

What can my body do for me? Seeking to improve body-satisfaction with a guided
functionality mirror exposure

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Abstract

Research has identified negative body image as a growing concern among college-aged women. In turn, significant research has been devoted to exploring various treatments for body-dissatisfaction. Prior research has found mirror exposure (ME) interventions to be effective in improving body-satisfaction. However, few studies to date have incorporated aspects of positive body image within an ME treatment. The current study incorporates concepts of body-functionality within a guided ME task with the intent of facilitating participants' appreciation of the functional capabilities of the body as opposed to mere physical appearance. All participants completed a set of measures assessing levels of body-appreciation, state body-esteem, and body-surveillance both before and after an ME task guided by an audio recording. Participants who were made to think about the functionality of their bodies during the audio recording displayed increased body-appreciation and increased orientation toward the fitness of their bodies. However, no significant differences were found between groups in terms of self-objectification or state body-image. Thus, this research supports prior findings identifying functionality as a means to improving body-appreciation and provides support for interventions that incorporate these concepts.

Introduction

Extensive research has identified women in modern, Western society as particularly prone to negative body image and body dissatisfaction (Ebbers, Graves & Drake 2013; Grogan, 2017; Swami, Tran, Stieger & Voracek, 2005). This discontent is widespread and research shows that the large majority of women are dissatisfied with their bodies and desire to lose weight (Coker & Abraham, 2014; Smith-Jackson, Reel & Thackeray, 2011; Sanftner, Ryan, & Pierce, 2009; Williams, Cash, & Santos, 2004). Consequently, negative body image and dissatisfaction are so commonplace among young women that the phenomenon has been coined as a type of “normative discontent” (Rodin, Silberstein, & Streigel-Moore, 1984). This body-dissatisfaction can arise in girls as young as eight years old and has a widespread effect on behavioral, social, and emotional functioning. Body-dissatisfaction is associated with increased vulnerability to dieting, depression, social anxiety, and poor quality of life (Cash & Fleming, 2002; Grogan, 2017; Noles, Cash, & Winstead, 1985). Furthermore, low body-satisfaction predicts higher levels of unhealthy weight control behaviors, less healthy nutrition, and lower levels of regular exercise (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). Socially, women are prone to frequently engage in “fat talk” with their peers which can easily perpetuate the normative nature of body-dissatisfaction (Britton, Martz, Bazzini, Curtin, & Leashomb, 2016; Nichter & Vuckovic, 1994). Furthermore, body-dissatisfaction is a prominent risk factor for the development of eating disorders, a significant feature of all clinical eating disorder diagnoses, and is a particularly strong predictor of relapse (American Psychiatric Association, 2013; Delinskey & Wilson, 2006; Johnson & Wardle, 2005; Probst, Vancampfort, & Pieters, 2008). In the process of treatment for an eating disorder, improving thoughts about one’s body and one’s overall body experience is a primary goal for both therapists and patients, and positive changes

in one's body-image is a prominent predictor of treatment success (Danielsen, 2012; Vanderlinden, Buis, Pieters, & Probst, 2008). Thus, across both clinical and non-clinical populations, body-dissatisfaction negatively affects young women both socially and emotionally and is associated with maladaptive behavior patterns.

Why is body discontent so widespread among young women in Western cultures and how can it be explained? Objectification Theory (Fredrickson & Roberts, 1997) proposes that the female body is objectified in Western society such to the extent that women are valued primarily for their appearance. This in turn leads women to perceive their own self-worth as intrinsically related to the objective attractiveness of their physical appearance. In this way, many women engage in body-surveillance, or habitually monitor their bodies, in order to assess the status of their outward appearance relative to certain established ideals of attractiveness (Burdette, 2014; Ebbers et al., 2013). Western media consistently reinforces body-surveillance as a normative behavior that women are to engage in if they are to be considered attractive (Fairburn & Beglin, 1994; Harrison & Cantor, 1997; Miles, 2009).

For example, women are bombarded with messages about how to achieve "tighter thighs" or "more ripped abs." These mainstream messages assume that all women are constantly monitoring their bodies for flaws, consistently find that their bodies are discrepant with the ideal, and pervasively desire to fix their bodies in service of this ideal (Harrison & Cantor, 1997; Morry & Staska, 2001). Therefore, it seems these messages are simultaneously constructing ideals of attractiveness while also influencing women to frequently survey their bodies for any "trouble spots" in need of fixing (Grogan, 2013). Thus, media reinforces frequent surveillance of the body as a positive behavior in which to engage if one is to achieve an "ideal" body shape.

