linear regression models are shown in Table 4 for females and Table 5 for males, and the findings are reported below.

Body-related emotions and self-rated health in females

Body shame and self-rated health were moderately negatively correlated ($r = -0.366$) in females (Table 3), suggesting that as

TABLE 1
Selected characteristics of participants retained and not retained for analysis, by gender, NDIT study, 1999 to 2020

	Females		Males	
	Retained (n = 448)	Not retained ^a (n = 222)	Retained (n = 351)	Not retained ^a (n = 272)
Age at cycle 1, mean (SD)	12.6 (0.5)	12.9 (0.7)	12.7 (0.5)	12.9 (0.6)
Born in Canada, %	94.0	88.7	93.4	90.1
French-speaking, %	31.7	32.0	29.3	26.8
Mother university-educated, %	42.6	34.2	50.6	44.1
BMI, ^b mean (SD)	19.9 (3.9)	20.4 (4.0)	20.1 (3.8)	20.2 (3.8)

Abbreviations: BMI, body mass index; NDIT, Nicotine Dependence in Teens; SD, standard deviation.

^a Includes participants lost to follow-up between cycles 1 and 23 and participants with missing data in cycle 23.

^b At NDIT inception, in 1999 to 2000.

body shame increased, self-rated health decreased. Similarly, as shown in Table 4, Model 1, body shame was negatively associated with self-rated health in the unadjusted linear regression model ($b_{\text{crude}} = -0.42$, 95% CI: $-0.51, -0.32$). In Table 4, Model 2, the beta remained relatively stable after adjustment for age, participant education and BMI ($b_{\text{adj}} = -0.37$, 95% CI: $-0.48, -0.26$), suggesting that with each unit increase in body shame, there was a 0.37 decrease in the self-rated health score.

Body pride and self-rated health were weakly positively correlated ($r = 0.230$) in females (Table 3), suggesting that as body pride increased, self-rated health also increased. Similarly, as shown in Table 4, Model 3, body pride was positively associated with self-rated health in the unadjusted linear regression model ($b_{\text{crude}} = 0.23$, 95% CI: $0.14, 0.33$). In

Table 4, Model 4, the interpretation of the findings was not altered by adjusting for age, education and BMI ($b_{\text{adj}} = 0.25$, 95% CI: $0.15, 0.35$), suggesting that with each unit increase in the body pride score, the self-rated health score increased by 0.25.

Body-related emotions and self-rated mental health in females

Body shame and self-rated mental health were moderately negatively correlated ($r = -0.329$) in females (Table 3), suggesting that as body shame increased, self-rated mental health decreased. Similarly, as shown in Table 4, Model 5, body shame was negatively associated with self-rated mental health in the unadjusted linear regression model ($b_{\text{crude}} = -0.38$, 95% CI: $-0.48, -0.28$). In Table 4, Model 6, the beta remained relatively stable after adjustment for age, participant education and BMI ($b_{\text{adj}} = -0.38$, 95% CI: $-0.49, -0.26$), suggesting that with each unit

increase in body shame, there was a 0.38 decrease in the self-rated mental health score.

Body pride and self-rated mental health were weakly positively correlated ($r = 0.222$) in females (Table 3), suggesting that as body pride increased, self-rated mental health also increased. Similarly, as shown in Table 4, Model 7, body pride was positively associated with self-rated health in the unadjusted linear regression model ($b_{\text{crude}} = 0.23$, 95% CI: $0.13, 0.32$). In Table 4, Model 8, the interpretation of the findings was not altered by adjusting for age, participant education and BMI ($b_{\text{adj}} = 0.23$, 95% CI: $0.13, 0.33$), suggesting that with each unit increase in the body pride score, the self-rated health score increased by 0.23.

