EXPLORING GENDER AND WEIGHT LOSS MOTIVATORS

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by
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Abstract

EXPLORING GENDER AND WEIGHT LOSS MOTIVATORS

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Although the obesity epidemic has impacted men and women equally, only 25% of men attempt to lose weight, compared to 40% of women. Since motivation likely plays a role in seeking weight loss programs, in program attrition and successful completion of weight-loss programs, this research explores gender and weight loss motivators, using self-determination theory, with a nationally representative cross sectional data set of 2,997 participants. Using a principal component analysis, 28 weight-loss motivation items were classified into two components—Quality of Life (QOL) motivators and Interpersonal and Cultural (IC) Motivators. Hierarchical regression analyses were conducted with the predictors of Gender, Age, Body Mass Index, and Relative Size in four possible models for QOL and IC. Older men and women, compared to the younger ones, were weaker in their endorsement of QOL motivators for weight loss. Yet women had less of a decrease in QOL motivators compared to men in the aged cohort effect. Similarly, there was less motivation for weight loss for IC for the older the participants compared to the younger ones. However, women found IC motivators to be more motivating for weight loss than men. By

understanding who endorses which type of motivators, clinicians can better assess for those motivators that may be associated with poor psychological well-being, as well as better predict outcomes in professional weight loss programs.

Keywords: weight loss; health risk; intrinsic motivator, extrinsic motivator; self-determination theory; body image

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Acknowledgment is also due to Slim-Fast™ who funded the survey development and data collection for the "Psychology of Size" dataset used in this thesis.

Dedication

This thesis is dedicated to my mother and father whose unending support has gotten me through far harder trials than graduate school.

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Exploring Gender and Weight Loss Motivators

Obesity rates in the United States have increased from 13.4% in 1960 to 36.2% in 2010 (body mass index (BMI) $\geq$ 30 kg/m^2), and an additional one-third of people meet overweight criteria (BMI 25-29.9 kg/m^2; Center of Disease Control [CDC], 2012; Flegal, Carroll, Odgen, & Curtin, 2010). This obesity epidemic affects men and women equally. However, in a nationally representative sample of survey participants, approximately 25% of men were attempting to lose weight, compared to approximately 40% of women (Kruger, Galuska, Serdula, & Jones, 2004; Williamson, Serdula, Anda, Levy, & Byers, 1992). In an effort to better understand this disparity, this research explores how motivators for weight loss vary by gender.

One predominant factor influencing weight loss motivation is body image. In a meta-analysis of 222 studies over 50 years with a total sample of 140,836 and ages ranging from 12 to over 35, researchers found that men were more satisfied with their bodies and found themselves to be more attractive than did women (Feingold & Mazella, 1998). Although the definition of "body image" across studies was not unified, the trend was clear—men typically have better body image than women (Feingold & Mazella, 1998). In a related study, 849 participants reported their height and weight so BMI could be calculated. Participants then reported their weight loss attempts and their perception of their weight, measured on a seven-point scale ranging from very underweight to very overweight (Lemon, Rosal, Zapka, Borg, & Andersen, 2009). They found that men were less likely to perceive themselves to be overweight across all BMI categories and less likely to attempt weight loss than women. However, believing oneself to be overweight was highly correlated with weight loss attempts across genders (Lemon et al., 2009). Therefore, Lemon and colleagues (2009) suggest that how men and women feel and think about their bodies is related to how likely they are to

attempt weight loss. Since women generally feel worse about their bodies, this is likely to be a primary motivator for weight loss. In contrast, adolescent males from a sample of 580 British students tend to endorse more desired health and fitness as motivators for weight loss rather than body tone and attractiveness (Gillison, Standage, & Skevington, 2006). Overall, due to the significant gender disparity in body image, it is probable that body image also contributes to gender differences in motivation to lose weight.

Because adult Americans tend to gain an average of 10 pounds every ten years until the age of fifty, age likely plays a role in body image perceptions (Andres, 1989). Even though this natural weight gain is correlated with longer lifespans, weight gain and other age related changes such as wrinkles, hair loss, and sagging skin have the potential to produce insecurities. In a review of body image across the life span, Tiggemann (2004) found that women almost always have poorer body satisfaction than men. This body dissatisfaction remains constant across age groups for the desire to be thin, eating and weight concerns, and weight preoccupation for women. Men, especially younger men, overall have better body satisfaction than women, although older age groups did sometimes demonstrate body dissatisfaction (Tiggemann, 2004). However, the importance of body size, shape, and overall appearance decreases with age for both genders (Tiggemann, 2004). Therefore, age is likely to also contribute to variance in weight loss motivation.

To examine motivators for weight loss researchers can explore who successfully completes programs versus those who fail to complete a weight loss program, or to study individuals who achieve and maintain weight loss compared to those who do not. Despite the initial weight loss success associated with weight loss programs, most programs still struggle with client attrition (30-60%; Douketis, Macie, Thabane, & Williamson, 2005). Additionally,

approximately 80% of clients report total or additional weight regain (e.g., after having lost 20 pounds, the client regains those 20 pounds or more) resulting in little to no long-term weight loss success (Perri, 1998). Individuals and organizations' supporting the *Fat Acceptance Movement* (National Association to Advance Fat Acceptance [NAAFA], 2013; Perri, 1998) attribute this "failure" to weight loss organizations encouraging people to do the impossible by asking them to lose weight and/or fight their natural body size. Fat Acceptance organizations, such as Health at Every Size®, in an attempt to caution against weight loss programs, are trying to educate the public with such messages as "The war on obesity has taken its toll. Extensive 'collateral damage' has resulted: food and body preoccupation, self-hatred, eating disorders discrimination, poor health…" (Bacon, n.d). Furthermore, despite obesity occurring in equal rates in U.S. men and women (36.2% & 32.6% respectively), most weight loss programs are geared towards their primary consumer—women. While some popular weight loss programs have begun to target men in their advertising (e.g., Slim-Fast™), such endeavors are probably less profitable than when companies target weight loss products at women (Lemon et al., 2009).

