



Exercise motives and positive body image in physically active college women and men: Exploring an expanded acceptance model of intuitive eating



Tracy L. Tylka^a, Kristin J. Homan^{b,*}

^a Department of Psychology, Ohio State University, Columbus, OH 43210, USA

^b Department of Psychology, Grove City College, Grove City, PA 16127, USA

ARTICLE INFO

Article history:

Received 2 March 2015

Received in revised form 25 July 2015

Accepted 27 July 2015

Keywords:

Exercise motives

Positive body image

Body appreciation

Intuitive eating

Body functionality

Body acceptance by others

ABSTRACT

The acceptance model of intuitive eating posits that body acceptance by others facilitates body appreciation and internal body orientation, which contribute to intuitive eating. Two domains of exercise motives (functional and appearance) may also be linked to these variables, and thus were integrated into the model. The model fit the data well for 406 physically active U.S. college students, although some pathways were stronger for women. Body acceptance by others directly contributed to higher functional exercise motives and indirectly contributed to lower appearance exercise motives through higher internal body orientation. Functional exercise motives positively, and appearance exercise motives inversely, contributed to body appreciation. Whereas body appreciation positively, and appearance exercise motives inversely, contributed to intuitive eating for women, only the latter association was evident for men. To benefit positive body image and intuitive eating, efforts should encourage body acceptance by others and emphasize functional and de-emphasize appearance exercise motives.

© 2015 Elsevier Ltd. All rights reserved.

Introduction

Exercise is one of the most powerful lifestyle behaviors for promotion of health and well-being. Relative to inactive individuals, physically active adults have lower rates of all-cause mortality, cardiovascular disease, type 2 diabetes, metabolic syndrome, and some cancers; they also exhibit better cardiorespiratory and muscular fitness (U.S. Department of Health and Human Services, 2008). Regular exercise is also associated with psychological benefits, including reduced anxiety and depression, improved self-esteem, better quality sleep, and greater health-related quality of life (Mead et al., 2009; Spence, McGannon, & Poon, 2005; U.S. Department of Health and Human Services, 2008). However, in regard to body image and eating behavior, the correlates of exercise are not the same for all individuals. Instead, it appears that the links between exercise and both body image and eating-related markers of health and well-being depend on the reasons underlying an individual's desire to engage in physical activity rather than the amount or

frequency of exercise (Homan & Tylka, 2014; LePage & Crowther, 2010; Mond, Hay, Rodgers, & Owen, 2006).

People choose to exercise for many different reasons, including (for example) weight control, health, fitness, stress management, socialization, and challenge (Cash, Novy, & Grant, 1994; Markland & Ingledew, 1997; Silberstein, Striegel-Moore, Timko, & Rodin, 1988). However, accruing evidence indicates that these motives can be classified into two domains based on their relationships with body image-related variables. Specifically, external motives related to appearance (including weight control, attractiveness, body tone) tend to be associated with body dissatisfaction, internalization of cultural appearance ideals, dietary restraint, and disordered eating symptoms, while internal, functional motives (including health, fitness, enjoyment, challenge, mood improvement) show inverse relationships with those same variables (DiBartolo, Lin, Montoya, Neal, & Shaffer, 2007; LePage & Crowther, 2010; Mond & Calogero, 2009; Strelan, Mehaffey, & Tiggemann, 2003; Thome & Espelage, 2007; Vartanian, Wharton, & Green, 2012).

Although researchers have investigated the relationships among exercise motives, negative body image, and disordered eating, research has not yet explored how exercise motives relate to positive body image. Positive body image is an important construct that is rapidly gaining attention among researchers because it represents a state of psychological well-being that is greater

* Corresponding author at: 100 Campus Drive, Grove City, PA 16127, USA. Tel.: +1 724 458 2043.

E-mail address: kjhoman@gcc.edu (K.J. Homan).

than the absence of appearance-related distress (Avalos, Tylka, & Wood-Barcalow, 2005; Tiggemann & McCourt, 2013; Tylka, 2011a; Tylka & Wood-Barcalow, 2015b; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). In addition to positive appraisals of their appearance, individuals with positive body image demonstrate *positive embodiment*, or healthy ways of inhabiting the body, such as body appreciation and body functionality (Tylka & Wood-Barcalow, 2015b). *Body appreciation* includes holding favorable opinions toward the body, accepting the body regardless of appearance, respecting the body by engaging in healthy behaviors, and protecting the body by rejecting unrealistic media appearance ideals (Avalos et al., 2005). Those high in body functionality have an *internal body orientation*, focusing on what their body can do and how it feels rather than how it looks or appears to others (Augustus-Horvath & Tylka, 2011).

It would be worthwhile to examine the relationships between the external and internal exercise motive domains (hereafter referred to as “appearance exercise motives” and “functional exercise motives”) and positive body image within a model that recognizes positive embodiment. Therefore, the present study examined these associations within the acceptance model of intuitive eating (Avalos & Tylka, 2006), which draws in part from humanistic theory (Rogers, 1961) and objectification theory (Fredrickson & Roberts, 1997). The acceptance model of intuitive eating posits that perceiving that the body is unconditionally accepted (rather than objectified) by others helps individuals appreciate their bodies, both directly and indirectly via developing an internal rather than external orientation of their bodies (see Fig. 1, paths a–c). Body appreciation and internal body orientation, then, foster intuitive eating (paths d–e). *Intuitive eating* is a behavioral manifestation of positive body image that involves trust in and connection with internal hunger and satiety cues and eating in response to these cues (Tribole & Resch, 2012; Tylka, 2006). Moreover, individuals who eat intuitively are not preoccupied with food and dieting; rather, they choose foods that are appealing and help their bodies function well (Tylka, Calogero, & Daniélsdóttir, 2015; Tylka & Kroon Van Diest, 2013).