Body-related emotions and self-rated health in males

Body shame and self-rated health were moderately negatively correlated ($r = -0.327$)

TABLE 2
Selected characteristics^a of study participants, by gender, NDIT study, 2017 to 2020

	Females			Males		
	Total n ^b	Mean (SD) or % yes	Range	Total n ^b	Mean (SD) or % yes	Range
Age, y	448	30.6 (1.0)	28.5–34.1	351	30.6 (1.0)	28.2–34.6
Participant university-educated	447	62.4%	—	349	56.4%	—
Body shame ^c	447	2.1 (0.8)	1.0–5.0	350	1.8 (0.8)	1.0–4.8
Body pride ^c	447	2.3 (0.9)	1.0–5.0	350	2.4 (1.0)	1.0–5.0
Self-rated health	446	3.2 (0.9)	1.0–5.0	350	3.3 (0.9)	1.0–5.0
Self-rated mental health	445	3.2 (0.9)	1.0–5.0	349	3.4 (0.9)	1.0–5.0
BMI (cycle 22) ^d	384	23.8 (4.7)	16.3–45.4	298	25.1 (4.4)	18.1–46.0
BMI (cycle 23)	379	25.4 (5.8)	15.9–50.9	296	26.3 (4.6)	18.3–47.8

Abbreviations: BMI, body mass index; NDIT, Nicotine Dependence in Teens; SD, standard deviation.

^a As measured in cycle 23, unless otherwise indicated.

^b Totals differ due to missing data.

^c Measured using subscales of the Body and Appearance Self-Conscious Emotions Scale.

^d BMI cycle 22 data were used to avoid using a value of BMI that was on the causal pathway between exposure variables and outcome variables.

TABLE 3
Correlation coefficients between age, BMI, participant education, body shame, body pride, self-rated health and self-rated mental health among females (n = 384–448^a) and males (n = 298–351^a), NDIT study, 2017 to 2020

	Age	BMI (cycle 22) ^b	Participant education	Body shame	Body pride	Self-rated health	Self-rated mental health
Age		0.048	-0.196*	0.062	0.090	-0.076	-0.048
BMI (cycle 22) ^b	0.090		-0.205*	0.289*	0.034	-0.192*	0.013
Participant education	-0.201*	-0.072		-0.141*	0.015	0.236*	0.119*
Body shame	0.024	0.183*	-0.001		-0.179*	-0.366*	-0.329*
Body pride	0.046	0.062	0.025	-0.009		0.230*	0.222*
Self-rated health	0.001	-0.159*	0.117*	-0.327*	0.340*		0.432*
Self-rated mental health	-0.007	-0.167*	0.060	-0.350*	0.212*	0.510*	

Abbreviations: BMI, body mass index; NDIT, Nicotine Dependence in Teens.

Note: Data for males are presented in shaded cells. Correlation coefficients are Pearson product moment correlation coefficients.

^a Totals differ due to missing data.

^b BMI cycle 22 data were used to avoid using a value of BMI that was on the causal pathway between exposure variables and outcome variables.

* Significant at $p \leq 0.05$

in males (Table 3), suggesting that as body shame increased, self-rated health decreased. Similarly, as shown in Table 5, Model 1, body shame was negatively associated with self-rated health in the unadjusted linear regression model ($b_{\text{crude}} = -0.38$, 95% CI: -0.49 , -0.26). In Table 5, Model 2, the beta remained relatively stable after adjustment for age, participant

education and BMI ($b_{\text{adj}} = -0.35$, 95% CI: -0.47 , -0.22), suggesting that with each unit increase in body shame, there was a 0.35 decrease in the self-rated health score.

Body pride and self-rated health were moderately positively correlated ($r = 0.340$) in males (Table 3), suggesting that as body

pride increased, self-rated health also increased. Similarly, as shown in Table 5, Model 3, body pride was positively associated with self-rated health in the unadjusted linear regression model ($b_{\text{crude}} = 0.29$, 95% CI: 0.20 , 0.37). In Table 5, Model 4, the interpretation of the findings was not altered by adjusting for age, education and BMI ($b_{\text{adj}} = 0.32$, 95% CI: 0.23 ,

TABLE 4
Crude and adjusted beta coefficients (b) and 95% CIs from linear regression models for the association between body shame and body pride and each of self-rated health and self-rated mental health in females, NDIT study, 2017 to 2020