An overview of the literature with varying samples of college students, community members, distributed BMI categorization of participants, clinical and non-clinical samples alike, found that while the quality of the weight loss program contributes to weight loss potential, the global success or failure to comply with the treatment program is greatly determined by a client's individual reasons or motivation for attempting weight loss (Putterman & Linden, 2004; Schelling, Munsch, Meyer, & Margraf, 2011; Stotland, Larocque, & Sadikaj, 2012; Thome & Espelage, 2007; West et al., 2011). Such motivation may be instilled by a triggering event as demonstrated by the National Weight Control

Registry, which studies those who have successfully maintained significant weight loss of 30 pounds or more. The majority of this study's participants (77%) reported having a triggering event, such as a medical event, that launched their desire for weight loss (Gorin, Phelan, Hill, & Wing, 2004; Klem, Wing, McGuire, Seagle, & Hill, 1997). Furthermore, since weight regain is so common after weight loss, motivation must persevere as those who manage to maintain their weight loss continued to adhere to their diet and exercise plans while continuing to monitor their weight (McGuire, Wing, Klem, Lang, & Hill, 1999; Phelan, Wing, Hill, & Dibello 2003). Therefore, in order to increase weight loss potential for men and women and to better understand the nature of body image and weight-related self-esteem more completely, researchers and professionals must understand what motivates weight loss attempts and what gender infused motivators currently exist.

Motivation

The definition of motivation has been long debated—from Freud's theory of "psychic energy" to more current theories emphasizing the role of purpose, need, or value driven behaviors (Reiss, 2012). Regardless of the specific mechanisms that motivators activate, there is the general consensus that motivation is why people choose one behavior over another (Formica, 2013; Reiss, 2012). In Deci and Ryan's (2000) review of the literature, they describe the evolution of contemporary motivation theories as starting with the assumption that behaviors persist when they aid in the acquisition of desired outcomes. This assumption was refined to include the extent to which people value the outcome as this value impacts the continuation of behaviors (e.g., the more valued the outcome, the greater the likelihood of maintenance). Moreover, peoples' belief in how likely they are to attain the desired outcome (i.e., self-efficacy) impacts their behaviors, because, for example, regardless

of how deeply someone wants to lose 50 pounds, if he or she does not believe it is accomplishable (i.e., outcome expectancy), the individual will not attempt the weight loss.

In recent years, research has focused on the quality of motivators, asserting that not all motivators are equally effective. Deci and Ryan (2000) assert that these findings of motivator inequality coincide with their self-determination theory (SDT). In a meta-analytic review of the literature, Teixeira, Carraca, Markland, Silva, and Ryan (2012) examined 66 empirical studies with varying samples of adults (e.g., healthy adults, college students, cancer survivors) and varying BMI categorization (i.e., samples that were purely obese and overweight individuals versus other random samples) resulting in support for SDT in relation to a wide range of physical activity contexts (e.g., weight loss programs). In another meta-analysis utilizing 184 independent data sets with varied participant samples, researchers found positive relationships between need satisfaction (i.e., the extent to which a behavior accomplish valued outcomes; e.g., having more energy to play with their children), intrinsic motivation (i.e., motivators that regulate behavior through internal means), and positive health outcomes, including weight loss (Ng et al., 2012).

Self-determination theory organizes motivators based on their goal content and the regulatory processes by which the goals are pursued. Content and regulatory processes are evaluated based on the types of needs they fulfill, and Deci and Ryan (2000) have determined that people have three basic needs—competence, relatedness, and autonomy. Competence encompasses peoples' need to feel capable of accomplishing a task (i.e., self-efficacy); relatedness is the need for people to connect with others; and autonomy is the need to behave by choice instead of in response to a contingency or another person's influence. The regulatory processes, or initiation and maintenance of behaviors attempting to satisfy needs,

are also evaluated using a scale ranging from completely externally motivated (extrinsic) to completely internally motivated (intrinsic). Consequently, psychological well-being is impacted by the motivator used to regulate behavior, as was found in research examining adults who exercise regularly (Maltby & Day, 2001). While the same two people may be participating in the same behavior, like exercise, whether their motivation to participate in that behavior is intrinsic or extrinsic is what positively or negatively impacts psychological well-being, as found in a sample of 205 female college students attempting regular exercise and weight loss (Vartanian, Wharton, & Green, 2012).

Extrinsic motivation. Extrinsic motivators, or controlled motivation, influence the initiation and maintenance of behavior through external means. These influential methods include, but are not limited to external rewards, approval or praise, social pressures, or avoiding disapproval or feelings of guilt. Motivators that are extrinsic are reinforced by the consequences of the behavior (e.g., becoming more attractive, produces praise and attention from others) instead of the behavior being rewarding in and of itself. In regards to weight loss, these motivators may include getting praise from family, friends, and physicians, or avoiding their disapproval, attempting to satisfy society's "thin is in" culture, attempting to change attractiveness or body tone, or weight loss competitions for money (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). The most popular of these extrinsic type motivators are those based in improving physical appearance. While some may seek to improve their appearance for their own benefit, making the motivator intrinsic, most work to improve their physical appearance to increase approval and recognition from others. Furthermore, Vansteenkiste and colleagues (2004) analyzed the content of goals and the behaviors they produced. One group was told Tai-bo exercise would help them stay physically fit (intrinsic)

and the other group was told Tai-bo would keep them physically attractive (extrinsic). Those who framed Tai-bo as an extrinsic goal performed the exercise more poorly than those using intrinsic goals. Additionally, while extrinsic motivators may promote weight loss, they are strongly related to poor psychological well-being, especially in regard to weight loss (Maltby & Day, 2001; Sebire, Standage, & Vansteenkiste, 2009). In samples of adults ranging from college students to community members with varying ages and BMIs, participants who endorse the use of such extrinsic motivators, especially appearance related ones, were more likely to be younger, use more extreme dieting strategies, and experience disinhibited eating, disordered eating behaviors, poor body satisfaction, or low self-esteem (Maltby & Day, 2001; Putterman & Linden, 2004; Sebire et al., 2009; Vartanian et al., 2012).

Intrinsic motivation. Self-determination theory suggests that the most effective motivators are those that regulate the initiation and maintenance of behavior through internal means. These internal methods promote the value of the behavior (as it is reinforced by movement towards desired outcomes), aligning the behavior with other central values and lifestyle patterns. Motivators that are intrinsic are reinforcing on their own. A popular type of intrinsic motivator is one focused on improving physical health. Participants from varying samples who report the use of intrinsic motivators are less likely to participate in extreme or disordered weight loss strategies, less likely to experience disinhibited eating, and more likely to have better body satisfaction, self-esteem and overall psychological well-being (Maltby & Day, 2001; Putterman & Linden, 2004; Sebire et al., 2009; Vartanian et al., 2012).