This pattern is especially detrimental due to the prominent ideal being one of unhealthy thinness not reflective of the general population (Groesz, Levine, & Murnen, 2002). Therefore, the implications in these messages unsurprisingly come with negative consequences. High frequency of body-surveillance is associated with high levels of both self-objectification and body-shame (Daye, Webb, & Jafari, 2014; Liss & Erchull, 2011; Tiggemann & Lynch, 2001). Research has shown that women who internalize unrealistic ideals have more desire to alter their bodies (Grogan, 2017; Morry & Staska, 2001). Furthermore, women who consumed magazines with diet articles reported higher body-dissatisfaction and desired to be thinner compared to their counterparts who consumed news magazines (Turner, Hamilton, Jacobs, Angood, & Dwyer, 1997). Women who viewed images of underweight models with warning labels indicating unrealistic ideals were significantly less body-dissatisfied than those who viewed these images without warning labels (Slater, Tiggemann, Firth, & Hawkins, 2002). In short, the objectification of the female body is pervasive throughout modern media. The widespread exposure that women have to these messages can help to explain the ubiquity of body-dissatisfaction. However, the broader cultural influence of female objectification continues to convince women that attractiveness and pursuit of an ideal body-shape is of paramount concern. If these messages are sufficiently internalized, self-esteem can easily become primarily contingent upon achievement of these ideals. Thus, objectification theory explains these phenomena and further reveals why large portions of women are dissatisfied with their bodies in their inability to achieve unrealistic ideals.

In lieu of shifting the widespread cultural factors that promote and perpetuate normative body-dissatisfaction, researchers in the past 30 years have increasingly devoted attention to the treatment of body-image disturbance and the reasons for its development (Grogan, 2017; Tylka

& Wood-Barcalow, 2015). Already, significant research has been dedicated to testing interventions aimed at reducing body image-related distress. These interventions have been applied across both clinical eating disorder and nonclinical populations and all collectively aim to reduce detrimental cognitions and behaviors associated with negative body image (Farrell, Shafran & Lee, 2006; Jones, Kass, Trockel, Glass, Wilfley & Taylor, 2014; Ketchen, Jones, Taylor, Wil, Eichen, Fitzsimmons-Craft, & Eisenberg, 2016; Margolis & Orsillo, 2016; McCabe, Connaughton, Tatangelo, & Mellor, 2017; Pendleton, Goodrick, Poston, Reeves, & Foreyt, 2002). Among these, interventions implementing principles of cognitive behavioral therapy have been most widely recognized as effective (Farrell, Shafran, & Lee, 2006; Rosen, 1989). These interventions seek to reduce improper estimation of body-size and body-shape avoidance while also restructuring negative cognitions related to the body through a variety of techniques and exercises. Tasks may include video-feedback of one's real appearance, exercises to foster active opposition to unrealistic media ideals, or individual homework assignments that trace the history of one's body-image dissatisfaction (Key, George, Beattie, Stammers, Lacey, & Waller, 2001). However, these treatment components are rarely tested in isolation and are instead evaluated as combined treatment programs. Thus, there exists controversy as to whether multi-component CBT programs are truly effective due to their non-specific approach. In turn, the goal remains to continuously test components of body-image interventions separately for effectiveness (Farrell et al., 2006).

Among the components that comprise successful body-image interventions, mirror exposure (ME) has emerged as a widely effective technique across a wide range of settings. For example, a multi-component treatment for body-image concerns that incorporates ME is more effective than the same treatment without ME (Key et al., 2001). Furthermore, in comparison to

a nondirective therapy intervention, those given a ME intervention experienced decreased body image avoidance, decreased body dissatisfaction, decreased dieting, depression, and increased self-esteem (Delinsky & Wilson, 2006). The rationale of mirror exposure arises from the tenets of exposure therapy for anxiety disorders. Looking into a mirror is particularly distressing for those who are highly dissatisfied with their physical appearance (Trentowska, Bender, & Tuschen-Caffier, 2013; Trentowska, Svaldi, & Tuschen-Caffier, 2014; Williams, Hudson, Whisenhunt, & Crowther, 2014). However, exposure to this distress over time has the potential to both decrease this distress and the avoidance of the accompanying discomfort. Although individuals high in body-dissatisfaction experience a greater spike in anxiety during ME, these interventions are highly effective over time in reducing problematic eating behaviors and increasing body satisfaction in those with eating disorders (Cash & Smolak, 2011).

Because mirrors make individuals high in body-dissatisfaction more self-conscious and more critical (Cash & Smolak, 2011), they also provide a valuable platform for restructuring negative body-related cognitions. In other words, ME can be a means to recondition perceptions of the body. While looking in a mirror, individuals are often evaluating the status of their appearance and thus engaging heavily in body-surveillance. Women who are more body-dissatisfied look more at their self-defined 'ugly' body parts in the mirror than those they label as 'beautiful' (Cash & Smolak, 2011; Jansen, Nederkoorn, & Mulken, 2005). Therefore, mirrors provide a platform for individuals to scrutinize certain body parts and engage in other body-checking behaviors. In this way, ME is a particularly useful opportunity to interrupt the detrimental practice of body-surveillance and momentarily re-orient negative cognitions. Because negative perception of the body and patterns of body-surveillance are central to the

maintenance of body-dissatisfactions, treatments like ME that specifically target these patterns warrant future research (Cash & Smolak, 2011; Farrell, Shafran, & Lee, 2006).