Model	Self-rated health		Self-rated mental health	
	β_{crude} (95% CI)	β_{adj}^a (95% CI)	β_{crude} (95% CI)	β_{adj}^a (95% CI)
Model	1 n = 445	2 n = 381 ^b	5 n = 445	6 n = 381 ^b
Body shame	-0.42 (-0.51, -0.32)	-0.37 (-0.48, -0.26)	-0.38 (-0.48, -0.28)	-0.38 (-0.49, -0.26)
Age	—	-0.04 (-0.13, 0.06)	—	-0.05 (-0.14, 0.05)
Participant education	—	0.33 (0.15, 0.52)	—	0.22 (0.03, 0.41)
BMI ^c	—	-0.01 (-0.03, 0.01)	—	0.03 (0.01, 0.05)
R ²	0.13	0.18	0.11	0.12
F	68.5	19.6	53.8	13.1
Model	3 n = 444	4 n = 381 ^b	7 n = 444	8 n = 381 ^b
Body pride	0.23 (0.14, 0.33)	0.25 (0.15, 0.35)	0.23 (0.13, 0.32)	0.23 (0.13, 0.33)
Age	—	-0.07 (-0.16, 0.02)	—	-0.08 (-0.18, 0.02)
Participant education	—	0.35 (0.16, 0.54)	—	0.24 (0.04, 0.44)
BMI ^c	—	-0.03 (-0.05, -0.01)	—	0.01 (-0.01, 0.03)
R ²	0.05	0.14	0.10	0.10
F	24.8	14.9	22.9	7.5

Abbreviations: BMI, body mass index; CI, confidence interval; NDIT, Nicotine Dependence in Teens.

Note: Bold indicates that the 95% CI excluded the null value for the exposure variable of interest.

^a Model adjusted for age, participant education (in cycle 23) and BMI (in cycle 22).

^b Totals for adjusted models differ from totals for unadjusted models due to missing data on participant education and/or BMI.

^c BMI cycle 22 data were used to avoid using a value of BMI that was on the causal pathway between exposure variables and outcome variables.

TABLE 5
Crude and adjusted beta coefficients (b) and 95% CIs from linear regression models for the association between body shame and body pride and each of self-rated health and self-rated mental health in males, NDIT study, 2017 to 2020

	Self-rated health		Self-rated mental health	
	β_{crude} (95% CI)	β_{adj}^a (95% CI)	β_{crude} (95% CI)	β_{adj}^a (95% CI)
Model	1 n = 349	2 n = 295 ^b	5 n = 349	6 n = 295 ^b
Body shame	-0.38 (-0.49, -0.26)	-0.35 (-0.47, -0.22)	-0.47 (-0.60, -0.33)	-0.45 (-0.60, -0.30)
Age	—	0.04 (-0.07, 0.14)	—	0.06 (-0.06, 0.18)
Participant education	—	0.25 (0.06, 0.45)	—	0.14 (-0.09, 0.37)
BMI ^c	—	-0.02 (-0.04, 0.002)	—	-0.03 (-0.05, 0.001)
R ²	0.11	0.13	0.12	0.14
F	41.8	11.0	48.6	11.6
Model	3 n = 348	4 n = 294 ^b	7 n = 348	8 n = 294 ^b
Body pride	0.29 (0.20, 0.37)	0.32 (0.23, 0.41)	0.21 (0.12, 0.30)	0.21 (0.10, 0.32)
Age	—	-0.01 (-0.11, 0.19)	—	0.02 (-0.11, 0.14)
Participant education	—	0.22 (0.03, 0.41)	—	0.12 (-0.11, 0.36)
BMI ^c	—	-0.04 (-0.06, -0.01)	—	-0.04 (-0.07, -0.02)
R ²	0.12	0.18	0.10	0.10
F	45.5	16.2	16.3	6.1

Abbreviations: BMI, body mass index; CI, confidence interval; NDIT, Nicotine Dependence in Teens.

Note: Bold indicates that the 95% CI excluded the null value for the exposure variable of interest.

^a Model adjusted for age, participant education (in cycle 23) and BMI (in cycle 22).

^b Totals for adjusted models differ from totals for unadjusted models due to missing data on participant education and/or BMI.

^c BMI cycle 22 data were used to avoid using a value of BMI that was on the causal pathway between exposure variables and outcome variables.

0.41), suggesting that with each unit increase in the body pride score, the self-rated health score increased by 0.32.