Utility of SDT

In addition to supporting the positive relationship between intrinsic motivation and beneficial health outcomes, Ng et al.'s (2012) meta-analysis supports the use of SDT as a

framework to study precipitants and outcomes of motivation for behavior change. With this in mind, consider the paradox of asking participants what motivates them to lose weight, when those who follow the Fat Acceptance Movement purport that weight loss should not be the ultimate goal, but instead the target should be elimination of weight-related discrimination and stigma. Considering the "thin is in" culture in the United States, the desire for many to lose weight is not a fleeting trend. Therefore, it is important to assess what motivators people are endorsing and what outcomes these motivators produce—what motivators produce the most detrimental outcomes, and how motivators fit the established trends related to intrinsic and extrinsic motivators. Additionally, "weight loss" can be a catch all term for alternative targeted healthy behaviors that often result in weight loss (i.e., increased physical activity and improved nutrition). Furthermore, understanding population differences in motivator endorsement can help professionals better utilize motivational interviewing, which is complimentary to SDT, to promote behavior change in clients (Deci & Ryan, 2000).

Gender Differences and Motivation

Along with the documented differences in body image between women and men in the U.S. (Feingold & Mazella, 1998), it is likely that potential motivators for weight loss vary by gender also. For example, in a study of exercise motivation, 580 British adolescent participants (300 male, 280 female) were surveyed on topics of weight perceptions, exercise goals, and exercise motivation (Gillison et al., 2006). These researchers found that males most commonly endorsed the goals of fitness and health (both intrinsic), and females most commonly endorsed goals of body tone, health, and attractiveness (i.e., body tone and attractiveness being extrinsic, and health being intrinsic). Conversely, in a 27-study meta-

analysis measuring the influence of gender on motivation for physical activity, Guérin, Bales, Sweet, and Fortier (2012) found men had higher scores of extrinsic motivation than women. Interestingly, scores of intrinsic motivation showed no statistically significant differences between men and women. Overall, research regarding gender differences have found no distinct trends. This may be a function of the influence of age and behaviors the participants are trying to change. Overall there are no clear global gender trends for motivation, and there appears to be a shortage of literature regarding gender differences and SDT as they relate to weight loss.

Aims of this Study

The literature suggests body image, which is influenced by gender, age, and, in part, actual body size, is likely a large contributor to variance in motivation for weight loss as individuals must first perceive themselves to be overweight before feeling a desire to lose weight. Therefore, this study capitalized on use of a large age-representative sample of U.S. adults to further explore how gender, age, BMI, and body image influence a variety of items assessing motivation for weight loss.

More specifically, U.S. adults participated in a 2007 survey that included 28 items about motivations for weight loss. This study used a principal component analysis to examine how these items cluster. After this was completed, the components were used to explore possible gender similarities and differences on motivators for weight loss and if these constructs relate to relative clothing size (a measure of body image).

Method

Participants

This study used the "Psychology of Size" large-scale cross-sectional descriptive marketing survey sponsored by Slim-Fast™ and conducted on the MyView Research site of the internet by a polling company named The Segmentation Company, a division of Yankelovich. Inclusion criteria for participants included having U.S. citizenship, being at least eighteen years of age, and being previously enrolled in an online research panel to serve as participants in a variety of polling activities. Recruitment was done via email invitations to participate in a "Health and Wellness Survey" sent between May 11 and May 18, 2007, to those who met inclusion criteria according to certain demographic quotas (e.g., age stratification; equal number of men and women). Consent to participate was inherent in the voluntary completion of the online survey, and all participants received a $1 Pay-Pal™ compensation for their time.

A total of 4,014 participants completed the survey, but 102 were removed for unrealistic height, weight, or clothing size, or failure to report these items (e.g., a woman with a BMI of 12 and pant size of 30; anatomically impossible size combinations), and 913 were removed due to being at or below their ideal size resulting in a final sample size of 2,997. The final sample had 1,362 men (45.4%) and 1635 women (54.6 %) with an average age of 46.25 (*SD* = 15.31) and 85.6% Caucasian, 5.7% African American, 3.6% Asian/Pacific Islander, and 3.4% Hispanic. Petroff, Martz, Webb, and Galloway (2011) established that the sample prior to the removal of those at or below their ideal size, approximated age, ethnic, and income representation of the U.S. population. Since this data

was previously gathered and de-identified, the Appalachian State University IRB determined this research did not require further approval (See Appendix A).

Materials

The Psychology of Size survey consisted of 130 items designed to assess demographic information, body image satisfaction, weight management behavior, avoidance behavior, clothing size, height, and weight. This study used items to produce the following variables: gender, age, weight loss motivators, BMI, and relative size (RS).

Weight loss motivators. Participants were asked "Whether or not you have ever or are currently trying to lose weight, how strongly would each of the following motivate you to lose weight?" Participants rated how strongly each of the 28 items were motivating to them on a 4 point Likert scale ranging from 1 = *not a motivation to lose weight at all* to 4 = *extremely strong motivation to lose weight* (See Appendix B). These items were created by Yankelovich for Slim-Fast™ to gather data for potential product marketing. Because the direction of this Likert is somewhat counterintuitive, these items were reversed scored, so that higher scores reflected strong motivation for weight loss. These items were subjected to a principal component analysis to determine if these items cluster into component(s) and used as criterion variables in this study.

Body mass index. Height and weight were self-reported by participants then converted to BMI via (kg/m^2; World Health Organization, 2012). The CDC has established that the weight classes correspond to the following BMI: underweight is a BMI < 18.5; normal weight is a BMI = 18.5-24.9; overweight is a BMI = 25-29.9; and obese is a BMI > 29.9 (CDC, 2011). BMI has been shown to be self-reported rather accurately with a strong correlation of .90 when comparing self-reported and researcher measured height and weight

(McAdams, Van Dam, & Hu, 2007; Spencer, Appleby, Vavey, & Key, 2002; Wada et al., 2005), but there is the limitation of human error; specifically, participants tend to overestimate height and underestimate weight (Gorber, Tremblay, Moher, & Gorber, 2007). While body size alone will not lead individuals to seek weight loss, it does play a role in their perception of being overweight, whether accurate or not. This perception of being overweight can lead to motivation to lose weight (Lemon et al., 2009). BMI was measured as a means to assess the degree to which body size alone (i.e., BMI) impacts weight loss motivations in this study.