There is substantial empirical support for the acceptance model of intuitive eating among various age groups, including adolescent girls, emerging adult, early adult, and middle adult women (Andrew, Tiggemann, & Clark, 2015; Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006), as well as female college athletes (Hahn Oh, Wiseman, Hendrickson, Phillips, & Hayden, 2012). In each of these examinations of the model, its five paths were significant. Thus, in our expanded model, we hypothesized that the corresponding paths (see Fig. 1, paths a–e) would be significant for our sample of women. We also predicted that body appreciation and internal body orientation would mediate the relationship between body acceptance by others and intuitive eating among women, as the extent to which body acceptance by others is connected to women’s intuitive eating has been found to be fully dependent on their positive embodiment (Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006).

To our knowledge, the present study represents the first examination of the acceptance model of intuitive eating among men. We expected that its proposed paths (Fig. 1, paths a–e) also would be significant for our sample of men, given documented positive bivariate correlations between men’s internal body orientation, body appreciation, and intuitive eating (Tylka & Kroon Van Diest, 2013) and men’s perceptions of body acceptance by family members, body appreciation, and intuitive eating (Kroon Van Diest & Tylka, 2010). We investigated differences in the strengths of the model paths between women and men. Given that the acceptance model of intuitive eating was based on girls’ and women’s experiences, we predicted stronger pathways in women’s data compared to men’s data. Furthermore, to balance the analysis with women,

we examined whether body appreciation and internal body orientation would mediate the relationship between body acceptance by others and intuitive eating for men, although we did not offer a hypothesis due to the absence of theory and research on men’s positive embodiment.

Next, we hypothesized that exercise motives would be related to the model variables via paths f–m (see Fig. 1). The more women and men perceive that their body’s appearance is unconditionally accepted by others, the more they may be “freed” from narrowly viewing exercise as a method to control their appearance. This mindset would allow them to recognize and seek out exercise’s internal, functional benefits (path f) while also attenuating concerns about altering, changing, or maintaining their appearance through exercise (path g). Likewise, the more women and men have an internal body orientation, thus prioritizing how their body feels and functions over how it looks, the more likely they will be motivated to exercise for functional reasons (path h) and not appearance reasons (path i). Indeed, prioritizing one’s appearance over one’s competency-based body attributes was found to be inversely associated with functional exercise motives and positively associated with appearance exercise motives (Strelan et al., 2003). Additionally, the higher women’s and men’s functional exercise motives, the more likely they will be attuned to positive changes as a result of exercise, such as improvements in fitness and/or energy level, physical ability, and everyday functioning. Attention to these changes may foster an appreciation for their body (path j) and a readiness to eat according to their body’s internal hunger and satiety cues and cravings to maintain their energy and body performance (path k). Conversely, exercising in hopes of modifying appearance (by losing fat, gaining muscle mass, etc.) is likely to be inversely associated with appreciating the body as it currently is (path l; Homan & Tylka, 2014). It is also likely to show an inverse relationship with intuitive eating (path m) out of concern that eating in this manner may “waste” the calories burned during the workout, prevent fat loss, and/or promote body fat accumulation rather than muscle tone or development. We also compared the strength of paths f–m for women and men; however, due to the lack of available theory and research, we did not formulate a hypothesis addressing whether they would be stronger for women or men.

Finally, we expected that, compared to men, women would have higher average scores on appearance exercise motivation and lower average scores on the remaining model variables due to the disproportionate cultural and interpersonal pressure women receive to focus on, tend to, and alter their appearance (Buote, Wilson, Strahan, Gazzola, & Papps, 2011; Fredrickson & Roberts, 1997). Instead, men are encouraged to tend to their body’s competence and ability to function (Daniel & Bridges, 2010). Indeed, in young adult samples, women have been found to have lower levels of internal body orientation (i.e., higher body surveillance), body appreciation, and intuitive eating than men (Calogero, 2009; Tylka, 2013; Tylka & Kroon Van Diest, 2013; Tylka & Wood-Barcalow, 2015a).

Method

Participants and Procedure

After receiving approval from the affiliated college and university IRBs, we recruited undergraduate students because they are provided with opportunities for regular physical activity (e.g., gymnasiums, college sports clubs or teams). Students from a small liberal arts college in Pennsylvania received the questionnaires in an envelope which they completed at their convenience. Students at a regional campus of a large public university in Ohio completed the questionnaires online at their convenience. Students

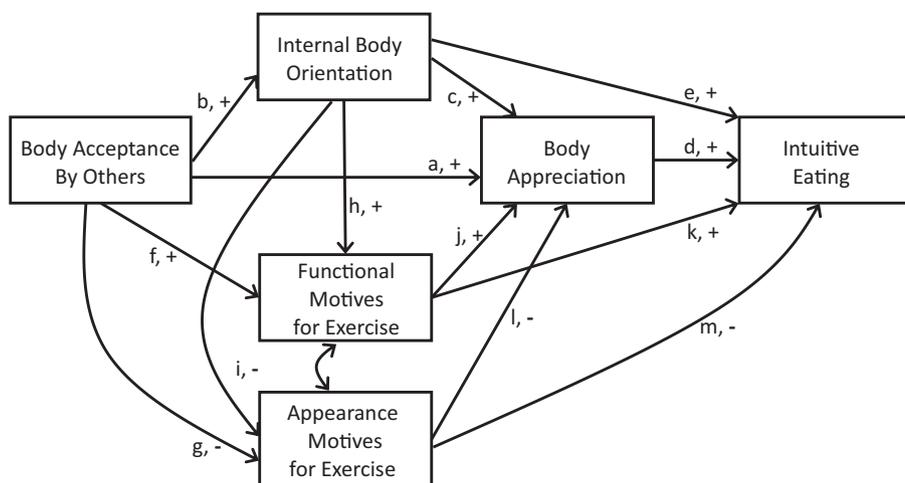


Fig. 1. Hypothesized acceptance model of intuitive eating, with exercise motives integrated. Given that items for functional exercise motives and items for appearance exercise motives were included within the same measure, we correlated the errors between these two variables to acknowledge method variance.

were assured that their responses would remain anonymous, and they received psychology course credit via a numerical coding system. Measures were counterbalanced to control for order effects.

