5-2014

The Impact of Body Image on Women in Later Life: Effects on Quality of Life and Body Perception

Rachel L. Avants
University of Arkansas, Fayetteville

The Impact of Body Image on Women in Later Life: Effects on Quality of Life and Body Perception

The Impact of Body Image on Women in Later Life: Effects on Quality of Life and Body Perception

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Health Science

by

Rachel L. Avants
Baylor University
Bachelor of Science in Health, Human Performance and Recreation, 2006
Baylor University
Master of Science Education in Community Health, 2008

May 2014
University of Arkansas

This dissertation is approved for recommendation to the Graduate Council.

_____
Dr. L. Jean Henry
Dissertation Director

_____
Dr. Kristen Jozkowski
Committee Member

_____
Dr. Ronna Turner
Committee Member

_____
Dr. Michelle Gray
Committee Member

Abstract

Physical, mental, and emotional changes can occur throughout the aging process, making it important to treat different age groups as separate populations when researching body image. Yet, very few instruments have been validated for middle-aged and older adults. An online survey was used to perform a validation of the Body Image Quality of Life Inventory (BIQLI) and examine demographic relationships, with a sample of 947 women, ages 40-79, from across the United States. A principal component analysis (PCA) and convergent validity supported the use of the BIQLI for women ages 40 to 79. A one-factor model was validated for comparing BIQLI scores across decades. A two-factor model provided useful information about potential subscales within the BIQLI for women of certain decades. Two- and three-factor models had different patterns for each decade, making the one-factor model the only solution for comparing across age groups. The strongest demographic relationship existed between total BIQLI score and body mass index, though the relationship weakened as age increased. Income level and relationship status had small associations with BIQLI score only for the women in their 60s. Results indicate that the 60s may be a time of transition for body image and warrants continued research. Race also played a distinct role with Caucasians having lower scores than the sample with all races combined. Combining races may skew findings and lead to incorrect assumptions, especially when Caucasians are included in a sample.

Acknowledgements

I am deeply grateful to my dissertation committee chair, Dr. Jean Henry, who has helped me through the entire degree and dissertation process. Without her help, I would not have found this field of research that means so much to me. I would also like to express the deepest appreciation to my dissertation committee members, Drs. Ronna Turner, Kristen Jozkowski, and Michelle Gray, who made time in their hectic schedules to provide advice and recommendations. All four of them helped make my defense a time of excitement and I look forward to our future collaborations.

My heartfelt appreciation goes to Jerry Laster for making the research possible and for being a source of strength throughout the entire degree and dissertation process. I also owe my special thanks to Ann Avants, who volunteered her excellent editing services. Finally, I would like to thank my family, Wes, Cindy, Ben, Ann, John, and Eve, who have helped encouraged me when times were hard and celebrated all of the little successes throughout this degree.

Table of Contents

Chapter 1: Introduction

Body image is an important component of a person's self-concept and identity (Chrisler & Ghiz, 1993). It is made up of the perceptions, thoughts and feelings a person has about his/her own body (Cash & Smolak, 2011). Body image is influenced by interactions with other people; these can be friends, family, or a random person shopping in the same store. These interactions and the media help to shape a person's understanding of how society expects him/her to act and look (Wertheim & Paxton, 2011).

Negative body image has been described as negative thoughts about one's own body (Cash & Smolak, 2011) and the discrepancy between a person's ideal and current body image (Bedford & Johnson, 2006). Negative body image can lead a woman to employ coping strategies in an attempt to fix or control the impact of negative body image (Bedford & Johnson, 2006; Cash & Smolak, 2011). A woman may employ unhealthy coping strategies that can have a severe negative impact on her psychological and physical health (Cash, Santos & Williams, 2005; Gavin, Simon, & Ludman, 2010; Patrick, Stahl, & Sundaram, 2011).

