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Body satisfaction is associated with Transtheoretical Model constructs for physical activity behavior change

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ABSTRACT

Despite advancements in health behavior theory and practice, less than half of the United States population meets physical activity recommendations. Two cross-sectional studies ($n = 432$; $n = 1455$) were conducted to explore associations between body satisfaction and Transtheoretical Model (TTM) constructs proposed to explain the physical activity behavior change process. A series of regression analyses were conducted, controlling for demographic and TTM variables, as appropriate. Results indicate that body satisfaction significantly explains 2–8% of variance in the TTM constructs responsible for promoting stage movement. Furthermore, body satisfaction was significantly associated with stages of change representing short (>6 months) and long-term (>5 years) maintenance of physical activity. Future research should continue to examine these construct relationships using more rigorous research designs, with the ultimate goal of implementing body satisfaction components alongside traditionally effective TTM interventions to improve physical activity maintenance.

Introduction

Because regular physical activity substantially reduces morbidity and mortality associated with the most prevalent, costly and preventable chronic health problems in the United States (e.g., heart disease, stroke, diabetes, cancer and depression), the Department of Health and Human Services recommends that all adults accumulate 150 min of moderate to vigorous intensity physical activity every week (Haskell et al., 2007; United States Department of Health and Human Services, 2008). Unfortunately, less than half of the United States population meets this recommendation (Adabonyan, Loustalot, Kruger, Carlson, & Fulton, 2010). Furthermore, of those who initiate a physical activity program, few are able to maintain sufficient physical activity levels in the long-term (Dishman, 1991; Marcus et al., 2006).

Several health behavior theories and models (i.e., Transtheoretical Model, Theory of Reasoned Action/Planned Behavior, Social Cognitive Theory, Self-determination Theory) boast substantial correlational, prospective, and randomize-control trial evidence supporting their use to promote physical activity (Downs & Hausenblas, 2005; Hutchison, Breckon, & Johnston, 2009; Marcus et al., 2006; Teixeira, Carraca, Markland, Silva, & Ryan, 2012; Trost, Owen, Bauman, Sallis, & Brown, 2002). Despite this supporting evidence, the majority of the population still struggles to begin and sustain adequate levels of physical activity. This creates strong rationale for reassessing, challenging, modifying, integrating and empirically testing health behavior theories and models, such that we better understand the complex process and mechanisms of physical activity behavior change.

Although it has yet to be incorporated into popular health behavior change theories and models, body image is a psychosocial construct with potential to advance our knowledge, understanding, and ability to modify physical activity. Body image is a multidimensional psychosocial construct consisting of self-perceptions regarding physical appearance, physical fitness and performance, physical health, weight, and muscle tone (Cash, 1990, 2000; Leit, Pope, & Gray, 2001). The appeal of integrating body image with established health behavior change models is multifaceted. First, an abundance of research suggests that body image is positively associated with physical activity (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Huberty et al., 2008; Kruger, Lee, Ainsworth, & Macera, 2008; Millstein et al., 2008; Trost et al., 2002; Wilcox, Richter, Henderson, Greaney, & Ainsworth, 2002), yet no research has examined whether body image would be influential in *changing* physical activity behavior. This is surprising, given the body of literature that also suggests poor body image can be a barrier to physical activity participation (Leary, 1992; Martin, Leary, & O'Brien, 2001).

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Additionally, because research has documented high prevalence rates of body image dissatisfaction in the United States (Berscheid, Walster, & Bohrnstedt, 1973; Cash & Henry, 1995; Cash, Winstead, & Janda, 1986; Garner, 1997), there may be public health importance to incorporating this modifiable construct into population-based physical activity behavior change interventions. In other words, if there is a link between nationally low rates of physical activity and nationally high rates of body image dissatisfaction, public health professionals may be able to create interventions aiming to improve both physical activity and body satisfaction, simultaneously, resulting in more efficacious physical activity interventions.

Finally, when examining sex differences in national population rates of physical activity and body image dissatisfaction, women are less physically active and have greater body image dissatisfaction than men (Cash & Henry, 1995; Troiano et al., 2008). Thus, the body image construct has the potential to explain the physical activity disparity between men and women.

For the present study, the Transtheoretical Model (TTM) was chosen for integration because it is a complete stage model with explicitly defined and measureable constructs hypothesized to explain physical activity behavior change over time and has been successfully applied to physical activity and exercise behaviors (Hutchison et al., 2009; Prochaska & DiClemente, 1982, 1983; Prochaska & Marcus, 1994; Prochaska, Velicer, DiClemente, & Fava, 1988; Velicer, DiClemente, Prochaska, & Brandenburg, 1985). In comparison, other health behavior theories and models are either incomplete stage models that do not possess explicitly defined and measurable constructs (e.g., Precaution Adoption Process Model), or theories that propose to explain behavior (e.g., Social Cognitive Theory, Theory of Reasoned Action/Planned Behavior, Self Determination Theory), as opposed to behavior *change*. Beyond the strictly theoretical implications, understanding how body image functions in the behavior change process *over time* will be important for the creation and implementation of individually-tailored interventions.