Students who failed at least one of three embedded validity questions (e.g., “To make sure you are paying attention, please do not answer this item”) were excluded from the final data set ($n = 17$). Furthermore, because exercise motives depend on participants engaging in physical activity, we limited our sample to students who indicated that, in a typical week, they *sometimes* or *often* engaged in physical activity “long enough to work up a sweat” and excluded those who reported *never* engaging in physical activity long enough to work up a sweat within a typical week ($n = 86$).

The 406 participants in the final data set included 258 women and 148 men; 276 were from the liberal arts college, and 130 from the regional university campus. Participants reported engaging, for at least 15 min,¹ in strenuous exercise 3.24 ($SD = 2.94$) times a week, moderate exercise 3.69 ($SD = 4.09$) times a week, and mild exercise 5.02 ($SD = 6.80$) times a week. They ranged in age from 18 to 47 years ($M = 19.62$, $SD = 2.87$) and identified as Caucasian American (88.5%), African American (5.2%), Asian American (2.0%), Native American (1.6%), Latino/a (1.2%), or multiracial (1.4%). Average BMI (calculated from self-reported height and weight data) was 22.59 ($SD = 3.36$) for women and 23.79 ($SD = 3.40$) for men, which was obtained after removing six outliers that were at least 3 SD above the mean.² Both of these averages are in the normal range based on United States government guidelines (U.S. Department of Health and Human Services, 2002).

Measures

Body acceptance by others. The 10-item Body Acceptance by Others Scale (BAOS; Avalos & Tylka, 2006) assesses the extent participants perceive that their bodies are accepted by friends, family, people whom they have dated, society, and media (e.g., “I’ve

¹ Examples of strenuous (e.g., running, jogging, basketball), moderate (e.g., fast walking, baseball), and mild (e.g., yoga, golf, easy walking) exercise were provided to participants.

² We gathered BMI data simply to describe the sample. However, we do not control for BMI in the analyses, given that BMI is confounded with muscle mass, which is especially problematic for men in particular within body image research (see Tylka, 2011b). Moreover, the relationship between BMI and body fat percentage is not linear and also is inherently different for women and men (for a review, see Rothman, 2008).

felt acceptance from my friends regarding my body shape and/or weight”). Its items are rated on a 5-point scale (1 = *never*, 5 = *always*) and averaged; higher scores indicate greater perceived body acceptance. Among college women, BAOS scores demonstrated internal consistency reliability, 3-week test-retest reliability, and construct validity (Avalos & Tylka, 2006). To our knowledge, psychometric evidence has not yet been accrued with a male sample. In the present study, Cronbach’s alphas for BAOS items were .91 for women and .91 for men.

Internal body orientation. The Body Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996) measures the extent to which individuals focus on how their bodies appear to others versus how their bodies feel or function (i.e., an external versus internal body orientation, respectively). Because six of its eight items specifically ask about individuals’ attention to how their bodies feel or function (e.g., “I think more about how my body feels than how my body looks”), it has been used as a measure of internal body orientation (Augustus-Horvath & Tylka, 2011; Homan & Tylka, 2014). Items were rated using a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*) and scored such that higher average scores reflect higher *internal* body orientation. The internal consistency reliability and convergent validity of its scores have been supported among college samples (Tylka & Kroon Van Diest, 2013). In the present study, Cronbach’s alphas for OBCS items were .86 for women and .88 for men.

Exercise motives. The Function of Exercise Scale (FES; DiBartolo et al., 2007) assesses exercise motives with two subscales: Appearance, which includes motives related to weight control (nine items, e.g., “I exercise to work off unwanted calories”) and Health and Enjoyment (seven items, e.g., “I really have fun when I’m exercising,” “I want to be strong and healthy”). The Health and Enjoyment subscale also contains items related to challenge (e.g., “I exercise because I like the challenge”) and stress management (e.g., “Exercise releases tension”); for this reason, we refer to this subscale as “Functional.” Items are scored on a 7-point scale (1 = *do not agree*, 7 = *strongly agree*) and averaged; higher scores indicate greater motivation. DiBartolo et al. (2007) garnered support for the FES’s two-dimensional factor structure, as well as the 5-month test-retest reliability, internal consistency reliability, convergent validity, and predictive validity of both subscale scores among college students. In the present study, Cronbach’s alphas for Appearance items were .92 for women and .91 for men, whereas

the alphas for Functional items were .78 for women and .77 for men.

Body appreciation. The 13-item Body Appreciation Scale (BAS; Avalos et al., 2005) assessed participants' acceptance of and appreciation for their bodies (e.g., "I respect my body"). Its items are rated on a 5-point scale (1 = *never*, 5 = *always*) and averaged; higher scores indicate higher body appreciation. Among college women, BAS scores demonstrated internal consistency reliability and 3-week test-retest reliability, and construct validity (Avalos et al., 2005). In the present study, Cronbach's alphas for BAS items were .92 for women and .90 for men.

Intuitive eating. The 21-item Intuitive Eating Scale (IES; Tylka, 2006) assesses the extent individuals grant themselves unconditional permission to eat (e.g., "If I am craving a certain food, I allow myself to have it"), eat for physical rather than emotional reasons (e.g., "I stop eating when I feel full [not overstuffed]"), and rely on their internal hunger and satiety cues to guide their eating (e.g., "I trust my body to tell me how much to eat"). Participants respond to each item using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*); items are averaged, with higher scores indicating greater eating in response to hunger and satiety cues. Among college women, the IES was found to have a higher-order factor structure, demonstrated internally consistent and stable scores over a 3-week period, and evidenced construct validity (Tylka, 2006). Cronbach's alphas for IES items were .85 for women and .85 for men in the present study.