Body image research has primarily focused on young, adult females, but more recent research has expanded to include other age groups (Grogan, 2011). Women of all ages tend to have more similarities than differences in their body image experiences (Bedford & Johnson, 2006; Grippo & Hill, 2008; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). Women share a desire to lose weight, behavioral responses to negative body image, and the mental and physical consequences of negative body image (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). Though desire to lose weight is common for all ages, older women have less drive for thinness than younger women (Lewis & Cachelin, 2001; Pruis & Janowsky, 2010).

Body dissatisfaction decreases slightly with age, particularly after the 60s (Anderson et al., 2002; Rusticus, Hubley, & Zumbo, 2008), but the aging process introduces potential challenges for older women that are not experienced by younger women. The idealized woman in Western culture is slender, attractive, and young (Grogan, 2011). Older women tend to associate their value to society with their ability to maintain or achieve this idealized appearance (Clarke & Griffin, 2008; Duncan & Loretto, 2004; Puhl, Andreyeva, & Brownell, 2008). In an attempt to meet this ideal, older women practice more activities to counter the effects of aging than younger women (Baker & Gringart, 2009). Like younger women, older women have used disordered eating patterns to control their weight (Allaz et al., 1998; Lewis & Cachelin, 2001; McLean, Paxton, & Wertheim, 2010; Midlarsky & Nitzburg, 2008; Patrick, Stahl, & Sundaram, 2011; Slevec & Tiggemann, 2010), which can lead to clinical-level eating disorders (Peat, Peyerl, & Muehlenkamp, 2008). Older women may also view cosmetic procedures as the way to attain the idealized look (Clarke & Griffin, 2008; Clarke, Repta, & Griffin, 2008; Henderson-King & Henderson-King, 2005; Slevec & Tiggemann, 2010) when the impact of aging goes beyond what weight control can address.

Statement of the Problem

Although some quantitative studies have been conducted on older adult body image, many are on small, homogenous samples. This presents an issue when attempting to generalize to the adult female population. Even comparisons between the studies are made difficult by the lack of consistency in instruments measuring body image. The individual study results are also suspect, given that many of these instruments have not been validated for older adults. Although similarities in body image experience across the ages exist, women of different ages still vary in

how they experience body image. Therefore, it is an erroneous assumption that an instrument validated in young adults is automatically a valid instrument for older adults.

Significance

Roy and Payette (2012) identified four areas that should be addressed in the field of body image in older adults: a standardized conceptualization and assessment for body image, creation and validation of instruments for seniors, a cohort study of seniors to examine body image, and further use of focus groups. This study will answer part of that need by providing further validation for one instrument and beginning the validation process for a second instrument. Upon successful validation, the data collected from the large, diverse sample will provide further insight into body image in older women.

Purpose of the Study

The purpose of this dissertation is two-fold: to validate existing instruments for the aging female population in the United States and to obtain a point-in-time measurement of the impact that body image has on adult women between the ages of 40 and 79. Specific areas of interest include quality of life, comparison of perceived body image to ideal body image, trends in peri- through post-menopause status, and variations that may exist among ethnicities, socio-economic status, relationship status, and age groups.

Research Questions

I. Is the Body Image Quality of Life Inventory (BIQLI) a reliable and valid instrument for use with women between the ages of 40 and 79?

   a. Hypothesis 1: A one-factor model for the BIQLI will be appropriate for use with women ages 40 to 79.

b. Hypothesis 2: Total BIQLI score will be negatively correlated with total score on the Body Image Ideals Questionnaire.

c. Hypothesis 3: Total BIQLI score will be negatively correlated with body mass index.

d. Hypothesis 4: The BIQLI will have high reliability using Cronbach's alpha.

II. What relationships, if any, exist between total score on the Body Image Quality of Life Inventory and the following demographic data: menstrual status, relationship status, body mass index, age, race, educational attainment, income level?

a. Hypothesis 1: Body mass index will be negatively correlated to total BIQLI score, indicating that women with a higher body mass index will have a more negative body image quality of life than women with a lower body mass index.

b. Hypothesis 2: Age will be positively correlated with total BIQLI score, indicating that older women will have a more positive body image quality of life than younger women.

c. Hypothesis 3: White women will have a lower body image quality of life than women of other races.

d. Hypothesis 4: A relationship will exist between total BIQLI score and menstrual status, relationship status, educational attainment, and/or income level.