Throughout past research, ME has been categorized as either “pure” or “guided.” For example, mirror exposure tasks can be implemented simply in terms of pure exposure to one’s appearance through mirror gazing or can be implemented alongside other techniques that serve to “guide” individuals through the experience of ME. “Guided” mirror exposure is particularly adaptable and researchers continue to creatively augment pure ME with various other cognitive techniques intended to redirect perceptions about the body. So far, research has tested the effectiveness of “guided” mirror exposures incorporating non-judgment, mindfulness, cognitive dissonance, or focus upon particular body parts. In most cases, these techniques are implemented by a therapist. Otherwise, participants are given explicit instructions to think about or focus upon their body in certain ways while gazing in the mirror. Delinsky and Wilson (2006) found an ME intervention to be effective in which participants described their body in nonjudgmental terms while gazing in a mirror. In this intervention, a trained therapist first educated participants on the benefits of mirror exposure and specifically how it would increase their body satisfaction. Then, participants were asked to identify their “hot spots” or the body parts that they perceived most negatively. During the ME exercise, individuals faced a mirror and were instructed to nonjudgmentally speak about their body as if they were describing themselves to a blind person. They were encouraged to not skip over any body parts and strongly discouraged from using any unkind language toward their bodies. The therapist briefly demonstrated how they could approach this task before allowing the participant to engage in the task on their own. The therapist would only interject if participants were skipping over certain body parts or describing their body parts either critically or too subjectively. Similarly, Trentowska, Svaldi, and Tuschen-

Caffier (2014) used a guided ME task that emphasized mindfulness and discouraged self-deprecation. This form of ME was effective in decreasing shape and weight concern, eating restraint, and eating concerns in EDNOS and decreasing body dissatisfaction in BN.

Although these nonjudgmental approaches are commonly found to be effective, Luethcke, McDaniel, and Becker (2011) conducted a study to test the comparative effectiveness of various previously implemented ME approaches. The researchers randomly assigned a non-clinical sample of undergraduates to either a mindfulness-based ME exercise (MB ME), nonjudgmental ME exercise (NJ ME) or a cognitive-dissonance ME exercise (CD ME). All participants were asked to identify the body parts they were most dissatisfied with before engaging with the varying ME exercises. NJ ME participants were instructed to make nonjudgmental comments about their body while looking in the mirror. MB ME were asked to do the same but additionally asked to remain mindful. CD ME participants were asked to make positive comments about their appearance while looking in the mirror. However, they were allowed to make positive comments on the function of their body if they could not think of appearance-related compliments. Results showed that the CD ME was the only intervention in which body-satisfaction significantly increased over time. The other two conditions were able to improve ED pathology, shape and weight concern, and body-checking and avoidance, but did not significantly increase body-satisfaction. Researchers have further sought to target the detrimental focus toward self-defined “ugly” body-parts characteristic of those with body-dissatisfaction. Glashouwer, Jonker, Thomassen, and Jong (2016) assessed the effectiveness of a “positive mirror exposure” task which encouraged women to pay more attention to their self-rated “beautiful” body parts more than their self-rated “ugly” body parts while gazing in a mirror. Although this task was effective in increasing body-satisfaction in both women high and low in

body-satisfaction, women low in body-satisfaction still gazed for longer periods of time at their “ugly” body parts after the intervention. Thus, research is still exploring the ways in which “guided” mirror exposure can effectively redirect thoughts surrounding body-dissatisfaction.

In light of the questionable effectiveness of guided ME in comparison to pure ME Moreno-Domínguez, Rodríguez-Ruiz, Fernández-Santaella, Jansen, and Tuschen-Caffier (2012) tested the effectiveness of guided mirror exposure as compared to a “pure” mirror exposure in which participants are simply exposed to their physical appearance in a mirror. The researchers found both the pure and guided ME interventions to be more successful in reducing body-dissatisfaction than a guided-imagery task with no ME. However, the pure ME task was more effective in reducing negative body-related thoughts. These findings are compelling considering the specific aim of guided mirror exposure in re-conditioning negative cognitions toward the body. Perhaps the techniques researchers have been using to “guide” ME are lacking in certain elements or are only marginally effective in their current approaches.

Guided ME remains an excellent opportunity to re-condition negative cognition in the moment where individuals often feel the most dissatisfaction. However, the current literature seems to be implementing “guided” techniques that are lacking in several ways. First, several “guided” mirror exposures may inadvertently reinforce an appearance-focus and body-surveillance behaviors by asking participants to self-identify body parts as either “ugly” or “beautiful.” In this way, participants are moved closer to, not further away from the core problem: self-objectification of the body. Secondly, many other “guided” techniques that incorporate mindfulness or non-judgment may be moderately effective but overall fail to give individuals any novel or positive way to reconfigure their present dissatisfaction. Instructions for these interventions almost always restrict expression of negative thoughts without providing an

avenue by which to reconfigure these negative cognitions. The majority of women already automatically engage in avoidance-related strategies when body image is poor (Smith-Jackson et al., 2011). Several of the extant “guided” ME tasks restrict negative thoughts and insist upon non-judgment in a way that may inadvertently foster these avoidance practices rather than provide a novel and positive framework through which to view the body.