Body-related emotions and self-rated mental health in males

Body shame and self-rated mental health were moderately negatively correlated ($r = -0.350$) in males (Table 3), suggesting that as body shame increased, self-rated mental health decreased. Similarly, as shown in Table 5, Model 5, body shame was negatively associated with self-rated mental health in the unadjusted linear regression model ($b_{\text{crude}} = -0.47$, 95% CI: -0.60, -0.33). In Table 5, Model 6, the beta remained relatively stable after adjustment for age, participant education and BMI ($b_{\text{adj}} = -0.45$, 95% CI: -0.60, -0.30), suggesting that with each unit increase in body shame, there was a 0.45 decrease in the self-rated mental health score.

Body pride and self-rated mental health were weakly positively correlated ($r = 0.212$) in males (Table 3), suggesting that as body pride increased, self-rated mental health also increased. Similarly, as shown

in Table 5, Model 7, body pride was positively associated with self-rated mental health in the unadjusted linear regression model ($b_{\text{crude}} = 0.21$, 95% CI: 0.12, 0.30). In Table 5, Model 8, the interpretation of the findings was not altered by adjusting for age, participant education and BMI ($b_{\text{adj}} = 0.21$, 95% CI: 0.10, 0.32), suggesting that with each unit increase in the body pride score, the self-rated health score increased by 0.21.

Discussion

A dominant focus of health in Western social systems emphasizes the pursuit of weight loss, despite substantial evidence that weight loss is unsustainable for most people, and that weight cycling has adverse health effects.^{2,3,43} This study examined the associations among body-related self-conscious emotions—body shame and body pride—and each of self-rated health and self-rated mental health in young adults. The findings suggest that both males and females who reported greater body-related shame and lower body pride perceived their overall health more negatively, even after BMI was taken into account. These findings underscore

the importance of considering psychosocial contributors to self-rated health in young adults, in addition to physical attributes such as BMI.

That higher levels of body-related shame relate to lower self-rated health is consistent with theoretical tenets^{2,13,22} as well as with empirical evidence of elevated cortisol²³ and symptoms of mental illness.²⁵ Our findings also align with associations noted between higher levels of body pride and both fewer symptoms of mental illness and higher reported levels of well-being.^{24,33} While associations between global self-conscious emotions and indicators of health have been observed in past studies,^{22,25} our findings highlight the importance of assessing these emotions contextualized to the body and its appearance. Given the emphasis Western society places on appearance, and the pressure to uphold the strict standards both men and women are subject to with respect to weight,¹¹ as well as evidence that the appearance domain of one's identity strongly predicts global self-worth,⁴⁴ it is not surprising that how people feel about their body has a robust impact on their global perceptions of health. These findings

have important practical implications, and suggest that interventions that aim to mitigate emotions to promote perceived overall health (e.g. weight-neutral health-behaviour programs) should specifically target the established antecedents and experiences of body shame and body pride.¹⁸

For both males and females, the associations between BMI and self-rated mental health in the adjusted models were inconsistent; they remained significant only in the body shame model for females and the body pride model for males. These findings add to an inconsistent literature on the association between higher body weight and symptoms of mental illness. At least one study⁴⁵ demonstrated a positive association, whereas null associations have been noted after controlling for psychosocial variables (e.g. weight perceptions).¹⁴ Another study reported associations in women only.⁴⁶

Overall, our findings on body-related self-conscious emotions are consistent with weight bias theories and models¹³ as well as with empirical evidence,⁴⁷ supporting that the psychological responses to weight-based identities and stigma (e.g. interpersonal mistreatment, bias) contribute to diminished mental health. Our findings extend recent research demonstrating the associations among body shame, body pride and symptoms of mental illness in young adults⁴⁸ by highlighting that emotional responses to body appearance may be a more important consideration than weight status itself. Since mental illness in young adulthood is predictive of cardiovascular disease and an elevated risk of mortality into middle and late adulthood,⁴⁹ body-related self-conscious emotions may be an important target for mitigating symptoms of mental illness and fostering well-being in young adults.