Definition of Terms

Anorexia: a mental disorder characterized by an intense fear of being overweight and the refusal to maintain a healthy body weight (American Psychiatric Association, 1994).

Binge eating: the consumption of extremely large amounts of food in a short time frame coupled with a sense of being out of control (American Psychiatric Association, 1994).

Body composition: is the percentage of body mass that is made up of fat as opposed to fat-free mass (Thompson, Gordon, & Pescatello, 2010).

Body dissatisfaction: negative thoughts and feelings about one's body (Grogan, 1999; Cash & Smolak, 2011).

Body dysmorphic disorder: preoccupation with an imagined (or overly exaggerated) defect in personal appearance (American Psychiatric Association, 1994).

Body image: the perceptions, thoughts and feelings that a person has about his/her own body (Cash & Smolak, 2011).

Body image dissatisfaction: occurs when there is a discrepancy between one's ideal and current body image (Bedford & Johnson, 2006).

Body mass index (BMI): is an assessment of weight in relation to height. BMI does not account for body composition, but a BMI of 30 or higher has been linked to increased risk of hypertension, coronary heart disease and mortality (Thompson, Gordon, & Pescatello, 2010). BMI is divided into categories: under weight (BMI less than or equal to 18.4), normal weight (BMI of 18.5 to 24.9), overweight (BMI of 25.0 to 29.9), obese I (BMI of 30.00to 34.99), obese II (BMI of 35.00 to 39.99), and obese III (BMI of 40 or higher).

Bulimia: a mental disorder characterized by recurring binge eating episodes followed by behaviors designed to prevent weight gain (vomiting, use of laxatives, excessive exercise) (American Psychiatric Association, 1994).

Drive for thinness: occurs when the pursuit of becoming thin is coupled with a preoccupation with weight and excessive dieting (Garner, Olmstead, & Polivy, 1983).

Early perimenopausal: when menses has occurred within the previous three months, but menstrual irregularity has occurred in the past year (Johnston et al., 2006).

Householder: a term used by the U.S. Census Bureau to identify one person as the primary reference point for a given household. The person can be the owner, one of multiple owners or the primary name on the lease. In the event that none of these situations apply, the person can be any adult member of the household ("Householder," n.d.).

Late perimenopausal: no menses has occurred in the previous three months, but menses did occur within the previous 11 months (Johnston et al., 2006).

Menses: "period of mild hemorrhage, which occurs approximately once each month, during which the uterine epithelium is sloughed and expelled from the uterus" (Seeley, Stephens,& Tate, 2003, p. 1040)

Menstrual cycle: "cyclic changes that occur in sexually mature, non-pregnant females and culminate in menses." (Seeley et al., 2003, p. 1040)

Perfectionism: "excessive personal expectations for superior achievement" (Garner et al., 1983, p. 18)

Postmenopausal: no menses has occurred for 12 months or longer (Johnston et al., 2006).

Premenopausal: when menses has occurred within the previous three months and no change in menstrual regularity has been experienced in the preceding year (Johnston et al., 2006).

Quality of life: an individual's subjective measure of both positive and negative aspects of his or her own life. It is a very complex measure that encompasses all aspects of life. Health-related quality of life is concerns with just those aspects that have proven to affect mental or physical health. Health-related quality of life has shown to be directly related to self-reported chronic disease and their risk factors (Centers for Disease Control & Prevention, 2011).

Delimitations

This study is delimited to women between the ages of 40 and 79 who are a part of a group that regularly takes surveys for an online survey administration company. Therefore, all participants had regular access to a computer and internet service. For the purpose of this study, participants must also be proficient in English.