According to the TTM (Prochaska & DiClemente, 1983), the behavior change process is separated into six stages: precontemplation, contemplation, preparation, action, maintenance, and termination. The precontemplation stage is used to denote an individual who does not intend to engage in regular physical activity within the next 6 months. Contemplation is the stage in which an individual intends to begin regular physical activity within the next 6 months. When individuals seriously consider regular physical activity within the next month, or have begun physical activity, but are inconsistent, they are considered to be in the preparation stage. The action stage is when an individual began meeting physical activity recommendations within the past 6 months. When these changes in physical activity behavior continue for six or more consecutive months, a person is classified into the maintenance stage. Finally, individuals are said to be in the termination stage when they have maintained their physical activity behavior for more than 5 years, have a high degree of self-efficacy to participate in this desired behavior, and do not encounter temptations to fail to engage in recommended levels of physical activity (Prochaska & Marcus, 1994; Prochaska & Velicer, 1997). While the termination stage has historically been omitted from the physical activity literature, there is evidence of its validity for physical activity and exercise (Cardinal, 1999; Cardinal & Levy, 2000; Fallon & Hausenblas, 2001, 2004; Fallon, Hausenblas, & Nigg, 2005; Horiuchi, Tsuda, Watanabe, Fukamachi, & Samejima, 2012).

In addition to the stages of change, the TTM proposes that movement among these stages is impacted by four psychosocial constructs. Self-efficacy is the situation-specific confidence to overcome high-risk circumstances without relapse into sedentary behaviors (Bandura, 1977, 1982) and frequently found to be influential for understanding physical activity (Lewis, Marcus, Pate, & Dunn, 2002; McAuley, 1991, 1993; McAuley, Jerome, Elavasky, Marquez, & Ramsey, 2003; Trost et al., 2002). Only recently included in the physical activity literature (Fallon & Hausenblas, 2001, 2004; Fallon et al., 2005; Hausenblas et al., 2001; Nigg, Motl, Horwath, Wertin, & Dishman, 2011), temptation refers to the intensity of urges to engage in sedentary behaviors in the midst of difficult situations (Prochaska & Velicer, 1997). Temptation varies inversely with self-efficacy across the stages of change, such that temptation is highest in the earlier stages and lowest in the later stages (Hausenblas et al., 2001; Prochaska & Velicer, 1997). Decisional balance denotes the weighing of the pros and the cons of engaging in physical activity, with lower stages of change associated with greater cons, and higher stages of change associated with greater pros (Marcus, Rossi, Selby, Niaura, & Abrams, 1992; Prochaska & Velicer, 1997). Finally, the processes of change consist of five cognitive and five behavioral processes used to progress through the stages of change (Prochaska & Velicer, 1997). Generally, both experiential and behavioral processes are low in the earlier stages. Increases in the experiential processes begin in the early stages, followed by increases in the behavioral processes during the middle and later stages of change. While it is most important to focus on how these TTM constructs facilitate forward movement through the stages of change, we also note that the constructs are highly correlated with one another, such that processes of change, self-efficacy and pros are positively correlated with one another, but inversely correlated with temptation and cons.

In conclusion, despite an abundance of literature establishing a positive relationship between physical activity and body image (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006), no behavior change theories or models explicitly incorporate body image as an independent and influential psychosocial construct in health behavior change. Furthermore, a recent literature search using Psychinfo and Pubmed (search terms: physical activity, exercise, theory of planned behavior, social cognitive theory, TTM, body image, and body satisfaction) yielded no empirical studies exploring associations between any body image construct and the constructs proposed to explain physical activity behavior change. Therefore, two independent cross-sectional studies (Study 1, Study 2 design) were conducted to examine the association between TTM constructs and body satisfaction, defined as a person's global, subjective evaluation of their satisfaction with their body.

Fig. 1 shows empirically established construct relationships for physical activity behavior change (solid lines) as well as the hypothesized relationships between body satisfaction and behavior change constructs (dotted lines). These hypotheses were based on empirically validated relationships among the TTM constructs for physical activity behavior change (Fallon & Hausenblas, 2004; Fallon et al., 2005; Hutchison et al., 2009; Marshall & Biddle, 2001; Prochaska & Marcus, 1994) and the known positive relationship between physical activity and body satisfaction (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006). Specifically for Studies 1 and 2, we hypothesized that:

(1) body satisfaction would be positively associated with self-efficacy, processes of change and decisional balance pros (indicated by Path a)
(2) body satisfaction would be negatively associated with temptation and decisional balance cons (indicated by Path a), and
(3) body satisfaction would be positively associated with stages of change (indicated by Path b).

For Study 2, we examined an additional hypothesis that:

(4) body satisfaction will moderate the relationship between TTM constructs and stages of change (displayed by Path c), such that body satisfaction will change the strength or direction