Vancampfort and Pieters (2008) state that there may need to be a change in the way that participants process information in order for certain guided mirror exposure exercises to be most effective. As previously discussed, mirror exposure is intended to expose patients to the discomfort of confronting physical appearance yet most “guided” techniques lack a useful way to overcome self-objectification of the body. Mindfulness and nonjudgmental approaches may reduce experiential discomfort but overall fail to urge individuals to conceptualize their bodies in a non-objective way. Presently, ME research needs to incorporate more “guided” techniques that offer individuals ways to more positively inhabit their bodies in order for body-dissatisfaction to significantly decline in the face of self-objectification and body-surveillance (Piran, 2011).

Franzoi’s “body-conceptualization theory” (1995) provides a framework in which body-surveillance and self-objectification can be systematically opposed. Franzoi (1995) argues that the body can be conceptualized in two ways. First, in line with objectification theory, the body is seen as as an object (BAO) made up of parts with mere aesthetic value. When researchers employing ME interventions ask participants to identify the body-parts they see as most ‘ugly’ or ‘beautiful’ they may be reinforcing this pattern of thought. In contrast, the body can be viewed “as process” wherein the body is appreciated for a wide variety of functions ranging from social communication to physical activity. Seeing the body as process (BAP) allows us to view our bodies through a functional rather than an aesthetic lens. As mentioned previously, valuing the

body solely for its appearance is correlated with high body-dissatisfaction and eating disorder risk. However, viewing the body as object, or viewing the body functionally, has been associated with positive body-image and body image satisfaction (Mulgrew & Hennes, 2014; Tiggemann & McCourt, 2013; Tylka & Homan, 2015; Varnes, Stollefson, Janelle, Dorman, Dodd, & Miller, 2013).

Significant research has identified an association between individuals' appreciation for the body's functionality and body-satisfaction. For example, interviews conducted with college women with positive body-image showed that these women possessed greater appreciation for the specific functions of their bodies and valued these functions over the mere appearance of specific body parts (Wood-Barcalow, Tylka & Augustus-Horvath, 2010). Additionally, high scores on the Body-Appreciation Scale (Avalos, Tylka & Wood-Barcalow, 2005) were associated with decreased body-surveillance and increased levels of appreciation for the functionality of the body. Appreciating the functionality of the body can additionally be protective in certain environments where body-objectification is prominent (Alleva, Veldhuis & Martijn, 2016; O'Hara, Cox, & Amorose, 2014; Rubin & Steinberg, 2011). For example, women who took an exercise class with an instructor who emphasized body-functionality displayed increased body-satisfaction in comparison with women who exercised in a class with appearance-based motives (O'Hara, Cox, & Amorose, 2014). Furthermore, individuals exposed to images embodying the "thin-ideal" experienced greater body-appreciation, body-satisfaction, and less self-objectification if they wrote about the functionality of their bodies after viewing the images (Alleva, Veldhuis, & Martijn, 2016). Pregnant women reporting higher levels of satisfaction with the functionality of their bodies even engaged in fewer harmful prenatal behaviors associated with increased body-surveillance (Rubin & Steinberg, 2011). Overall,

viewing the body as “process” or viewing the body functionally seems to be significantly protective against the consequences of objectification and additionally correlated with positive body image.

In the past, most body-image intervention research has been focused upon the reduction of symptoms associated with negative body-image. However, positive body image has recently been identified as distinctly different than a simple absence of negative feelings toward the body (Tylka & Wood-Barcalow, 2015). In other words, positive body image involves more cognitive, affective, and behavioral components beyond the absence of negative body-related cognitions and behaviors. Because of this, Cash and Smolak (2014) identify that positive body image research is both nascent and promising and aspects of positive body image deserve to be incorporated into future interventions for body-dissatisfaction. In this way, interventions can begin to encourage women high in body-dissatisfaction to engage with new ways of thinking rather than just reduce negative patterns. In lieu of the previous discussion of existing “guided” ME techniques, perhaps the shortcomings of these interventions are associated with the focus on merely reducing negative symptoms without increasing orientation toward tenets of positive-body image.

Several existing interventions incorporating body-functionality have already been tested and have been effective in reducing body-dissatisfaction. Alleva, Martijn, Van Breukelen, Jansen, and Karos (2015) tested an intervention for women high in body-dissatisfaction that aimed at increasing awareness of body-functionality through weekly structured writing exercises. Compared to participants assigned to the control program, those who wrote about the functionality of their bodies experienced greater satisfaction with their appearance, increased body-appreciation, and lower levels of self-objectification. An additional study found that

women who wrote about the functionality of their bodies experienced increased body-satisfaction as compared to women who wrote about the aesthetic appearance of their bodies (Alleva, Veldhuis, & Martijn, 2016). Furthermore, In Step 8 of Cash's (2008) widely implemented 8-Step *Body-Image Workbook*, assigned activities encourage the appreciation of the body specifically for its capabilities and functionality.