Results

Preliminary Analyses

Item-level missingness was extremely low ($M=0.16\%$); thus, mean substitution was used to estimate the few missing data points. Variable means, standard deviations, and correlations are presented in Table 1. Skew and kurtosis values were acceptable ($<|0.75|$) for each of the model variables.

Sex Differences in Model Variables

As hypothesized, women reported lower levels of internal body orientation, functional motivation, body appreciation, and intuitive eating, as well as higher levels of appearance motivation, compared to men. The effect sizes representing the degree of difference ranged from small (for body acceptance by others) to large (for intuitive eating). These comparisons are reported in Table 1.

Path Analyses

Path analysis was conducted using Mplus (Muthén & Muthén, 1998–2011). Adequacy of model fit is determined via consensus among three indices recommended by Hu and Bentler (1999): the comparative fit index (CFI), the standardized root-mean-square residual (SRMR), and the root-mean-square error of approximation (RMSEA). Values of around $\geq .95$ for CFI, $\leq .08$ for SRMR, and $\leq .06$ for RMSEA indicate a relatively good fit of the model to the data.

First, we examined the fit of the model presented in Fig. 1. The sample size for both women and men exceeded the 110 participants needed for the minimum case-to-parameter ratio of 5:1 (Kline, 2005). As hypothesized, this model provided a good fit to the data for women and men, CFI = 1.000, SRMR = .007, RMSEA = .000 (90% CI = .000–.119), $\chi^2(2) = 1.13$, $p = .568$. Three paths were not significant for women or men: body acceptance by others to appearance

exercise motives, internal body orientation to intuitive eating, and functional exercise motives to intuitive eating.

To obtain a more parsimonious model, we deleted these three nonsignificant paths and reanalyzed the model. This trimmed model provided a good fit to the data, CFI = .995, SRMR = .033, RMSEA = .049 (90% CI = .000–.104), $\chi^2(8) = 11.80$, $p = .160$, and did not differ from the original model, $\chi^2_{\text{difference}}(6) = 10.67$, $p = .099$.³ Thus, the trimmed model was retained (see Fig. 2 for path coefficients for women and men). It is notable that two paths were not significant for men: the path from internal body orientation to functional exercise motives and the path from body appreciation to intuitive eating; we retained these paths in the model because they were significant for women. No model path was significant for men but not for women.

Multiple-Group Analysis

We used Mplus to conduct a multiple-group analysis to determine whether the 11 paths in Fig. 2 were similar in strength for women and men. For this analysis, we created an "invariant" model that constrained all 11 paths to be equal for women and men. We then compared this invariant model to the trimmed or "variant" model, in which the values of all paths were allowed to vary for women and men. The variant model provided a significantly better fit to the data than the invariant model, CFI = .970, SRMR = .111, RMSEA = .074 (90% CI = .041–.106), $\chi^2(19) = 39.63$, $p = .004$, $\chi^2_{\text{difference}}(11) = 27.83$, $p = .003$, indicating that at least one path was different in strength for women and men.

We then compared the invariant model with 11 different models, each allowing only one path to vary. If the invariant model was significantly different from the model with one variant path, then the strength of that particular variant path was different between women and men. Four paths were significantly stronger for women than men: the path from internal body orientation to functional motivation, $\chi^2_{\text{difference}}(1) = 6.10$, $p = .014$; the path from internal body orientation to body appreciation, $\chi^2_{\text{difference}}(1) = 5.38$, $p = .020$; the path from body acceptance by others to body appreciation, $\chi^2_{\text{difference}}(1) = 4.54$, $p = .033$; and the path from body appreciation to intuitive eating, $\chi^2_{\text{difference}}(1) = 5.69$, $p = .017$. The remaining seven paths were not significantly different between women and men (all $ps > .236$).

Mediation

We examined whether body appreciation mediated the path between body acceptance by others and intuitive eating. To accomplish this, we used Shrout and Bolger's (2002) bootstrap procedures to estimate the significance of the indirect effects, which indicates mediation. That is, we specified Mplus to create 10,000 bootstrap samples from the data set by random sampling with replacement, and then generate indirect effects. In partial support of our hypothesis, body appreciation fully mediated the relationship between body acceptance by others and intuitive eating for women (indirect effect $\beta = .135$, $p < .001$) but not men (indirect effect $\beta = .028$, $p = .228$). Because the path from internal body orientation to intuitive eating was deleted due to being nonsignificant, we did not examine whether internal body orientation mediated the relationship between body acceptance by others and intuitive eating.

³ To test whether relationships were conditional upon the recruitment location (i.e., small liberal arts college vs. regional campus of a large university), each of the 11 paths in the trimmed model were tested by performing a regression analysis including an interaction term formed by multiplying the predictor variable by the location variable (coded 0 for the liberal arts college and 1 for the large university). The interaction term was nonsignificant in each analysis, indicating that relationships between variables did not differ based on location.

Table 1
Means, standard deviations, and correlations for major study variables.

Variable	Women		Men		p-value	d	1	2	3	4	5	6
	M	SD	M	SD								
1. Body acceptance by others	3.76	0.74	3.89	0.77	.092	-0.17	-	.20*	.31***	-.16*	.54***	.20*
2. Internal body orientation	3.44	1.10	4.25	1.23	<.001	-0.69	.24***	-	.03	-.46***	.40***	.37***
3. Functional exercise motives	5.42	0.91	5.72	0.87	.002	-0.34	.20**	.25***	-	.18*	.35***	-.02
4. Appearance exercise motives	5.25	1.27	4.23	1.47	<.001	0.74	-.21*	-.49***	.07	-	-.42**	-.60***
5. Body appreciation	3.62	0.68	3.94	0.62	<.001	-0.49	.61***	.54***	.28***	-.40***	-	.32***
6. Intuitive eating	3.21	0.53	3.65	0.51	<.001	-0.85	.28***	.46***	.10	-.61***	.48***	-

Note: Total N = 406 (women n = 258, men n = 148). Correlations for men are presented above the diagonal and correlations for women are below the diagonal.