Relative size. The difference between current clothing size and ideal clothing size results in the discrepancy score of RS. Current clothing size for women was assessed with the question "What size of clothing do you usually wear?" and ideal clothing size was assessed with the question "And what size would you ideally like to be?" Data reflected the even-numbered sizing scheme typical of U.S. women's clothing. Conversely, men were asked about their current pants size and ideal pants size, and data reflected the sequential inch increments typical of U.S. menswear. Average clothing sizes were reported in this study to between a dress size of 14 and 16 for women (14.8; SD = 5.8) and waist size of 38.3 for men (SD = 5.5). This finding is comparable to Han, Gates, Truscott, and Lean (2005) overweight and obesity cut-offs for women and men in their study that found clothing size corresponds to BMI classifications and subsequent increased health risks.

RS was classified into five categories representing individuals one, two, three, four, or "five or more" sizes larger than ideal. Men had a mean RS of 2.08, and women had a mean of 2.42; thus, the average man was approximately 2 waist or inch sizes above his ideal, and the average woman was 2.42 dress sizes above ideal size in this study. Only those who

indicated they were the size they desired to be or larger were included as they may best be able to endorse the various weight loss motivators. Therefore 915 participants (23%) who endorsed being their ideal or smaller than their ideal size were removed. The final sample size (n = 2,997) consisted of 45.4% of men and 54.6% of women. Moreover, 43.9% of men and 30.3 % of women were found to be one size above ideal; 28.9% of men and 31% of women were two sizes above ideal; 11.8% of men and 17.7% of women were three sizes above ideal; 6.5% of men and 8.7% of women were four sizes above ideal; and 8.9% of men and 12.2% of women were five or more sizes above ideal. Relative size was used in the current study as an indicator of body image with larger scores indicating poorer body image. As discussed with the BMI variable, perceiving oneself as being overweight or larger than an ideal size is often needed to motivate weight loss. Relative Size is a variable that helps to measure this perception of being overweight.

Analyses

Principal component analysis. Principal Component Analysis (PCA) was used to assess significant components loading in component categories—specifically how motivation items divide into categories. Components were established through a PCA, which resulted in eigenvalues. The components with the highest eigenvalues were used for the following steps. Item loadings on each of these components were then extracted using the maximum likelihood approach. In order to maximize the distinctiveness between items, components were rotated with an orthogonal approach (Field, 2013).

In reviewing analyses, first sampling adequacy was measured using the KaiserMeyerOlkin Measure of sampling adequacy; ideally these scores are between 0.7 and 0.8, with a minimum acceptable score of 0.5. Additionally, measures of component analysis

are subject to a statistical significance criterion of $p < .01$. For initial component extraction, components with the highest eigenvalues and rotated sums of squares loading were reported to communicate variance accounted for by these components. To evaluate the orthogonal rotation, a pattern and a structure matrix was produced to assess the pattern of components and emphasize distinctions between components, respectively. Items will be retained if the item loading is equal to or greater than +/- 0.30 (Field, 2013). Once one or more components were identified, items were examined for perceived patterns, and the component(s) were named. Finally, components scores were calculated using the item loadings for each.

Hierarchical regression. The categorical variable of gender was explored using a hierarchical regression analysis (HRA) on the motivators for weight loss component(s). The continuous variables of BMI, age, and RS were explored using continuous predictors on the weight loss component(s). The first step of the hierarchy submitted gender given that previous literature suggests robust gender differences for body image and motivators for weight loss (Tiggemann, 2004) and because gender potentially relates to differences in intrinsic and extrinsic motivators for weight loss (Gillison et al., 2006; Guérin et al., 2012).

Because age appears to influence body image or desire for weight loss (Andres, 1989; Lemon et al., 2009; Tiggemann, 2004), age was added into the second step of the HRA of gender, age, and a possible interaction term combining gender and age. Age likely contributes to body image due to natural biological changes with time, as well as typical psychological effects that lead individuals to be more content with their bodies with age (Andres, 1989; Tiggemann, 2004). Since it is logical that actual body size or being overweight could drive motivators for weight loss, the third step consisted of gender, age, and added BMI, allowing for possible interaction terms among all included variables.

Finally, since body image has been shown to influence desire for weight loss, seemingly at times separate from actual body size or BMI (Lemon et al., 2009), the fourth and final step of the HRA added RS to already included variables of gender, age, and BMI, and their possible interaction terms, to ascertain if RS predicted above and beyond the rest of the proposed predictors in accounting for variance on motivators for weight loss.

Due to our large sample size, even small changes can produce statistical significance where real differences do not truly exists. Because of this and other limitations of using statistical significance as a means to indicate the importance of a relationship (Cumming, 2008; Schmidt, 1996, 2010), we used an adjusted R^2 increase of at least a 1% increment of the total variance explained as criterion for additional variables within the model. This is consistent with an accepted criterion we used in an earlier paper measuring avoidance behaviors in the same dataset (Maphis, Martz, Bergman, Curtin & Webb, 2013). To further assess the relationships between variables we chose to also run a Pearson's correlation between all variables and components involved in the hierarchical regression analyses.

Results

Principal Component Analysis

To identify meaningful categories, a Principal Components Analysis (PCA) was conducted. This allowed us to group the variables based on their relationship to two underlying components in the data by observing the raw data eigenvalues compared to the 95^{th} percentile random data eigenvalues. A scree plot test provided additional support for two components (see Figure 1). To observe clear item loadings onto their respective factors, we chose to suppress correlations below the absolute value of .30. All items loaded on one of the two identified factors using the .30 cutoff; thus, we did not have to drop any items from the

questionnaire. All items loaded onto the first component, but only a few loaded onto the second. To further emphasize the distinction between the components, we segregated the few shared items into the second component, making independent components without any shared items between the two. This separation is what determined which items belonged in each component. Sixteen items remained in the first component after the separation. To name the components, we looked to the highest loaded items to assess the overarching themes that grouped the items together (Field, 2013). Table 1 shows the top loading items for component one were: *be more confident* = .780, *be happier* = .776, and *focus less emotional energy on losing weight* = .748. These items seem to reflect motivators that promote *Quality of Life* (QOL) since they reflect a desire to improve satisfaction and fulfillment in daily living through weight loss. Moreover, this corresponds nicely with previous research (Ng et al., 2012; Vartanian et al., 2012) concerning how intrinsic motivation for change in SDT is often more personalized and fits a desire for enhanced quality of life.