Research on the benefits of thinking about the body in functional terms is both emerging and promising. However, specific interventions employing these concepts are few and often only consist of writing exercises or workbook exercises. ME is unique for its potential to reduce negative cognitions in a moment of likely discomfort and high self-awareness. Past research on guided mirror exposures has attempted to restructure these cognitions as more neutral and nonjudgmental. However, no ME studies to date have intentionally included aspects of positive body-image, such as functionality, within guided ME interventions. In fact, Luethcke et al. (2011) attribute the unique success of their CD ME task in improving body-satisfaction to the confound of allowing participants to describe their body positively in functional terms. Therefore, the inclusion of a functionality-focus in a ME task is promising and remains to be tested. The present study will address these gaps by testing the effectiveness of a functionality-focused guided ME task as compared with a control ME task in a nonclinical sample of college women. It is hypothesized that participants who engage with the functionality-focused ME will display increases in body-satisfaction as compared with those who engage with the control ME.

Methods

Participants

Eighty-five female Union College students took part in the study to fulfill course credit or for monetary compensation. Ages ranged from 18-21 years and body-mass index (BMI) ranged

from 16.8 to 44.8 kg/m² ($M=23.97$, $SD=4.96$). 69.8% participants identified as White followed by 14.0% of participants who identified as Asian, 8.1% participants identified as Hispanic/Latino, 3.5% identified as African American, 3.5% as multiracial, and 1.1% did not respond. One participants' data was discarded due to random responding.

Measures

Demographics Prior to answering all questionnaires, participants were asked to provide their age and race/ethnicity. After completing all sections of the study, participants provided their height and body weight, which was used to compute BMI.

Multidimensional Body-Image The Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000) is a 69-item self-report measure that comprehensively evaluates behaviors, thoughts, and attitudes concerning body-image. The MBSRQ is intended for use with individuals over the age of 15 and has successfully evaluated components of body-image in a wide variety of areas such as eating disorders, obesity, and physical exercise. The MBSRQ was selected for use in this study due to its proven sensitivity in measuring body-image changes after clinical intervention (Cash, 1994). The MBSRQ contains seven factor subscales and three multi-item subscales. Within a normative sample derived from the U.S. National Survey, the MBSRQ demonstrated internal consistency (Cronbach's α ranging from .70 to .91). In a sample of college students, the MBSRQ presents excellent test-retest reliability at 1 month ($r = .71$ to $.94$) (Cash, 2000). The first 57 items ask participants to indicate the extent to which a statement pertains to them personally, ranging from 1-*definitely disagree* to 5-*definitely agree*. Items 58-60 ask participants to indicate their past experience with crash dieting behaviors (1-*never* to 5-*very often*) and their perception of their weight in relation to others (1-*very underweight* to 5-*very overweight*). Items 61-69 ask participants to indicate how satisfied or

dissatisfied they are (1-*very dissatisfied* to 5-*very satisfied*) with several aspects of their body. Chronbach's α calculated for the present sample was modest and ranged from $\alpha=.61$ to $.67$ from pre to post ME.

State Body-Image The Body-Image State Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2000) is a 6-item self-report measure intended to assess state body image. The BISS was included in this study for its ability to assess short-term changes in state body image. Each item prompts individuals to indicate how they feel in the present moment about various aspects of their body-image including weight, body appearance, shape and size. Two items ask individuals to indicate how they feel their body compares to others and how they feel in the present moment compared to how they may usually feel. Each item contains nine response options anchored semantically from positive to negative feelings or appraisals about one's body with the exception of items 2, 4, and 6 which are anchored negatively to positively. The BISS is acceptably internally consistent (Chronbach's α ranging from $.77$ to $.90$). Test-retest reliability at 2 to 3 weeks is acceptable for a state measure ($r=.69$). Chronbach's α calculated for the present sample was acceptable and ranged from $\alpha=.76$ to $.77$ from pre to post ME.

Self-Objectification The Objectified Body Consciousness Scale (OBCS; Mckinley & Hyde, 1996) is a 24-item measure assessing body objectification across various areas. Only the body-surveillance subscale (OBCS-BS) was included in the present study due to its ability to measure self-objectification of the body. Higher scores on this subscale indicate a tendency to value the body based only on appearance (Alleva et al., 2014). Each item asks individuals to indicate the extent to which a statement is characteristic of their attitudes and beliefs (1-*strongly disagree* to 7-*strongly agree*). In a sample of undergraduate college women, both the scale as a whole and the body- surveillance subscale demonstrate acceptable internal consistency

(Chronbach's $\alpha = 0.75$, $\alpha = 0.89$, respectively). In the present study, Chronbach's α on the body-surveillance subscale ranged from $\alpha = .77$ to $.82$ from pre to post ME.

Body-Appreciation The Body-Appreciation Scale (BAS; Tylka, 2006) is a 13-item measure of the extent to which the body is appreciated both attitudinally and behaviorally. On each item, participants rate statements based on how often they engage in particular thoughts and behaviors (1-*never* to 5-*always*). The BAS was included in the present study for its ability to assess for positive aspects of body-image rather than just for the presence of body dissatisfaction. The BAS was psychometrically evaluated within a sample of female undergraduates and was found to be internally consistent (Cronbach's $\alpha = 0.94$). Additionally, the BAS presented sufficient test-retest reliability at 3 weeks in addition to good convergent validity (Avalos et al., 2005). Chronbach's α calculated for the present study was acceptable at both pre and post ME ($\alpha = .91$ to $.90$ respectively)

Adherence to Study Instructions A manipulation check was included after the guided audio recording to assess for random responding or lack of participation in the mirror exercise. Both questions asked about the specific content of the audio recording in order to assess participants' attention and the second question inquired about the details of the audio recording instructions.