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

Post-hoc examination of alternative indirect effects. We conducted post-hoc examinations to determine whether the three deleted paths in the trimmed model were mediated by third variables; therefore, we tested whether the indirect paths involved were significant. For women and men, the deleted path from body acceptance by others to appearance exercise motives was fully mediated by internal body orientation (women's indirect effect $\beta = -.120, p = .001$; men's indirect effect $\beta = -.089, p = .047$). For women, the deleted path from internal body orientation to intuitive eating was fully mediated by both body appreciation (indirect effect $\beta = .091, p < .001$) and appearance exercise motives (indirect effect $\beta = .246, p < .001$); for men, this relationship was fully mediated by appearance exercise motives (indirect effect $\beta = .261, p < .001$) but not body appreciation (indirect effect $\beta = .013, p = .317$). For women, the examination of whether body appreciation fully mediated the deleted path from functional exercise motives to intuitive eating yielded a marginally significant indirect effect ($\beta = .033, p = .053$); for men, this indirect effect did not approach significance ($\beta = .023, p = .276$).

Discussion

Although previous research has demonstrated that appearance-based reasons for exercise tend to show relationships with maladaptive attitudes and behaviors while functional reasons for exercise show inverse relationships with these same variables, research to date has not explored how these two categories of exercise motives relate to positive embodiment. The present study explored the role of these exercise motives in the context of the

acceptance model of intuitive eating (Avalos & Tylka, 2006), which is a model of positive embodiment. Overall, findings indicated that both exercise motives have unique and important connections with key constructs within the acceptance model of intuitive eating, and revealed a few key differences between women and men.

An important finding was that functional exercise motives are connected to greater positive embodiment. When both women and men perceive that others accept their bodies unconditionally, they are more likely to engage in physical activity for internal, functional reasons. Moreover, when women hold an internal body orientation, or one that values body functionality over appearance, they are more likely to endorse functional reasons for exercise; this was not found to be the case for men. In turn, functional exercise motives are directly linked to greater body appreciation for women and men, and indirectly linked to intuitive eating for women. Functional exercise motives, then, appear to play a central adaptive role in the acceptance model of intuitive eating, linking together body acceptance by others with adaptive ways of inhabiting the body: body appreciation for men, and internal body orientation, and intuitive eating for women.

In contrast, appearance exercise motives appear to thwart positive embodiment. For women and men, body acceptance by others is associated with lower appearance motives for exercise through greater internal body orientation. That is, women and men with lower internal body orientation are more likely to engage in physical activity in order to alter their appearance. For women and men, elevated appearance exercise motives illustrated disrupted embodiment through direct associations with lower body appreciation and intuitive eating. Appearance exercise motives, then, are likely

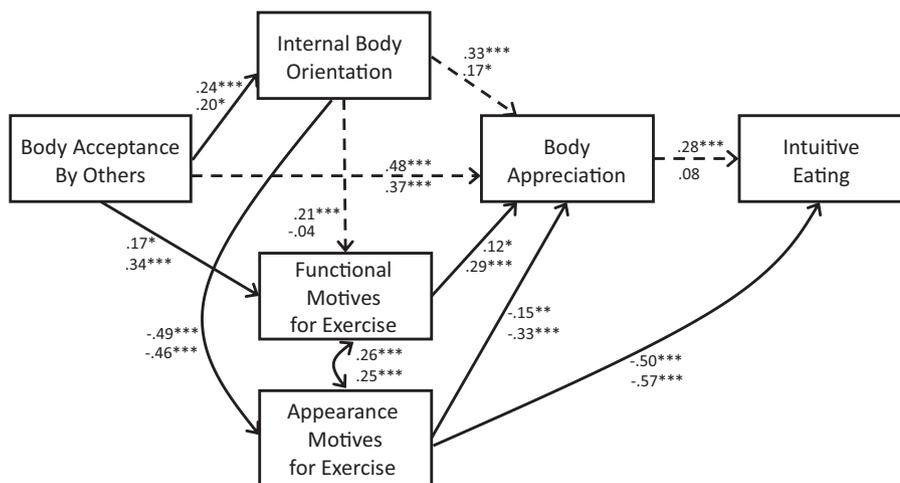


Fig. 2. Standardized path coefficients for the final (trimmed) model. Women's path coefficients are presented on top, and men's path coefficients are presented on bottom. Solid lines indicate that the path is not significantly different between women and men. Dashed lines indicate that the path is significantly different between women and men. *p < .05. **p < .01. ***p < .001.

to be maladaptive within the context of the acceptance model of intuitive eating, linking together lower internal body orientation to lower body appreciation and lower intuitive eating.

Previous research has suggested that, for body image, functional motives for exercise may serve a protective function whereas appearance exercise motives likely represent risk. Our results are consistent with this idea. For example, working out in environments that emphasize appearance and weight loss (through the use of mirrors or promotional materials featuring cultural appearance ideals) is related to higher self-objectification (i.e., internalizing an observer's perspective of the body) than exercising in settings that do not emphasize appearance (Prichard & Tiggemann, 2008). One study reported that this effect was dependent on participants' reasons for exercise. Specifically, women who endorsed higher health-related reasons for exercise experienced lower levels of state self-objectification when they participated in an appearance-focused group exercise class (O'Hara, Cox, & Amorose, 2014). The authors suggested that exercising for health reasons allowed participants to focus on the activity itself rather than on distracting negative cognitions regarding their bodies.