Twelve items loaded onto the second component. Since the highest loading items were media pressure = .545,entertainment pressure = .541, and societal pressure = .501, this component seemed to reflect Interpersonal and Cultural motivators for weight loss (IC; see Table 1). Additionally, five items of the IC motivators had negative loadings; so individuals who rate being healthier, feeling better, enjoying activities, having more energy and eliminating health problems as highly motivating for weight loss would have lower scores for the IC component than those who rate these items as less motivating. Examination of those items that loaded positively and those that loaded negatively on the second component suggests our name of Interpersonal and Cultural motivators for weight loss corresponds to the previous research (Vansteenkiste et al., 2004) on common extrinsic influences for weight

loss. Rather than feeling more of a personalized desire to lose weight for health and vitality, individuals scoring higher on IC are desiring a change in body size more as a result of perceived pressure by cultural, media, and interpersonal influences (i.e., the people individuals interact with on a daily basis).

Hierarchical Regression

Using the established increment of 1%+ criterion, examination of the relationships for the QOL component, the third model (gender, age, BMI, gender and age, gender and BMI) was the best fit model since it explained the most variance at 5.6% (see Table 2). Gender alone did not prove to influence variance in QOL endorsement significantly. Age alone produced the largest beta of -.205 suggesting age most greatly influenced QOL endorsement in this model and that younger participants were more likely to strongly endorse QOL motivators. The addition of the gender by age interaction produced a significant beta of .205. To understand the direction of the significant gender by age interaction that met the 1% criteria, we re-ran the regression separating men and women and found that men have a beta of -.161 and women have a beta of -.067. By doing this, we were able to see that the older men and women, compared to the younger ones, were weaker in their endorsement of QOL motivators for weight loss. However, the interaction effect suggests that the women had less of a decrease in QOL motivators compared to men in the aged cohort effect.

In predicting the endorsement of IC motivators, only the second model (gender, age, gender and age interaction term) met the 1% criteria as the best fit model explaining 13.5% of the variance (see Table 2). Unlike the QOL component, gender alone did produce a significant influence in IC endorsement with a beta of .141 suggesting women endorsed IC more strongly than men. The largest beta was age alone with a significant beta of -.267

suggesting younger participants more strongly endorsed IC motivators and age had a greater influence on endorsement variability than gender. Unlike the QOL component, the age and gender interaction variable did not produce a significant beta, suggesting age and gender in tandem do not produce any more influence on variability than age and gender independently. Overall, the best fitting model for IC component was consistent with the previous findings. There was less motivation for weight loss from Interpersonal and Cultural influences for the older the participants compared to the younger ones, and women more strongly endorsed the IC motivators than men.

Discussion

Being overweight affects more U.S. Americans now than ever before with 36.2% classified as obese in 2010 (body mass index (BMI) $\geq$ 30 kg/m^2) and an additional one-third of Americans at overweight criteria (BMI 25-29.9 kg/m^2; CDC, 2012; Flegal et al., 2010). Developing a more thorough understanding of why Americans desire to lose weight has implications for individuals whose weight gain or body size is having an adverse impact on their lives, as well as for individuals who are plagued with poor body image, which can create vulnerabilities for eating and exercise disorders. This study used an online survey with age-representative U.S. adults and found some consistencies with previous research on Self Determination Theory, that, indeed Americans' desire for weight loss can be divided into two major categories. The first is *Quality of Life,* meaning that some desire weight loss to enhance their happiness, confidence, or other emotional aspects of life, all of which fit into intrinsic reasons for change. Consistent with a body of research on media and cultural pressures to be lean (Garner & Kearney-Cooke, 1996), the second reason these participants were motivated to lose weight was because of *Interpersonal and Cultural* influences. They

wanted to lose weight to look better for others or to meet cultural expectations for physical appearance fitting more extrinsic incentives to change (Vansteenkiste et al., 2004). Further analyses suggested gender of participants and age of cohort influenced these two motivators for weight loss, yet actual body size and body image did not yield additional contributions. This lack of results may in part be because of multicollinearity (see Table 3). This discussion will focus on implications of these results for each of these disparate motivators to lose weight, implications for consumers and professionals, study limitations, and finally conclusions and directions for future research.

Quality of Life and Intrinsic Motivations for Weight Loss

Having more intrinsic reasons to lose weight is associated with greater program success and better psychological well-being (Maltby & Day, 2001; Ng et al., 2012; Putterman & Linden, 2004; Sebire et al., 2009; Vartanian et al., 2012). The results suggest that these personal incentives to lose weight are seen more naturally in women than men and in younger Americans than older ones. Clinicians assisting individuals in therapeutic weight loss should try to elicit these motivations to make them more salient as clients struggle with the difficulty of caloric restriction and increased physical activity for weight loss. Further, these professionals should be informed that men, more so than women, could be interested in losing weight for less personal or emotional reasons, and clinicians should explore and emphasize these proximal and distal goals. As an example, an obese woman may proclaim that she will have less joint pain after a 50-pound weight loss. After a 10-pound loss, the clinician could praise the success and ask her how her knees are feeling. A male client might wish to be able to play basketball with his grandson. An intuitive clinician might inquire after some weight loss when he thinks he can hit the basketball court.

The effect of age and the gender interaction on quality of life is interesting, but the cross sectional nature of this design keeps us from knowing if this is a developmental aging effect (i.e., the result of aging over time) or a cohort effect (i.e., the result of cultural difference between generations) in this adult sample. These results show that both men and women demonstrated less motivation the older the participants were, but on average women are slightly more likely to endorse intrinsic motivations and to sustain them with age. This more enduring effect of women desiring weight loss for personalized reasons compared to men maps onto the literature showing robust findings that women have worse body image than men (Feingold & Mazella, 1998). This results in men tending to perceive themselves as overweight less often than women and consequently attempting weight loss less often than women (Lemon et al., 2009).