Procedure

Participants were recruited via an online Psychology department participant pool and received course credit or monetary compensation for completing the study. Upon arriving, each participant read and signed an informed consent form. Then, participants entered a private study room, which had a desktop computer and a full-length mirror. Participants completed an online survey that included demographic questions, the MBSRQ, BISS, BAS, and OBCS-BS. After

completing these measures, participants were instructed to click a link to an audio recording. In this audio recording, all participants were instructed to stand up and face the full-length mirror so that they could see their whole body. Participants were randomly assigned to one of two audio recordings, either a control recording ($n=42$) or a functionality-focused recording ($n = 43$). In the control condition, participants were simply guided to draw attention to each of their body parts while looking in the mirror. In the functionality condition, participants were guided to draw attention to the same body parts but were additionally prompted to think of the various meaningful functions and capabilities of each body part they viewed.

Following the guided mirror exposure, participants were instructed to return to the computer and complete the remainder of the study according to the on-screen instructions. A brief manipulation check was included to assess the attention and comprehension of participants during the mirror exercise. Participants then completed the same set of measures they had completed prior to the audio recording. Finally, all participants were debriefed on the hypothesis of the study and the purpose and relevance of the overall research.

Statistical Analysis

First, data were analyzed using one-way ANCOVAs, with pretest scores on each measure used as covariates in the initial analysis, with BMI added as an additional covariate to secondary analyses.

Results

Manipulation Checks

The manipulation check questions included within the survey design were, for the most part, effective at assessing the intended effects of the experimental manipulation and the attention of the participants. The first question asked participants to indicate whether or not they

had thought about the various functions of their bodies during the ME exercise. Within the functionality ME condition, 9.3% of participants reported not thinking explicitly about the functions of their bodies. Within the control ME condition, 19% of participants reported thinking about the functionality of their bodies despite receiving no instruction to do so. The second manipulation check question asked participants whether they were jumping up and down while listening to the audio recording. This question was intended to assess the attention of the participants, given that the audio recording never instructs participants to jump. It was expected that attentive participants would not endorse jumping. However, 16.3% participants in the functionality ME condition reported that they were “jumping up and down” during the audio recording. Conversely, no participants in the control ME condition responded affirmatively to this question.

State Body-Image

Analyses revealed no significant differences between groups in terms of state body-esteem, $F(1,82) = .83, p = .36$. When BMI was added as an additional covariate, results were similarly nonsignificant, $F(1, 68) = 1.38, p=.24$.

Body-Appreciation

Analyses revealed a significant difference between participants in the functionality ME condition and participants in the control ME condition, $F(1,82) = 7.32, p= .008$, showing that participants in the functionality ME condition displayed more body-appreciation ($M= 49.14, SD=9.33$) after the functionality ME exercise than those in the control ME condition ($M = 47.14, SD=8.44$). These differences were remained significant after BMI was added as a covariate, $F(1,68) = 4.59, p=.04$.

Multidimensional Body-Image

Appearance Evaluation Participants in the control condition differed significantly from participants in the functionality condition on the appearance evaluation (AE) subscale of the MBSRQ, $F(1,82) = 44.7, p < .001$, with those in the control condition displaying significantly higher scores ($M = 3.50, SD = .804$) than those in the functionality condition ($M = 3.40, SD = .821$). When BMI was added as a covariate, this difference remained significant, $F(1,68) = 36.87, p < .001$, such that those in the control condition ($M = 3.44, SD = .77$) scored higher than those in the functionality condition ($M = 3.33, SD = .83$).

Appearance Orientation Participants did not differ significantly between groups in terms of Appearance Orientation, $F(1,82) = .30, p = .58$. After BMI was added as an additional covariate, results remained insignificant, $F(1,68) = .19, p = .66$.

Fitness Evaluation No significant differences existed between groups on the Fitness Evaluation Subscale, $F(1,82) = 3.43, p = .07$. After BMI was added as a covariate, results remained insignificant, $F(1,68) = 2.26, p = .14$.

Fitness Orientation Participants in the functionality conditioned displayed higher scores ($M = 3.92, SD = .85$) on the fitness orientation (FO) subscale of the MBSRQ than those in the control condition ($M = 3.70, SD = 1.04$), $F(1, 82) = 5.69, p = .02$. When BMI was added as a covariate, results were marginally significant, $F(1,68) = 4.00, p = .05$, such that those in the control condition ($M = 3.75, SD = 1.07$) scored slightly higher than those in the functionality condition ($M = 3.69, SD = .82$).

Health Evaluation Participants did not differ significantly between groups on the Health Evaluation subscale, $F(1,82) = .66, p = .42$. When BMI was added as a covariate, results remained insignificant, $F(1,68) = .26, p = .61$.

Health Orientation There were no significant differences between groups in terms of Health Orientation, $F(1,82) = .96, p=.33$. After BMI was added as a covariate, results remained insignificant, $F(1,68) = .59, p=.45$.