Although our findings support that body-related self-conscious emotions are associated with self-rated health, the mechanisms underpinning the associations are not known. Multiple pathways may be important. In addition to physiological dysregulation over time due to cumulative experiences of self-conscious emotions,²² self-conscious emotions may indirectly impact perceived health through their ability to motivate or deter health behaviours. Self-conscious emotions motivate perceived moral and socially acceptable health behaviours;¹⁸ weight-normative

approaches to health have perpetuated the notion that health behaviours are moral through healthism (i.e. the discourse that health can be achieved through discipline and effort, and that health is something moral citizens should strive for).^{1,3} More specifically, body shame promotes avoidance of contexts in which one feels vulnerable to experiencing shame, whereas body pride reinforces engagement in activities that elicit feelings of pride.¹⁸ Higher levels of body shame and lower levels of body pride have been consistently associated with lower levels of physical activity,^{17,20,34} while body shame relates to greater health care avoidance in women.²⁷ Longitudinal studies investigating the mechanisms that underpin this association are an important avenue for future research.

Implications

These findings assess individual-level emotions, but also have implications regarding the importance of social narratives around weight implicit in health care, education and government policies that contribute to eliciting these emotions. For example, school-based BMI screening programs sometimes use this metric as the sole indicator of health and reinforce habitual monitoring of weight in young people. Government policies in Canada have strongly promoted that weight is entirely controllable and that individuals should actively aim to control their weight.⁵⁰ Health care experiences are often described as stigmatizing and elicitors of shame, and shame is the most common motivator of health care avoidance.¹⁶ Therefore, system-level changes that recognize the importance of weight inclusivity and aim to mitigate feelings of body shame and foster positive body-related self-conscious emotions are essential. Consistent with weight-inclusive approaches to health,^{2,51} policies and programs that promote sustainable engagement in health behaviours and well-being across the weight spectrum are essential. These policies and programs must be developed with ongoing recognition that there are larger, uncontrollable factors (e.g. food access, genetics) that also play a role in weight and health.

Strengths and limitations

Strengths of this study include its focus on young adults, who are understudied in this realm, and its consideration of both

positive and negative body-related emotions as exposure variables. In addition, the data provide a basis for discussion about how to reorient health practice and policy that is overly focussed on weight. Finally, the analyses were conducted separately in males and females.

Limitations include that the cross-sectional study design precludes causal inference. Future studies should be longitudinal and establish the temporality of the exposures and outcomes. Residual confounding could be an issue due to poorly measured potential confounders or missing data on potential confounders.⁵² Loss to follow-up since inception could have introduced selection bias. Recall error related to self-report data could have introduced misclassification bias. Use of a purposive sample of schools to recruit participants could have rendered the findings less generalizable. Finally, it is possible that limited power reduced our ability to detect some associations.

Conclusion

This study examined the associations among body-related self-conscious emotions and self-reported health in young adults. In both males and females, both body shame and body pride were associated with self-rated health even after taking BMI into account. Although BMI and body-related self-conscious emotions are likely inextricably linked in complex ways, these findings highlight the importance of considering psychosocial contributors to health in young adults, and raise concerns that preventive interventions focussed primarily on BMI may side-step a key contributor to self-rated health in excluding consideration of body-related self-conscious emotions.

Acknowledgements

NDIT was supported by Canadian Cancer Society grants #010271, #017435 and #704031 and Canadian Institutes of Health Research grant #451832. The funders were not involved in the design or conduct of the study; collection, management, analysis or interpretation of the data; or preparation, review or approval of the manuscript. KML was supported by a Social Sciences and Humanities Research Council Doctoral Fellowship at the time of manuscript preparation. CMS holds a Canada Research Chair in Physical Activity and Mental Health. JOL held a Canada Research Chair

in the Early Determinants of Adult Chronic Disease from 2004 to 2021. EOL holds a post-doctoral salary award from the Fonds de recherche du Québec – Santé.

Conflicts of interest

None to declare.

Authors' contributions and statement

KML, EOL, CMS, SM, RHO, JOL—conceptualization. EOL, KML, JOL—analysis. KML, EOL—writing—original draft. JOL—funding acquisition. JOL—methodology, including study design and data collection. CMS, JOL—supervision. KML, EOL, CMS, SM, RHO, JOL—writing—review & editing.

The content and views expressed in this article are those of the authors and do not necessarily reflect those of the Government of Canada.