Limitations

The data gathered in this study will not be generalizable to the entire adult female population in the United States. This stems primarily from the nature of the survey administration method. By using the SurveyMonkey® Audience to identify potential participants, the sample is already limited to women who have computer and internet access. Day, Janus, and Davis (2005) reported on computer and internet use in the United States using information from the 2003 Current Population Study conducted by the U.S. Census Bureau. They reported that 72% of householders between the ages of 45 and 54 owned a computer and 65% of them had home internet access. The percentages drop as the age group gets older, with 63% of householders between the ages of 55 and 64 owning computers and 57% having home internet access. The next drop is dramatic for householders age 65 and older, with 35% owning a computer and only 30% having internet access.

Technology is advancing quickly, becoming more affordable and accessible to users. The reported percentages have likely gone up over the last nine years. However, there is still a gap between those who have a computer and internet access and those who do not. Another mediating factor is that research has shown that computer data collection led to less measurement error, more reports of socially undesirable attitudes and behaviors, and higher concurrent validity (Yeager et al., 2011).

The SurveyMonkey® Audience tends to skew towards higher incomes and education levels ("Is my SurveyMonkey® Audience sample representative?" n.d.). The sample reflected this trend, but only in the lower categories. There were fewer women in the sample that had a high school degree or below, but the difference was made up in an increase in the some college category (U.S. Census Bureau, 2012a). The household income of the sample was higher than the U.S. population in the $25-49 thousand category, but lower in the $0-24 thousand and the top three categories starting at $100 thousand (U.S. Census Bureau, 2012b).

The sample was primarily white (81%) and heterosexual (96.4%), further limiting the ability to generalize the findings. The results of this study will also be limited by the study design. This study will collect responses from participants at only one point in time. The analysis will only be able to provide correlational results, and not causation, between the variables of interest.

References

Allaz, A.-F., Bernstein, M., Rouget, P., Archinard, M., & Morabia, A. (1998). Body weight preoccupation in middle-age and aging women: A general population survey. *Eating Disorders, 23*(3), 287-294. doi: 10.1002/(SICI)1098-108X(199804)23:3<287::AID-EAT6>3.0.CO;2-F

American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition*. Washington, DC, American Psychiatric Association, 1994.

Anderson, L. A., Eyler, A. A., Galuska, D. A., Brown, D. R., & Brownson, R. C. (2002). Relationship of satisfaction with body size and trying to lose weight in a national survey of overweight and obese women aged 40 and older, United States. *Preventive Medicine, 35*(4), 390-396. doi: 10.1006/pmed.2002.1079

Baker, L., & Gringart, E. (2009). Body image and self-esteem in older adulthood. *Aging & Society, 29*(6), 977-995. doi: 10.1017/S0144686X09008721

Bedford, J. L., & Johnson, C. S. (2006). Societal influences on body image dissatisfaction in younger and older women. *Journal of Women and Aging*, *18*(1), 41-55. doi: 10.1300/J074v18n01_04

Cash, T. F., Santos, M. T., & Williams, R. F. (2005). Coping with body-image threats and challenges: Validation of the Body Image Coping Strategies Inventory. *Journal of Psychosomatic Research, 58*(2), 191-199. doi: 10.1016/j.jpsychores.2004.07.008

Cash, T. F., & Smolak, L. (2011). Understanding body images: Historical and contemporary perspectives. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 3-10). New York, NY: Guilford Press.

Centers for Disease Control and Prevention. (2011). *Health-Related Quality of Life (HRQOL): HRQOL concepts*. Retrieved from CDC website: http://www.cdc.gov/hrqol/concept.htm

Chrisler, J. C., & Ghiz, L. (1993). Body image issues of older women. *Women & Therapy, 14*(1-2), 67-75. doi: 10.1300/J015v14n01_07

Clark, L. H., & Griffin, M. (2008). Visible and invisible aging: beauty work as a response to ageism. *Aging & Society, 28*(5), 653-674. doi: 10.1017/S0144686X07007003

Clark, L. H., Repta, R., & Griffin, M. (2007). Non-surgical cosmetic procedures: Older women's perceptions and experiences. *Journal of Women & Aging, 19*(3/4), 69-87. doi: 10.1300/J074v19n03_06