It is likely that a similar process explains the associations between functional exercise motives, appearance exercise motives, and body appreciation within our acceptance model of intuitive eating. Specifically, because individuals who work out for health, enjoyment, tension-relief, or challenge are not distracted by concerns about altering appearance, they are also more likely to appreciate how their bodies feel and function as a result of exercise. These perceptions are important because it has been shown that perceived improvements in physical ability (such as strength or endurance) and physical self-efficacy are stronger predictors of body image than actual changes in body composition, including weight loss (Martin Ginis, McEwan, Josse, & Phillips, 2012). Thus, it is likely that people who pursue exercise for functional reasons will be attuned to positive changes in their overall fitness level, which may foster an appreciation for and a connection to their bodies. Additionally, for women, feelings of appreciation for and connection to their bodies are linked to listening to their bodies to determine when, what, and how much to eat. Conversely, those who pursue exercise for appearance reasons have lower attunement to their inner experiences and are less appreciative of their bodies.

The present study's findings suggest that interventions that emphasize functional reasons for exercise and deemphasize appearance reasons may facilitate positive embodiment. Promising experimental intervention research supports this idea. Calogero and Pedrotty (2004) designed an innovative exercise program that emphasized functional reasons for exercise, such as exercising to rejuvenate the body, increase the mind-body connection, and alleviate mental and physical stress. These authors found that women with anorexia nervosa who participated in this program gained more weight and reduced their obligatory attitudes towards exercise compared to a control group. Future research could test the effects of this type of intervention on positive embodiment. In addition, our findings emphasize the importance of exercise facilities (as well as parents, coaches, physical education instructors) promoting functional motives for exercise and minimizing weight loss motivations. For example, fitness centers could remove wall mirrors in fitness rooms as well as emphasize health and fitness outcomes and avoid appearance-based outcomes during exercise classes. Bulletin boards could highlight the health benefits of exercise participation or advertise new classes that emphasize building skill or sheer enjoyment of the activity. Instead of contests that reward weight loss, organized challenges could recognize participants who have achieved personal goals directly related to physical ability (e.g., mastering a particular skill).

The original acceptance model emphasizes the importance of body acceptance by others, and our results are consistent with this assertion. When individuals perceive that others accept their bodies, they tend to be less preoccupied with their outer appearance and they direct more attention to how they feel and function. The present study thus extends this finding by showing that body acceptance by others is also associated with a greater emphasis on functional reasons for exercise. Thus, our results suggest that another way that body acceptance by others is translated into higher body appreciation is through exercise motivated by health, enjoyment, stress-reduction, or other functional reasons. Given the links between body acceptance by others and positive embodiment, it is clearly important to encourage the perception that one's body is unconditionally accepted by important others. Unfortunately, the current Western cultural climate does little to promote body acceptance by others, and it is difficult to challenge established societal ideals that glorify particular body types and denigrate those that do not conform. Nevertheless, consistent with previous research (Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006), our results highlight the importance of challenging narrow and unrealistic cultural ideals, promoting acceptability of all body types, and encouraging individuals to value and respect what their bodies can do rather than what their bodies look like.

This study was the first to test the original acceptance model with male participants, and results provided partial support for the model's validity for men. In general, while the model fit men's data, most pathways were weaker for men than women. Perhaps the starkest contrast between men and women was that for women, there was a robust, significant pathway from body appreciation to intuitive eating, but for men, this pathway failed to reach statistical significance. It appears that lower appearance exercise motives, compared to body appreciation, are more closely associated with men's intuitive eating, highlighting the importance of exercise motives within this model. Overall, integrating exercise motives into the acceptance model proved to be important for both women's and men's positive embodiment.

It is important to interpret this study in light of its limitations. First, we tested a model that implied causal pathways from body acceptance by others to body appreciation and intuitive eating via internal body orientation and exercise motives. Although the data supported this model, statistical analyses alone cannot confirm causation. Longitudinal research, which could test whether hypothesized causal variables temporally precede outcomes, and experimental work, which could definitively demonstrate causal effects, are both needed. Second, participants were primarily White and young, limiting the generalizability of findings. Third, we focused on participants' self-reported reasons for exercise, rather than the amount of exercise. This decision was based on previous research that indicated that it is not the amount or frequency of physical activity that determines its effect on body image, but the cognitions underlying the activity. Fourth, we did not assess type of exercise (such as cardio or yoga). Exercise motives have been shown to mediate the association between type of exercise and its psychological correlates (Prichard & Tiggemann, 2008); thus, future research should incorporate type of activity. Fifth, we narrowed our sample to those who regularly engaged in exercise long enough to work up a sweat. Some exercises, such as yoga and Pilates, light weight lifting, and swimming may be less likely to promote sweating, and therefore we may have excluded individuals who engaged only in these forms of exercise. Sixth, we did not use updated measures of body appreciation (i.e., the BAS-2; Tylka & Wood-Barcalow, 2015a) and intuitive eating (Tylka & Kroon Van Diest, 2013), as data were collected prior to the publication of these measures. Seventh, the BAOS assesses others' acceptance of body weight and shape, two body dimensions that may be less relevant to men than body

size. Finally, the study relied upon self-report measures, which are susceptible to participant error and social desirability.

Nevertheless, this study adds to the body of research showing that people's reasons for exercise are relevant to their positive embodiment. It is the first to show that functional exercise motives contribute directly to body appreciation, and for women, indirectly to intuitive eating. Likewise, our finding that appearance exercise motives are closely tied to lower internal body orientation, lower body appreciation, and lower intuitive eating equally for women and men within the context of a model of positive embodiment is novel. The present study also underscores the importance of perceiving that the body is accepted by others, which is directly associated with higher functional exercise motives and indirectly (via lower internal body orientation) associated with lower appearance exercise motives. These findings argue for continued investigation into regular exercise, motives to exercise, and positive body image. In the spirit of O'Hara et al. (2014) and Calogero and Pedrotty (2004), experimental designs could manipulate the emphasis placed on function (as opposed to appearance) during exercise to determine how exercisers' positive body image is impacted within various settings. Functional motives and positive body image could also be investigated using a reciprocal-influence longitudinal design (see Garland et al., 2010). For example, researchers could study whether initial levels of functional exercise motives "broaden" future and continued engagement in exercise. This engagement may then serve to build positive body image, intuitive eating, and physical health, which in turn would further reinforce individuals' functional motives to engage in exercise.