Interpersonal and Cultural Influences and Extrinsic Motivators for Weight Loss

Having more extrinsic reasons to lose weight is associated with poorer weight loss program outcomes and worse psychological well-being (Maltby & Day, 2001; Ng et al., 2012; Putterman & Linden, 2004; Sebire et al., 2009; Vartanian et al., 2012). The most dominant content of the cultural and interpersonal component suggests that these motivators reflect extrinsic characteristics, since the behaviors are reinforced by consequences such as approval from others or achieving societal values. Our study results suggest that these external incentives for weight loss are held more strongly by women and younger individuals than by men or older Americans. Clinicians assisting individuals in therapeutic weight loss should assess such motivators and assist clients in finding more internally reinforced motivators. Clinicians should be informed that women, more so than men, could be interested in losing weight as a means to get approval from peers or be more congruent with societal

values, rather than personal ones. For example, an obese woman may be seeking weight loss so people will think she is a good mother. Since such "success" would be reliant on an unpredictable outcome like the praise of others, this could set the client up for perceiving herself as unsuccessful despite her behavior change and weight loss. Hence, the clinician may help the client reframe this goal to be more intrinsic, such as for her to reach a healthy weight to easy her pregnancies and have more energy to play with her kids after work.

Further clinicians could assist clients who have these interpersonal, extrinsic goals for weight loss to challenge their assumptions, often purported in popular media, as causal connections. A common example is that thinness causes an individual to be happy, whereas being overweight makes an individual unhappy (i.e., the beauty is good stereotype). This client could be invited to name examples of people who defy these stereotypes (e.g., Melissa McCarthy) and think in more detail about how to change behavior in other ways to meet alternative goals. For example she could be guided on how to increase confidence as a parent through active play with her kids or increase her energy so she can participate in activities that support her children.

As previously discussed, the cross-sectional nature of this design keeps us from knowing if the effects for aging are truly developmental or simply a cohort effect for aging. As with the QOL results, both men and women showed less motivation the older the participants were; but on average, women are slightly more likely to endorse these motivations and sustain this endorsement with age. This more enduring effect for women to desire weight loss for external reasons is supported by the literature that shows that, while women have improved body image as they age, the pressures for women to be thinner and more beautiful are far greater than those men experience (Garner & Kearney-Cooke, 1996;

Putterman & Linden, 2004). This bombardment of societal and cultural ideals for thinness results in more attempts at weight loss due to the higher rates of women perceiving themselves to be overweight at any age (Lemon et al., 2009). Because of the consistency of the aging effects within the sample for QOL and IC, and the limited literature on motivation and aging, the discussion of the component results will be handled simultaneously.

Implications for QOL and IC Motivators Combined

The gender trends for intrinsic and extrinsic motivator endorsement in the literature is conflicted as to the degree with which men and women endorses each type (Gillison et al., 2006; Guérin et al., 2012). This study found that women endorsed both intrinsic and extrinsic types of motivators more than men. The trend of younger women being more likely to strongly endorse motivators is supported in the literature, as younger women are more likely to have body dissatisfaction, which often fuels the desire to lose weight (Lemon et al., 2009; Tiggemann, 2004). Subsequently, the decrease in motivator endorsement across the ages of this sample is also supported by the literature in that body satisfaction is higher in older individuals than younger ones in cross-sectional studies (Lemon et al., 2009; Tiggemann, 2004).

These results may have implications in how clients seeking a professional weight loss program are interviewed in a clinical biopsychosocial assessment. It is standard practice to assess the reasons individuals are seeking weight loss as a method to personalize interventions, especially those provided in a group or online format (e.g., Weight Watchers®). Furthermore, a review of the literature on the effectiveness of setting and attempting to meet goals found that individuals who set goals were more successful at losing weight and reducing their dietary intake compared to control groups, who probably did not

engage in specific goal setting (Cullen, Baranowski, & Smith, 2001). These assessments can aid professionals in developing realistic weight loss goals and in customizing behavioral plans (i.e., diet and exercise) to help clients attain these goals.

Women and younger individuals are most likely to suffer from eating disorders, poor body image, and general poor psychological well-being, which may be driving their motivators for weight loss (Ng et al., 2012; Maltby & Day, 2001; Vartanian et al., 2012; Sebire et al., 2009; Tiggemann, 2004; Putterman & Linden, 2004). Astute clinicians would be able to counsel these clients on whether or not attempting weight loss improve their psychological well-being or if they could benefit best by alternative interventions such as CBT or IPT for disordered eating behaviors. Further, many programs move clients from a presenting complaint ("I want to lose weight") to more of a focus on health and lifestyle by assisting in increasing and shaping physical activity, increasing consumption of fruits, vegetables, and grains, and lowering fat in the diet. For some clients, the health behavior change could have a positive impact on alternative goals, such as feeling happier or becoming fitter and stronger, regardless of weight loss. An important role of the clinician is to help clients manage their expectations in regards to how much and how fast weight can be lost, since overlooking this critical issue could derail the client's efforts (O'Neil, 1992).

Also in this assessment, clinicians may identify barriers to healthy behavior change that could hinder weight loss, such as severe depression or binge eating disorder, which would require alternative interventions for effective treatment (National Task Force on the Prevention of Obesity, 2000). In addition, assessment of motivation is greatly aligned with multiple effective theoretical orientations such as Acceptance and Commitment Therapy that seek to help clients to identify values (i.e., aspirations that give the individual a sense of

direction and fulfillment synonymous with motivation) and behave in a way that is consistent with these values (Hayes, 2013).

The other facet in which these findings may have implications is the developmental influences on motivation. Although age and sex cannot be changed, clinicians can be more sensitive as to how these factors impact clients' lives. For example, it would seem that because body satisfaction improves with age, motivation to lose weight decreases (Tiggemann, 2004). Because of this, the most successful weight loss interventions are likely to be with younger individuals, since adolescents, and even more so, children, have better weight loss outcomes than adults (Berry et al., 2004; Jeffery et al., 2000). However, because of the 18-or-older age inclusion criteria in this study, more research should be done to compare motivations in children and adolescents to adults, particularly in regards to their endorsement of appearance and health related motivators.