References

1. Calogero RM, Tylka TL, Mensinger JL, Meadows A, Daniélsdóttir S. Recognizing the fundamental right to be fat: a weight-inclusive approach to size acceptance and healing from sizeism. *Women Ther.* 2019;42(1-2): 22-44. <https://doi.org/10.1080/02703149.2018.1524067>
2. Tylka TL, Annunziato RA, Burgard D, et al. The weight-inclusive versus weight-normative approach to health: evaluating the evidence for prioritizing well-being over weight loss. *J Obes.* 2014;983495. <https://doi.org/10.1155/2014/983495>
3. Calogero RM, Tylka TL, Mensinger JL. Scientific weightism: a view of mainstream weight stigma research through a feminist lens. In: Roberts T-A, Curtin N, Duncan LE, Cortina LM, editors. *Feminist perspectives on building a better psychological science of gender.* New York (NY): Springer International Publishing; 2016:9-28.
4. Romero-Corral A, Somers VK, Sierra-Johnson J, et al. Accuracy of body mass index in diagnosing obesity in the adult general population. *Int J Obes.* 2008;32(6):959-66. <https://doi.org/10.1038/ijo.2008.11>
5. Rothman KJ. BMI-related errors in the measurement of obesity. *Int J Obes.* 2008;32(Suppl 3):S56-S59. <https://doi.org/10.1038/ijo.2008.87>
6. Stanford FC, Lee M, Hur C. Race, ethnicity, sex, and obesity: is it time to personalize the scale? [Letter.] *Mayo Clin Proc.* 2019;94(2):362-3. <https://doi.org/10.1016/j.mayocp.2018.10.014>
7. Rask-Andersen M, Karlsson T, Ek WE, Johansson A. Gene-environment interaction study for BMI reveals interactions between genetic factors and physical activity, alcohol consumption and socioeconomic status. *PLOS Genet.* 2017;13(9):e1006977. <https://doi.org/10.1371/journal.pgen.1006977>
8. Musher-Eizenman D, Carels RA. The impact of target weight and gender on perceptions of likeability, personality attributes, and functional impairment. *Obes Facts.* 2009;2(5):311-7. <https://doi.org/10.1159/000235915>
9. Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity.* 2009;17(5):941-64. <https://doi.org/10.1038/oby.2008.636>
10. Lucibello KM, Vani MF, Koulanova A, DeJonge ML, Ashdown-Franks G, Sabiston CM. #quarantine15: a content analysis of Instagram posts during COVID-19. *Body Image.* 2021;38:148-56. <https://doi.org/10.1016/j.bodyim.2021.04.002>
11. Tiggemann M. Sociocultural perspectives on body image. In: Cash T, editor. *Encyclopedia of body image and human appearance.* Vol. 2. Cambridge (MA): Academic Press; 2012:758-65. <https://doi.org/10.1016/B978-0-12-384925-0.00120-6>
12. Dickerson SS, Gruenewald TL, Kemeny ME. When the social self is threatened: shame, physiology, and health. *J Personal.* 2004;72(6):1191-216. <https://doi.org/10.1111/j.1467-6494.2004.00295.x>
13. Hunger JM, Major B, Blodorn A, Miller CT. Weighed down by stigma: how weight-based social identity threat contributes to weight gain and poor health. *Soc Personal Psychol Compass.* 2015;9(6):255-68. <https://doi.org/10.1111/spc3.12172>
14. Haynes A, Kersbergen I, Sutin A, Daly M, Robinson E. Does perceived overweight increase risk of depressive symptoms and suicidality beyond objective weight status? A systematic review and meta-analysis. *Clin Psychol Rev.* 2019;73:101753. <https://doi.org/10.1016/j.cpr.2019.101753>
15. Idema CL, Roth SE, Upchurch DM. Weight perception and perceived attractiveness associated with self-rated health in young adults. *Prev Med.* 2019;120:34-41. <https://doi.org/10.1016/j.ypmed.2019.01.001>
16. Lee JA, Pausé CJ. Stigma in practice: barriers to health for fat women. *Front Psychol.* 2016;7:2063. <https://doi.org/10.3389/fpsyg.2016.02063>
17. Sabiston CM, Brunet J, Kowalski KC, Wilson PM, Mack DE, Crocker PR. The role of body-related self-conscious emotions in motivating women's physical activity. *J Sport Exerc Psychol.* 2010;32(4):417-37. <https://doi.org/10.1123/jsep.32.4.417>
18. Tracy JL, Robins RW. Putting the self into self-conscious emotions: a theoretical model. *Psychol Inq.* 2004; 15(2):103-25. https://doi.org/10.1207/s15327965pli1502_01
19. Pila E, Brunet J, Crocker PR, Kowalski KC, Sabiston CM. Intrapersonal characteristics of body-related guilt, shame, pride, and envy in Canadian adults. *Body Image.* 2016;16:100-6. <https://doi.org/10.1016/j.bodyim.2016.01.001>
20. Lucibello KM, Sabiston CM, O'Loughlin EK, O'Loughlin JL. Mediating role of body-related shame and guilt in the relationship between weight perceptions and lifestyle behaviours. *Obes Sci Pract.* 2020;6(4):365-72. <https://doi.org/10.1002/osp4.415>
21. Castonguay AL, Brunet J, Ferguson L, Sabiston CM. 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.* 2012;9(4):488-94. <https://doi.org/10.1016/j.bodyim.2012.07.003>