References

- Andrew, R., Tiggemann, M., & Clark, L. (2015). Predictors of intuitive eating in adolescent girls. *Journal of Adolescent Health, 56*, 209–214. <http://dx.doi.org/10.1016/j.jadohealth.2014.09.005>
- Augustus-Horvath, C. L., & Tylka, T. L. (2011). The acceptance model of intuitive eating: A comparison of women in emerging adulthood, early adulthood, and middle adulthood. *Journal of Counseling Psychology, 58*, 110–125. <http://dx.doi.org/10.1037/a0022129>
- Avalos, L. C., & Tylka, T. L. (2006). Exploring a model of intuitive eating with college women. *Journal of Counseling Psychology, 53*, 486–497. <http://dx.doi.org/10.1037/0022-0167.53.4.486>
- Avalos, L., Tylka, T. L., & Wood-Barcalow, N. (2005). The Body Appreciation Scale: Development and psychometric evaluation. *Body Image, 2*, 285–297. <http://dx.doi.org/10.1016/j.bodyim.2005.06.002>
- Buote, V. M., Wilson, A. E., Strahan, E. J., Gazzola, S. B., & Papps, F. (2011). Setting the bar: Divergent sociocultural norms for women's and men's ideal appearance in real-world contexts. *Body Image, 8*, 322–334. <http://dx.doi.org/10.1016/j.bodyim.2011.06.002>
- Calogero, R. M. (2009). Objectification processes and disordered eating in British women and men. *Journal of Health Psychology, 14*, 394–402. <http://dx.doi.org/10.1177/1359105309102192>
- Calogero, R. M., & Pedrotty, K. N. (2004). The practice and process of healthy exercise: An investigation of the treatment of exercise abuse in women with eating disorders. *Eating Disorders, 12*, 273–291. <http://dx.doi.org/10.1080/10640260490521352>
- Cash, T. F., Novy, P. L., & Grant, J. R. (1994). Why do women exercise? Factor analysis and further validation of the Reasons for Exercise Inventory. *Perceptual and Motor Skills, 78*, 539–544. <http://dx.doi.org/10.2466/pms.1994.78.2.539>
- Daniel, S., & Bridges, S. K. (2010). The drive for muscularity in men: Media influences and objectification theory. *Body Image, 7*, 32–38. <http://dx.doi.org/10.1016/j.bodyim.2009.08.003>
- DiBartolo, P. M., Lin, L., Montoya, S., Neal, H., & Shaffer, C. (2007). Are there "healthy" and "unhealthy" reasons for exercise? Examining individual differences in exercise motivations using the Function of Exercise Scale. *Journal of Clinical Sport Psychology, 1*, 93–120. Retrieved from <http://journals.humankinetics.com/jcsp>
- Fredrickson, B. L., & Roberts, T.-A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly, 21*, 173–206. <http://dx.doi.org/10.1111/j.1471-6402.1997.tb00108.x>
- Garland, E. L., Fredrickson, B., Kring, A. M., Johnson, D. P., Meyer, P. S., & Penn, D. L. (2010). Upward spirals of positive emotions counter downward spirals of negativity: Insights from the broaden-and-build theory and affective neuroscience on the treatment of emotional dysfunctions and deficits in psychopathology. *Clinical Psychology Review, 30*, 849–864. <http://dx.doi.org/10.1016/j.cpr.2010.03.002>
- Hahn Oh, K., Wiseman, M. C., Hendrickson, J., Phillips, J. C., & Hayden, E. W. (2012). Testing the acceptance model of intuitive eating with college women athletes. *Psychology of Women Quarterly, 36*, 88–98. <http://dx.doi.org/10.1177/0361684311433282>
- Homan, K. J., & Tylka, T. L. (2014). Appearance-based exercise motivation moderates the relationship between exercise frequency and positive body image. *Body Image, 11*, 101–108. <http://dx.doi.org/10.1016/j.bodyim.2014.01.003>
- Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55. <http://dx.doi.org/10.1080/10705519909540118>
- Kline, R. B. (2005). *Principles and practices of structural equation modeling* (2nd ed.). New York: Guilford Press.
- Kroon Van Diest, A. M., & Tylka, T. L. (2010). The Caregiver Eating Messages Scale: Development and psychometric investigation. *Body Image, 7*, 317–326. <http://dx.doi.org/10.1016/j.bodyim.2010.06.002>
- LePage, M. L., & Crowther, J. H. (2010). The effects of exercise on body satisfaction and affect. *Body Image, 7*, 124–130. <http://dx.doi.org/10.1016/j.bodyim.2009.12.002>
- Markland, D., & Ingledew, D. K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. *British Journal of Health Psychology, 2*, 361–376. <http://dx.doi.org/10.1111/j.2044-8287.1997.tb00549.x>
- Martin Ginis, K. A., McEwan, D., Josse, A. R., & Phillips, S. M. (2012). Body image change in obese and overweight women enrolled in a weight-loss intervention: The importance of perceived versus actual physical changes. *Body Image, 9*, 311–317. <http://dx.doi.org/10.1016/j.bodyim.2012.04.002>
- McKinley, N. M., & Hyde, J. S. (1996). The Objectified Body Consciousness Scale: Development and validation. *Psychology of Women Quarterly, 20*, 181–215. <http://dx.doi.org/10.1111/j.1471-6402.1996.tb00467.x>
- Mead, G. E., Morley, W., Campbell, P., Greig, C. A., McMurdo, M., & Lawlor, D. A. (2009). Exercise for depression. *Cochrane Database of Systematic Reviews, 3* <http://dx.doi.org/10.1002/14651858.CD004366.pub4>. Art no. CD004366
- Mond, J. M., & Calogero, R. M. (2009). Excessive exercise in eating disorder patients and in healthy women. *Australian and New Zealand Journal of Psychiatry, 43*, 227–234. <http://dx.doi.org/10.1080/00048670802653323>
- Mond, J. M., Hay, P. J., Rodgers, B., & Owen, C. (2006). An update on the definition of excessive exercise in eating disorders research. *International Journal of Eating Disorders, 39*, 147–153. <http://dx.doi.org/10.1002/eat.20214>
- Muthén, L. K., & Muthén, B. O. (1998–2011). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.
- O'Hara, S. E., Cox, A. E., & Amorose, A. J. (2014). Emphasizing appearance versus health outcomes in exercise: The influence of the instructor and participants' reasons for exercise. *Body Image, 11*, 109–118. <http://dx.doi.org/10.1016/j.bodyim.2013.12.004>
- Pritchard, L., & Tiggemann, M. (2008). Relations among exercise type, self-objectification, and body image in the fitness centre environment: The role of reasons for exercise. *Psychology of Sport and Exercise, 9*, 855–866. <http://dx.doi.org/10.1016/j.psychsport.2007.10.005>
- Rogers, C. R. (1961). *On becoming a person*. Boston, MA: Houghton Mifflin.
- Rothman, K. J. (2008). BMI-related errors in the measurement of obesity. *International Journal of Obesity, 32*, S56–S59. <http://dx.doi.org/10.1038/ijo.2008.87>
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445. <http://dx.doi.org/10.1037/1082-989X.7.4.422>
- Silberstein, L. R., Striegel-Moore, R. H., Timko, C., & Rodin, J. (1988). Behavioral and psychological implications of body dissatisfaction: Do men and women differ? *Sex Roles, 19*, 219–232. <http://dx.doi.org/10.1007/BF00290156>
- Spence, J. C., McGannon, K. R., & Poon, P. (2005). The effect of exercise on global self-esteem: A quantitative review. *Journal of Sport and Exercise Psychology, 27*, 311–334. Retrieved from <http://journals.humankinetics.com/jsep>
- Strelan, P., Mehaffey, S. J., & Tiggemann, M. (2003). Self-objectification and esteem in young women: The mediating role of reasons for exercise. *Sex Roles, 48*, 89–95. <http://dx.doi.org/10.1023/A:1022300930307>
- Thome, J. L., & Espelage, D. L. (2007). Obligatory exercise and eating pathology in college females: Replication and development of a structural model. *Eating Behaviors, 8*, 334–349. <http://dx.doi.org/10.1016/j.eatbeh.2006.11.009>
- Tiggemann, M., & McCourt, A. (2013). Body appreciation in adult women: Relationships with age and body satisfaction. *Body Image, 10*, 624–627. <http://dx.doi.org/10.1016/j.bodyim.2013.07.003>
- Tribole, E., & Resch, E. (2012). *Intuitive eating: A revolutionary program that works* (3rd ed.). New York: St. Martin's Press.
- Tylka, T. L. (2006). Development and psychometric evaluation of a measure of intuitive eating. *Journal of Counseling Psychology, 53*, 226–240. <http://dx.doi.org/10.1037/0022-0167.53.2.226>
- Tylka, T. L. (2011a). Positive psychology perspectives on body image. In T. F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (2nd ed., pp. 56–64). New York: Guilford.
- Tylka, T. L. (2011b). Refinement of the tripartite influence model for men: Dual body image pathways to body change behaviors. *Body Image, 8*, 199–207. <http://dx.doi.org/10.1016/j.bodyim.2011.04.008>
- Tylka, T. L. (2013). Evidence for the Body Appreciation Scale's measurement equivalence/invariance between U.S. college women and men. *Body Image, 10*, 415–418. <http://dx.doi.org/10.1016/j.bodyim.2013.02.006>
- Tylka, T. L., Calogero, R. M., & Danielsdóttir, S. (2015). Is intuitive eating the same as flexible dietary control? Their links to each other and well-being could provide an answer. *Appetite, 95*, 166–175. <http://dx.doi.org/10.1016/j.appet.2015.07.004>