Day, J. C., Janus, A., & Davis, J. (2005). *Computer and internet use in the United States: 2003* (Document No. P23-208). Retrieved from U.S. Census Bureau website: http://www.census.gov/prod/2005pubs/p23-208.pdf

Duncan, C., & Loretto W. (2004). Never the right age? Gender and age-based discrimination in employment. *Gender, Work, and Organization, 11*(1), 95-115. doi: 10.1111/j.1468-0432.2004.00222.x

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*(2), 15-34.

Gavin, A. R., Simon, G. E., & Ludman, E. J. (2010). The association between obesity, depression, and educational attainment in women: The mediating role of body image dissatisfaction. *Journal of Psychosomatic Research, 69*(6), 573-581. doi: 10.1016/j.jpsychores.2010.05.001

Grippo, K. P., & Hill, M. S. (2008). Self-objectification, habitual body monitoring, and body dissatisfaction in older European American women: Exploring age and feminism as moderators. *Body Image, 5*(2), 173-182. doi: 10.1016/j.bodyim.2007.11.003

Grogan, S. (1999). *Body image: Understanding body dissatisfaction in men, women and children*. New York, NY: Routledge.

Grogan, S. (2011). Body image development in adulthood. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 93-96). New York, NY: Guilford Press.

Henderson-King, D., & Henderson-King E. (2005). Acceptance of cosmetic surgery: Scale development and validation. *Body Image, 2*(2), 137-149. doi: 10.1016/j.bodyim.2005.03.003

Householder. (n.d.) In *Current Population Survey – Definitions*. Retrieved from United States Census Bureau website: www.census.gov/cps/about/cpsdef.html

Is my SurveyMonkey® Audience sample representative? (n.d.). Retrieved from SurveyMonkey® website: http://help.SurveyMonkey®.com/app/answers/detail/a_id/5726

Johnston, J. M., Colvin, A., Johnson, B. D., Santoro, N., Harlow, S. D., Merz, C. N. B., & Sutton-Tyrrell, K. (2006). Comparison of SWAN and WISE menopausal status classification algorithms. *Journal of Women's Health, 15*(10), 1184-1194.

Lewis, D. M., & Cachelin, F. M. (2001). Body image, body dissatisfaction, and eating attitudes in midlife and elderly women. *Eating Disorders, 9*(1), 29-39. doi: 10.1080/106402601300187713

McLean, S. A., Paxton, S. J., & Wertheim, E. H. (2010). Factors associated with body dissatisfaction and disordered eating in women in midlife. *International Journal of Eating Disorders, 43*(6), 527-536. doi: 10.1002/eat.20737

Midlarsky, E., & Nitzburg, G. (2008). Eating disorders in middle-aged women. *The Journal of General Psychology, 135*(4), 393-407. doi: 10.3200/GENP.135.4.393-408

Patrick, J. H., Stahl, S. T., & Sundaram, M. (2011). Disordered eating and psychological distress among adults. *International Journal of Aging and Human Development, 73*(3), 209-226. doi: 10.2190/AG.73.3b

Peat, C. M., Peyerl, N. L., & Muehlenkamp, J. J. (2008). Body image and eating disorders in older adults: A review. *The Journal of General Psychology, 135*(4), 343-358. doi: 10.3200/GENP.135.4.343-358

Pruis, T. A., & Janowsky, J. S. (2010). Assessment of body image in younger and older women. *Journal of General Psychology, 137*(3), 225-238. doi: 10.1080/00221309.2010.484446

Puhl, R. M., Andreyeva, T. & Brownell, K. D. (2008). Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *International Journal of Obesity, 32*(6), 992-1000. doi: 10.1038/ijo.2008.22

Roy, M., & Payette, H. (2012). The body image construct among Western seniors: A systematic review of the literature. *Archives of Gerontology and Geriatrics, 55*(3), 505-521. doi: 10.1016/j.archger.2012.04.007

Rusticus, S. A., Hubley, A. M., Zumbo, B. D. (2008). Measurement invariance of the Appearance Schemas Inventory-Revised and the Body Image Quality of Life Inventory across age and gender. *Assessment, 15*(1), 60-71. doi: 10.1177/1073191107306805

Seeley, R. R., Stephens, T. D., & Tate, P. (2003). *Anatomy & Physiology* (6th ed.). New York, NY: McGraw-Hill Companies, Inc.