22. Dolezal L, Lyons B. Health-related shame: an affective determinant of health? *Med Humanit.* 2017;43(4):257-63. <https://doi.org/10.1136/medhum-2017-011186>
23. Lupis SB, Sabik NJ, Wolf JM. Role of shame and body esteem in cortisol stress responses. *J Behav Med.* 2016; 39(2):262-75. <https://doi.org/10.1007/s10865-015-9695-5>
24. Castonguay AL, Sabiston CM, Crocker PR, Mack DE. Development and validation of the body and appearance self-conscious emotions scale (BASES). *Body Image.* 2014;11(2):126-36. <https://doi.org/10.1016/j.bodyim.2013.12.006>
25. Kim S, Thibodeau R, Jorgensen RS. Shame, guilt, and depressive symptoms: a meta-analytic review. *Psychol Bull.* 2011;137(1):68-96. <https://doi.org/10.1037/a0021466>
26. Ratcliffe D, Ellison N. Obesity and internalized weight stigma: a formulation model for an emerging psychological problem. *Behav Cogn Psychother.* 2015;43(2):239-52. <https://doi.org/10.1017/s1352465813000763>
27. Mensinger JL, Tylka TL, Calamari ME. Mechanisms underlying weight status and healthcare avoidance in women: a study of weight stigma, body-related shame and guilt, and healthcare stress. *Body Image.* 2018; 25:139-47. <https://doi.org/10.1016/j.bodyim.2018.03.001>
28. Lamont JM. Effects of body shame on poor health decisions: the mediating role of body responsiveness. *Curr Psychol.* 2021;40(11):5489-98. <https://doi.org/10.1007/s12144-019-00528-y>
29. Xu J, Roberts RE. The power of positive emotions: it's a matter of life or death—subjective well-being and longevity over 28 years in a general population. *Health Psychol.* 2010; 29(1):9-19. <https://doi.org/10.1037/a0016767>
30. Beard K, Eames C, Withers P. The role of self-compassion in the well-being of self-identifying gay men. *J Gay Lesbian Ment Health.* 2017;21(1): 77-96. <https://doi.org/10.1080/19359705.2016.1233163>
31. Mackowiak R, Lucibello KM, Gilchrist JD, Sabiston CM. Examination of actual and ideal body-related characteristics and body-related pride in adult males. *Am J Men's Health.* 2019;13(5):1557988319874642. <https://doi.org/10.1177/1557988319874642>
32. Wood-Barcalow NL, Tylka TL, Augustus-Horvath CL. "But I like my body": positive body image characteristics and a holistic model for young-adult women. *Body Image.* 2010;7(2):106-16. <https://doi.org/10.1016/j.bodyim.2010.01.001>
33. Gilchrist JD, Lucibello KM, Pila E, Crocker PR, Sabiston CM. Emotion profiles among adolescent female athletes: associations with flourishing. *Body Image.* 2021;39:166-74.
34. Castonguay AL, Pila E, Wrosch C, Sabiston CM. Body-related self-conscious emotions relate to physical activity motivation and behavior in men. *Am J Men's Health.* 2015;9(3):209-21. <https://doi.org/10.1177/1557988314537517>
35. Nelson LJ, Padilla-Walker LM. Flourishing and floundering in emerging adult college students. *Emerg Adulthood.* 2013;1(1):67-78. <https://doi.org/10.1177/2167696812470938>
36. Bauldry S, Shanahan MJ, Boardman JD, Miech RA, Macmillan R. A life course model of self-rated health through adolescence and young adulthood. *Soc Sci Med.* 2012;75(7):1311-20. <https://doi.org/10.1016/j.socscimed.2012.05.017>
37. O'Loughlin J, Dugas EN, Brunet J, et al. Cohort profile: the Nicotine Dependence in Teens (NDIT) study. *Int J Epidemiol.* 2015;44(5):1537-46. <https://doi.org/10.1093/ije/dyu135>