- Tylka, T. L., & Kroon Van Diest, A. M. (2013). The Intuitive Eating Scale-2: Item refinement and psychometric evaluation with college women and men. *Journal of Counseling Psychology, 60*, 137–153. <http://dx.doi.org/10.1037/a0030893>
- Tylka, T. L., & Wood-Barcalow, N. L. (2015a). The Body Appreciation Scale-2: Item refinement and psychometric evaluation. *Body Image, 12*, 53–67. <http://dx.doi.org/10.1016/j.bodyim.2014.09.006>
- Tylka, T. L., & Wood-Barcalow, N. L. (2015b). What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image, 14*, 118–129. <http://dx.doi.org/10.1016/j.bodyim.2015.04.001>
- U.S. Department of Health and Human Services, National Institute of Health, National Heart, Lung, and Blood Institute. (2002). *Three steps to initiate discussion about weight management* (NIH Publication No. 02-5211). Retrieved from <http://www.nhlbi.nih.gov/files/docs/resources/heart/steps.pdf>
- U.S. Department of Health and Human Services, Physical Activity Guidelines Advisory Committee. (2008). *Physical activity guidelines advisory committee report*. Retrieved from <http://www.health.gov/paguidelines/report/pdf/committeereport.pdf>
- Vartanian, L. R., Wharton, C. M., & Green, E. B. (2012). Appearance vs. health motives for exercise and for weight loss. *Psychology of Sport and Exercise, 13*, 251–256. <http://dx.doi.org/10.1016/j.psychsport.2011.12.005>
- Wood-Barcalow, N. L., Tylka, T. L., & Augustus-Horvath, C. L. (2010). “But I like my body”: Positive body image characteristics and a holistic model for young-adult women. *Body Image, 7*, 106–116. <http://dx.doi.org/10.1016/j.bodyim.2010.01.001>