Illness Orientation Participants in the functionality conditioned differed significantly from participants in the control condition in terms of scores on the Illness Orientation (IO) subscale of the MBSRQ, $F(1,82) = 6.74, p=.01$, such that participants in the functionality condition were more attentive ($M=3.28, SD=.93$) or reactive to potential physical illness after listening to the functionality audio recording than those in the control condition ($M=3.17, SD=.82$). After BMI was added as an additional covariate, results remained significant, $F(1,68) = 6.37, p=.01$, such that those in the functionality condition had higher scores ($M=3.25, SD=.87$) than those in the control condition ($M=3.11, SD=.79$).

Body Areas Satisfaction Participants did not differ significantly in terms of scores on the Body Areas Satisfaction subscale, $F(1,82) = .85, p=.36$. When BMI was added as an additional covariate, results remained insignificant, $F(1,68) = .59, p=.45$.

Overweight Preoccupation Participants did not differ significantly between groups on Overweight Preoccupation subscale scores, $F(1,82) = .29, p=.64$. When BMI was added as an additional covariate, results remained insignificant, $F(1,68) = .002, p=.97$.

Self-Classified Weight No differences existed between groups in terms of self-classified weight, $F(1,82) = 2.96, p=.09$. When BMI was added as a covariate, results remained insignificant, $F(1,68) = .54, p=.46$.

Self-Objectification

Contrary to the hypothesis of the study, there were no significant differences between groups on the OBC-BS, $F(1,82) = .60, p=.44$. When BMI was added as a covariate, results remained insignificant, $F(1, 68) = .68, p=.41$.

Discussion

In the face of a culture saturated with body-objectification, appreciating the body on functional terms is a powerful way to oppose appearance-based values that have been shown to lead to low self-esteem, disordered eating, and body-dissatisfaction (Alleva, Veldhuis & Martijn, 2016; O'Hara, Cox, & Amorose, 2014; Rubin & Steinberg, 2011; Wood-Barcalow, Tylka & Augustus-Horvath, 2010). Past research has successfully identified body-functionality as a concept capable of increasing body-appreciation and decreasing self-objectification (Alleva et al, 2015; Tylka & Wood-Barcalow, 2015) The present study experimentally evaluated the extent to which a guided ME intervention incorporating concepts of functionality was capable of improving body-image, body-appreciation, and self-objectification.

Compared to the participants assigned to the control ME condition, those assigned to the functionality ME condition displayed higher levels of body-appreciation, fitness orientation, and illness orientation. Those assigned to the functionality condition showed increases in appreciation for their bodies beyond physical appearance, including attentiveness to physical fitness and possible illness. All of these results remained significant after BMI was added as an additional covariate. Thus, the hypothesis of the study was partially supported by these findings. In addition, the present findings align with prior research identifying functionality as both a component and a means to achieving more positive body-image and increased body-appreciation (Alleva, Veldhuis, & Martin, 2016; Alleva et. al, 2015; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010).

Contrary to the hypothesis of the study, participants in the functionality ME condition did not differ in terms of their self-objectification and state body image from those in the control ME condition. This finding is paradoxical to the expectation that short-term ME exercises lead to increased negative, rather than positive, affect amongst clinical samples (Cash & Smolak, 2011). However, given that the current sample was comprised of nonclinical undergraduate students, prior findings in clinical samples may not apply.

The additional possibility exists that the control ME induced an unintentional attitude of mindfulness toward one's appearance. Because the control ME audio recording contained more intervals of silence for participants to reflect on the body-parts they viewed than in the functionality ME audio recording, some participants could have garnered more confidence in their appearance after noticing various body-parts that they felt positively toward or may have gradually felt more mindful toward their appearance. Those in the functionality condition may have had less time to process their thoughts during the ME task with the addition of extra instructions. These factors could have led to the significantly more positive appearance evaluation in the control condition compared the functionality condition after the audio recording. Although AE increased in the control condition after the ME task, AE remained the same in the functionality condition after the ME task. Thus, although these findings are compelling, they still partially support expectations that satisfaction with appearance would not be impacted in the functionality ME condition, considering the intention of the functionality ME to encourage participants to value their bodies beyond physical appearance.

Strengths and Limitations

The strengths of the present study primarily lie within the implementation of a novel ME intervention that incorporates aspects of body functionality. This approach is unique in its ability to incorporate concepts of functionality within ME, a moment of high body-surveillance.

Furthermore, functionality has been identified as an under-evaluated aspect of positive-body image with significant potential to improve body-dissatisfaction (Cash & Smolak, 2011). This study contributes to the growing literature on the effectiveness of body-functionality in guiding individuals toward increased body-appreciation. A second strength rests in the implementation of this intervention within a nonclinical sample. Prior research incorporating body-functionality has primarily been implanted within clinical populations. Therefore, the results of this study show that body-functionality is generalizable as a means to positive body-image beyond clinical settings. This is especially noteworthy considering the normative nature of body-dissatisfaction in young women today.