Slevec, J., & Tiggemann, M. (2011). Media exposure, body dissatisfaction, and disordered eating in middle-aged women: A test of the sociocultural model of disordered eating. *Psychology of Women Quarterly, 35*(4), 617-627. doi: 10.1177/0361684311420249

Thompson, W. R., Gordon, N. F., & Pescatello, L. S. (Eds.). (2010). *ACSM's guidelines for exercise testing and prescription* (8th ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.

U.S. Census Bureau. (2012a). *Educational attainment by selected characteristics: 2010* (Table 231). Retrieved from U.S. Census Bureau website: https://www.census.gov/compendia/statab/cats/education.html

U.S. Census Bureau. (2012b). *Selected characteristics of households, by total money income in 2011* (Table HINC-01). Retrieved from U.S. Census Bureau website: http://www.census.gov/hhes/www/cpstables/032012/hhinc/hinc01_000.htm

Wertheim, E. H., & Paxton, S. J. (2011). Body image development in adolescent girls. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 75-83). New York, NY: Guilford Press.

Yeager, D. S., Krosnick, J. A., Chang, L., Javitz, H. S., Levendusky, M. S., Simpser, A., & Wang, R. (2011). Comparing the accuracy of RDD telephone surveys and internet surveys conducted with probability and non-probability samples. *Public Opinion Quarterly, 75* (4), 709-747.

Chapter 2: Review of the Literature

The History of Body Image Research

Body image has been studied since the early 1900's. The original focus was on the neurological and physiological ways a person experienced his/her body after damage to the body or brain had occurred (Cash & Smolak, 2011). The shift to the current view of body image began in the 1930's. Paul Schilder is credited with moving the study of body image into a bio-psychosocial realm that considered neurological, psychological, and sociological factors. Seymour Fisher and Sidney Cleveland refined the definition of body image suggesting that feelings and attitudes towards one's body were develop through subjective experiences. They posited that it is those experiences and the manner in which they are organized by the individual that makes up one's body image (Fisher & Cleveland, 1968). In the late 1980's assessments began to focus on the perceptions of one's physical self (estimates of body size primarily) and/or attitudes about specific body parts (Anderson & LeGrand, 1991). This led to the body image research diverging into two paths. The first path continued to focus on the ways that disease or injury related experiences, life cancer or the loss of a body part, impacted body image. The second path examined how body image impacts life without targeting a disease or injury.

The second path gained momentum in the 1990's. Body image retained its definition, but the ways in which this definition was applied to research changed dramatically. Researchers began to focus on eating disorders, body dysmorphic disorder, and the impact that body image can have on the emotional and psychological development of adolescents and college students (Cash & Smolak, 2011). The study of body image has continued to expand, with the number of publications related to body image more than doubling in the 2000's compared to the 1990's.

The field of research has now looked beyond the white female college student to encompass a variety of contexts and populations (Cash & Smolak, 2011).

Development of Body Image

Body image is fluid and ever-changing in reaction to life experiences, changes in physical appearance, societal expectations, and cultural views regarding beauty and attractiveness (Bedford & Johnson, 2006; Chrisler & Ghiz, 1993; Hurd, 2000). It is an important component of one's self-concept and identity. It influences thoughts, the goals one sets, and the ability to carry out various activities (Chrisler & Ghiz, 1993).