Interestingly, actual body size (i.e., BMI) and body image (i.e., RS) did not seem to influence motivation for weight loss above and beyond the influence of age and gender. In regards to body image, gender is such a strong predictor for this variable that it likely overshadows RS as a body image metric (Lemon et al., 2009; Tiggemann, 2004). Although, logically, body size should impact motivation to lose weight as it influences the desire for thinness and could result in health consequences that could drive weight loss, our results did not indicate such a relationship beyond the influences of age and gender. For example, individuals who are overweight and perceive themselves to be overweight are likely to seek weight loss. The issue comes in differentiating between the influence of actual body size and perceived body size as it is supported by Lemon and colleagues (2009). Although this lack of a finding for the influence of body size and body image is counter to research that suggests

general body dissatisfaction is related to extrinsic motivation (Vansteenkiste et al., 2004), additional research is needed to determine the extent to which body size alone, outside of body perceptions, influences weight loss motivation.

Limitations

While this study had many strengths, including a large sample of 2997 that is nationally representative of American age, body size, and an even number of male and female participants, there are some limitations of this study that need to be addressed. We asked participants to speculate as to what they would find motivating for weight loss, whether they were trying to lose weight presently or not. While we took precautions in removing those who were at or under their ideal size, additional research could better capture findings if participants were surveyed on their motivators while actively trying to lose weight or asked to reflect on the effectiveness of motivators for past weight loss attempts.

There are also several limitations as to the content of the survey and focus of this study. Because this survey was created for marketing purposes, the items generated may have been more fitting by its creators to link to potential product sales as opposed to more generic goals of understanding how to help people with body image issues or weight loss. Because of this marketing focus, this research did not use copyrighted surveys for motivators for weight loss more commonly used in the literature such as the Treatment Self-Regulation Questionnaire (Levesque et al., 2007). We cannot make direct comparisons to previous research since we used a newly invented scale here. However, we can compare the content of our results to previous research.

To narrow the focus of this study, we did not examine race as it relates to motivation for weight loss, but additional research would be valuable to examine the extent to which

ethnicity and culture play a role in weight loss expectations, as there are established racial differences in body image and body preference (Cash Morrow, Hrabosky, & Perry, 2004; Corson & Andersen, 2002; Grabe & Hyde, 2006; Kumanyika, Wilson, & Guilford-Davenport, 1993; Thompson, 1996).

Due to the limitations of a cross-sectional data set such as this, we cannot draw clear conclusions as to the developmental nature of motivation and related constructs such as body image or body satisfaction. Additionally because of the 18-or-older age inclusionary criteria of this study, we cannot generalize our findings to children or adolescents. Additional research is needed to assess the developmental nature of motivation and the potential for greater weight loss success across the lifespan.

Lastly, even with using the established criteria for a minimum increase of predictable change used by Maphis et al. (2013), who used this data set for her study of body display avoidance behaviors, many of our effects in this study were small, so while results were slightly significant, a great deal of variance is still left unexplained. Additional research is needed to assess other possibilities that may account for variance in motivators for weight loss other than gender and age, such as present health concerns, weight history, or exposure to media.

Conclusions

Quality of life motivators reflect intrinsic motivation, while IC motivators reflect extrinsic motivation. We found that age and gender influence the strength of endorsement of various motivations, in that women and younger individuals rate motivators more strongly than men and older individuals. While our findings are limited by the self-report nature of the study and the small amount of variance explained, these findings support the necessity of

assessment of motivators for weight loss as the presence of extrinsic motivation is indicative of poor psychological well-being. Additionally, the target population's age should be considered when predicting weight loss success and program development since motivation seems to decrease the older the individuals are. Additional research is needed to assess the implications of endorsing these types of motivators in populations who are actively seeking or maintaining weight loss.

Motivation drives behaviors. The values that feed motivation are often instilled in youth or from life experiences that occur as individuals age. However, one can speculate that the motivators that individuals choose shape their lives just as much as their lives shape their motivations. By better understanding motivation over a lifetime, especially how defining characteristics such as gender impact that development, we can better help individuals reinforce behaviors they want in their lives, while extinguishing behaviors that decrease their quality of life.

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Appendix A

To: Alana McMichael

CAMPUS MAIL

From: IRB Administration
Date: 2/14/2014
RE: Determination that Research or Research-Like Activity does not require IRB Approval
Study #: 14-0185

Study Title: Exploring Gender and Weight Loss Motivators using the Psychology of Size Data Set

The IRB determined that the activity described in the study materials does not constitute human subject research as defined by University policy and the federal regulations [45 CFR 46.102 (d or f)] and does not require IRB approval.

This determination may no longer apply if the activity changes. IRB approval must be sought and obtained for any research with human participants.

If you have any questions about this determination, please contact Julie Taubman at 262-7981 or Robin Tyndall at 262-2692; or irb@appstate.edu. Thank you.

CC:
Denise Martz, Psychology

Appendix B

Whether or not you have ever or are currently trying to lose weight, how strongly would each of the following motivate you to lose weight? *(Choose one answer in each row.)*

	Not a motivation to lose weight at all 1	Somewhat strong motivation to lose weight 2	Very strong motivation to lose weight 3	Extremely strong motivation to lose weight 4
Wanting to look younger	1	2	3	4
Wanting to feel younger	1	2	3	4
Wanting to look more attractive	1	2	3	4
Wanting to be healthy/healthier	1	2	3	4
Wanting to feel better about myself	1	2	3	4
Wanting to receive positive attention from women	1	2	3	4
Wanting to receive positive attention from men	1	2	3	4
Wanting to enjoy everyday activities more	1	2	3	4
Wanting to be happy/happier	1	2	3	4
Wanting to gain more respect from other people	1	2	3	4
Wanting to have more confidence	1	2	3	4
Wanting to feel sexy/sexier	1	2	3	4
Wanting to enjoy shopping for clothes more	1	2	3	4
Wanting to have a better sex life	1	2	3	4
Wanting to be able to pursue more of the goals I have for my life	1	2	3	4
Wanting to be able to focus my 1emotional energy on things other than my weight	1	2	3	4
Wanting to have more energy	1	2	3	4
Wanting to be a better parent	1	2	3	4
Wanting to participate more in activities	1	2	3	4
Wanting to eliminate other	1	2	3	4

health problems				
Pressures from media	1	2	3	4
Pressures from the entertainment industry	1	2	3	4
Pressures from other people I know	1	2	3	4
Advice from a medical professional	1	2	3	4
Societal pressure	1	2	3	4
Pressures from the fashion industry	1	2	3	4
Pressure from friends or peers	1	2	3	4
Pressure from spouse or significant other	1	2	3	4