Of the several limitations within this study, perhaps the most notable is the failure to detect any significant difference between groups on OBC-BS scores. Participants in the functionality condition on average displayed a non-significant decrease from pre-ME scores ($M=38.09$, $SD=6.22$) to post-ME scores ($M=37.70$, $SD=6.92$) on the OBC-BS. Decreases in self-objectification occurred in the expected direction, but were not significant. In the control condition, scores on the OBC-BS showed no visible or statistically significant change after the ME task. Therefore, the lack of significance between groups could also be due to insufficient statistical power due to small sample size. However, it is most likely that no significance was found due to the nature of the questions within the OBC-BS. The questions are perhaps meant to assess one's existing and long-standing attitudes toward the body. The functionality ME intervention was perhaps insufficient as a single treatment in changing one's existing attitudes and perhaps increased body-surveillance by nature of its brief duration.

Thus, the second notable limitation of the present study lies in the absence of both follow-up administrations of the ME condition and follow-up assessments of change. Past

studies incorporating functionality-focused interventions have relied on repeated administration, or long-term follow-up, in order to produce noticeable effects upon body-satisfaction and body-appreciation (Alleva et. al, 2015; Alleva et. al, 2014). Repeated exposure or time to reflect upon ideas surrounding functionality is perhaps necessary to achieve positive change when existing attitudes toward the body are so skewed toward the “normative discontent” that is founded primarily in the evaluation of one’s appearance (Rodin, Silberstein, & Streigel-Moore, 1984). In particular, this would hold true when of viewing one’s body in a mirror. Concepts of functionality are antithetical to self-objectification, so would be foreign within a culture of appearance-focus. A one-time, three-minute confrontation with concepts of functionality may not be sufficient to have lasting effects. Any ideas that were absorbed during the functionality ME would likely not be enough to redirect cognition the next time participants face their appearance. Thus, repeated administration of the ME exercises or long-term follow-up may be necessary in order to truly assess the lasting effects of incorporating functionality within an ME exercise.

The third notable limitation within this study rests in the relative weakness of the manipulation check questions in assessing participant comprehension and attention to the concepts being introduced within the study: 16.3% of participants in the functionality condition reported “jumping up and down” during the ME task despite receiving no instruction to do so. It is expected that several participants interpreted this question differently in the functionality ME condition because they were perhaps being cued to think about the movement or physical capabilities of their bodies throughout the audio recording. However, 9.3% of participants in the functionality ME task reported not thinking about the functionality of their bodies despite receiving explicit directions to do so. The responses to these questions allow one to see that participants perhaps did not encode functionality as an overarching concept within the study

design. The number of participants who reported not thinking about functionality despite receiving explicit instruction to do so suggests that more education related to appreciating the body for its functions could have been included within the study design. For example, past research has briefly educated participants on what it means to appreciate the body functionality and the various benefits associated with viewing the body in this way prior to introducing the intervention (Alleva et al., 2015; Alleva et al., 2014). The inclusion of this type of overview could have perhaps strengthened the effectiveness of the functionality ME exercise as compared with the control ME exercise.

Directions for Future Research

A primary avenue for future research would be to assess the extent to which repeated administrations of the functionality ME exercise over time are effective in increasing feelings of body-appreciation and decreasing self-objectification. If such a study were conducted, the researchers would perhaps design a set period in which the functionality ME would be administered repeatedly either weekly or bi-weekly. Researchers could assess the relative change of scores over time and additionally could follow-up after the period of repeated ME administration to assess whether the possible effects of the treatment period were maintained at periods of weeks, months, or perhaps years. Based on the findings within this study and others, one would expect that feelings of body-appreciation and body-satisfaction would increase with repeated administration of the functionality ME task. In addition, it would be expected that reports of body-surveillance would decrease with increased familiarity and internalization of the body's functionality. In this way, functionality would serve increasingly as a protective factor against self-objectification as participants are repeatedly encouraged to appreciate their bodies in an appearance-focused setting such as mirror gazing.

An additional path for future research could rest in comparing the present functionality ME exercise with several other types of guided ME. In this way, research could assess the relative effectiveness of functionality when it is incorporated into an ME exercise. Although findings within this study suggest that functionality is a promising concept within guided ME interventions, little is known as to how the size of these effects compares to other guided ME approaches. The findings garnered from this study could be important in moving forward with guided ME research. If functionality ME is found to be marginally more effective as compared to other ME approaches, further research could assess the relative effectiveness of this intervention within clinical samples. Such research would propel the development of more effective and targeted interventions for body-dissatisfaction.

The final compelling avenue for future research would be to assess the effects of implementing this intervention within a male population as compared with a female population. The drive for muscularity among males suggests that self-esteem may already be somewhat derived from functionality. However, these attitudes are in many ways intertwined with appearance-focused values. Thus, these uninvestigated attitudes provide a valuable avenue for future research. One would perhaps expect that the concepts of functionality introduced within the ME exercise would be more effective in increasing male body-image satisfaction. This could be due to the existing cultural framework that values males for a prominent component of body-functionality, physical capabilities and strength. However, future research should further inquire the extent to which the functionality ME intervention increased appearance-focus for males. Functionality is quite intertwined with physical appearance in the concept of male attractiveness. Thus, the application of a functionality-based intervention within a male population would provide valuable insight into the core features of male body-image concerns

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