38. Wu S, Wang R, Zhao Y, et al. The relationship between self-rated health and objective health status: a population-based study. *BMC Public Health.* 2013;13:320. <https://doi.org/10.1186/1471-2458-13-320>
39. DeSalvo KB, Fan VS, McDonnell MB, Fihn SD. Predicting mortality and healthcare utilization with a single question. *Health Serv Res.* 2005;40(4): 1234-46. <https://doi.org/10.1111/j.1475-6773.2005.00404.x>
40. Fleishman JA, Zuvekas SH. Global self-rated mental health: associations with other mental health measures and with role functioning. *Med Care.* 2007;45(7):602-9. <https://doi.org/10.1097/mlr.0b013e31803bb4b0>
41. McAlpine DD, McCreedy E, Alang S. The meaning and predictive value of self-rated mental health among persons with a mental health problem. *J Health Soc Behav.* 2018;59(2):200-14. <https://doi.org/10.1177/0022146518755485>
42. Garson GD. Testing statistical assumptions [e-book]. Asheboro (NC): Statistical Associates Publishing; 2012. 52 p.
43. Mehta T, Smith DL, Muhammad J, Casazza K. Impact of weight cycling on risk of morbidity and mortality. *Obes Rev.* 2014;15(11):870-81. <https://doi.org/10.1111/obr.12222>
44. Harter S. The construction of the self: developmental and sociocultural foundations. 2nd ed. New York (NY): The Guilford Press; 2012. 440 p.
45. Zhao G, Ford ES, Dhingra S, Li C, Strine TW, Mokdad AH. Depression and anxiety among US adults: associations with body mass index. *Int J Obes.* 2009;33(2):257-66. <https://doi.org/10.1038/ijo.2008.268>
46. Mulugeta A, Zhou A, Power C, Hyppönen E. Obesity and depressive symptoms in mid-life: a population-based cohort study. *BMC Psychiatry.* 2018;18(1):297. <https://doi.org/10.1186/s12888-018-1877-6>
47. Lee MS, Gonzalez BD, Small BJ, Thompson JK. Internalized weight bias and psychological wellbeing: an exploratory investigation of a preliminary model. *PLOS ONE.* 2019;14(5): e0216324. <https://doi.org/10.1371/journal.pone.0216324>
48. Mendia J, Pascual A, Conejero S, Mayordomo S. The relationship between body and appearance-related self-conscious emotions and disordered eating: the mediating role of symptoms of depression and anxiety. *Int J Psychol Psychol Ther.* 2021;21(1): 93-105.

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49. Shah AJ, Veledar E, Hong Y, Bremner JD, Vaccarino V. Depression and history of attempted suicide as risk factors for heart disease mortality in young individuals. *Arch Gen Psychiatry*. 2011;68(11):1135-42. <https://doi.org/10.1001/archgenpsychiatry.2011.125>
 50. Salas XR, Forhan M, Caulfield T, Sharma AM, Raine M. A critical analysis of obesity prevention policies and strategies. *Can J Public Health*. 2017;108(5-6):e598–e608. <https://doi.org/10.17269/cjph.108.6044>
 51. Association for size diversity and health (ASDAH). About health at every size (HAES) [Internet]. Phoenix (AZ): 2022. Available from: <https://www.sizediversityandhealth.org/content.asp?id=152>
 52. Moral-García JE, Agraso-López AD, Ramos-Morcillo AJ, Jiménez A, Jiménez-Eguizábal A. The influence of physical activity, diet, weight status and substance abuse on students' self-perceived health. *Int J Environ Res Public Health*. 2020;17(4):1387. <https://doi.org/10.3390/ijerph17041387>