Table 1

Component Loadings and Component Items

Component 1: QOL	Component 2: IC
• .780 Be more confident • .776 Be happier • .748 Focus less emotional energy on losing weight • .745 Be more attractive • .733 Pursue goals • .733 Feel sexier • .731 Get more respect • .711 Enjoy shopping for clothes more • .705 Participate in more activities • .683 Feel Younger • .680 Look younger • .658 Have better sex • .587 Attention from men • .571 Be a better parent • .527 Attention from women • .464 Pressure from others	• .545 Media pressure • .541 Entertainment pressure • .501 Societal pressure • .431 Fashion pressure • .428 Spouse pressure • .416 Medical advice • .303 Peer pressure • -.300 Feel better • -.378 Enjoy Activities • -.406 Eliminate Health Problems • -.451 Have more energy • -.469 Be healthier

Table 2

Summary of hierarchical regression analysis for Quality of Life and Interpersonal and Cultural

	Quality of Life				Interpersonal and Cultural		
	β	*F*	*Adj* R^2		*β*	*F*	*Adj* R^2
Model 1 Gender(G)	 .147***	66.500***	.021		 .054**	8.886**	.003
Model 2 G Age(A) G*A 	 .003 -.254*** .205** -.161 men -.067 women	37.349***	.035		 .141** -.267*** -.137	156.71***	.135†
Model 3 G A BMI G*A G*BMI	 -.073 -.256*** .082 .190* .109	36.711***	.056†		 -.006 -.256*** -.153** -.148* .197*	96.011***	.137
Model 4 G A BMI RS G*A G*BMI G*RS	 -.126 -.283*** .059 .037 .240** -.010 .144	30.170***	.064		 -.035 -.270*** -.158* .008 -.121 .122 .092	69.837***	.139

Note. Gender is coded: male = 1, female = 2

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

†Denotes the model of best fit.

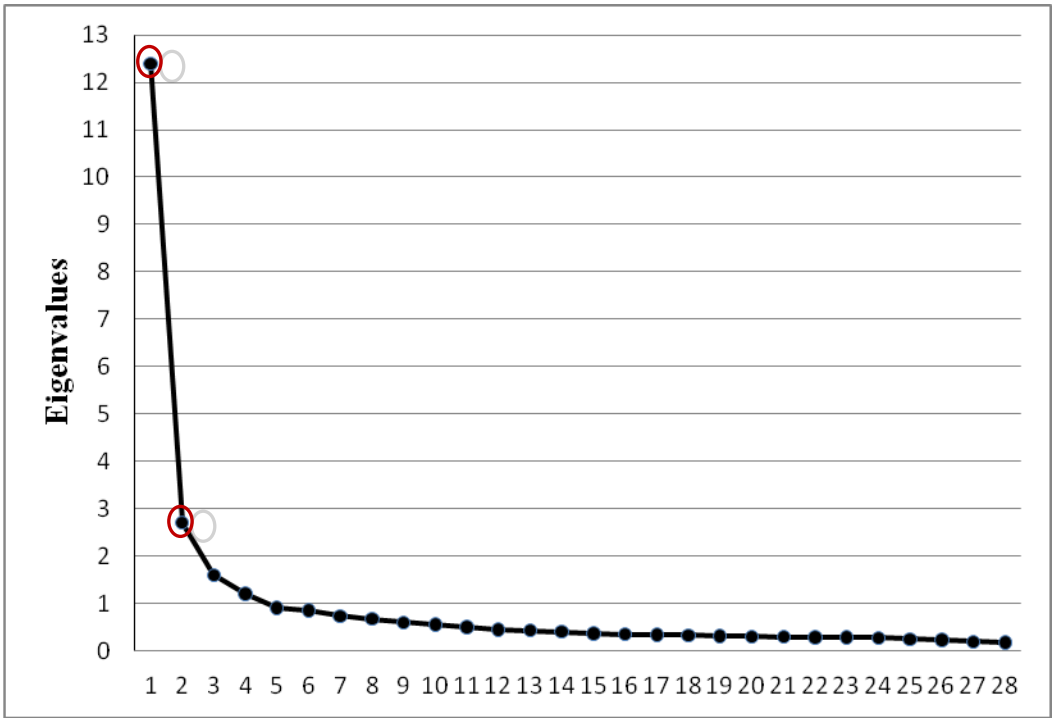
Table 3

Correlations between Gender, Age, Body Mass Index, Relative Size, Quality of Life Component and Interpersonal and Cultural Component

	Gender	Age	BMI	RS	QOL	IC
Gender	1	-.023	.004	.129**	.147**	.054**
Age	-.023	1	.084**	.008	-.114**	-.364**
BMI	.004	.084**	1	.701**	.138**	-.067**
RS	.129**	.008	.701**	1	.179**	.012
QOL	.147**	-.114**	.138**	.179**	1	.000
IC	.054**	-.364**	-.067**	.012	.000	1

Note. ** Correlation is significant at the p <0.01 level.

Figure 1. Principal Component Analysis Scree Plot



Vita

Alana Danielle McMichael completed her bachelor's in psychology with a minor in music at Missouri University of Science and Technology. There she was mentored by Dr. Amber Henslee and participated in event-specific binge drinking research exploring the drinking culture surrounding the university's prominent St. Patrick's Day traditions. Following her bachelor's, she completed a graduate certificate at Missouri S & T in Human-Computer Interaction while working at an inpatient program for adolescents struggling with substance abuse and continuing her active participation in theater.

After her undergraduate program instilled an interest in behavioral medicine and psychological approaches to weight loss, Ms. McMichael chose to pursue her master's in Health Psychology. In 2012, she was accepted at Appalachian State University, where she was mentored by Dr. Denise Martz. There, she focused many of her projects on weight loss and binge eating disorder. To gain experience in behavioral medicine and integrated care she completed her internship at the Medical University of South Carolina's Weight Management Center that was rated one of the top fifteen weight loss programs in the nation. For the future, she intends to focus her career on behavioral medicine and integrating psychological and behavioral interventions in primary care settings.