Children begin comparing themselves to their peers around the age of 8. In fact, 40-50% of children ages 6 to 12 report dissatisfaction with at least one aspect of their body size and/or shape. This carries through into adolescence as body image is further shaped by family, peers, toys, media influences, and the medical profession. Gender differences can be seen as early as age 6. Boys tend to demonstrate a function-related body image, while girls tend to demonstrate an appearance-related body image (Smolack, 2011).

Body Image Development in Female Adolescents

Research into body image disturbance in female adolescents has identified multiple areas of concern: body weight and shape, facial and skin appearance, muscularity, fitness, and strength. The desire to be thin can start as early as preadolescence, with 40-50% of preadolescent females reporting the desire to be thinner. This increases to over 70% during adolescence. Adolescent females connect being thinner with being happier, healthier, and more attractive. Between one-third to over half of adolescent females report experimentation or regular use of extreme methods for weight loss such as crash dieting, fasting, laxative use, and vomiting. The Western beauty ideal depicts a level of thinness that is unattainable for most

women. Internal conflict can build as the adolescent female continues to compare herself to this unattainable standard (Wertheim & Paxton, 2011).

Body image in Adult Females

A link exists between body image and self-esteem, a person's sense of value and physical health (Brown et.al, 1990; Hayslip, et.al, 1997). Cash and Henry (1995) described body image as "a salient facet of self-concept, body image bears a moderate relationship to self-esteem and psychosocial adjustment (e.g., eating disturbances, depression, social anxiety, and sexual functioning)" (pg19). The Western culture's "ideal woman" is young, attractive, and slender (Grogan, 2011). Given that cultural views and societal expectations are a major component of body image, the simple act of aging can contribute to body image problems for adult women. Appearance-related signs of aging are in direct opposition of the image of the Western ideal women. Changes like graying hair can be covered with relative ease, but changes like wrinkles and sagging skin require more dramatic cosmetic procedures to reduce their appearance.

Coping strategies are often employed to address the discrepancies between one's current and ideal body image. More dramatic coping strategies, like cosmetic surgery, are gaining in acceptance and use (Clarke & Griffin, 2008; Clarke, Repta, & Griffin, 2008; Henderson-King & Henderson-King, 2005; Slevec & Tiggemann, 2010), but behavioral strategies are used most commonly. A higher level of body image dissatisfaction correlates with an increased number of weight control practices (Bedford & Johnson, 2006). In an attempt to control weight, women reported using laxatives, diuretics, dietary supplements, smoking, dieting, and exercise (Bedford & Johnson, 2006).

An increase in body weight can have a particularly powerful effect on women's evaluations of their bodies (Anderson & LeGrand, 1991). Multiple studies have identified a

positive correlation between BMI and body dissatisfaction (Algars et al., 2009; Anderson et al., 2002; Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Reboussin et al., 2000; Roy & Payette, 2012). Weight gain is also often associated with the aging process, despite the majority of the weight change being due to behavioral causes. Longitudinal data about the change of BMI through the aging process is scarce. Livshits et al. (2012) conducted a 15-year longitudinal study in the United Kingdom on 1,003 women with starting ages ranging from 45 to 68. They found that approximately 58% of their sample had age-related increases in BMI, 30.6% showed no age-related change, and 11.4% had an age-related decrease.

Flegal and Troiano (2000) examined the relationship between BMI, age, and gender using the data from the NHANES II and III databases. The mean and median BMI for women by decade increased each decade from 20's through 70s by between 1 and 2 BMI points respectively. A BMI of 25 to 30 indicates an individual is overweight, but not obese. Starting at the 30's, the mean BMI was at 25 or higher. The National Center for Health Statistics release a data brief in October of 2013 that presented findings on obesity prevalence in relation to age groups. A statistically significant difference in BMI prevalence was identified between age groups 20 to 39 (31.8%) and both 40 to 59 (38.5%) and 60 and over (38.1%). Age groups 40 to 59 and 60 and over did not demonstrate a significant difference with only 1.4% difference between them (Ogden et al., 2013).

Body Image and the Aging Population

Americans are living longer lives due to the advances that have been made in medical care. This has produced a growing population of older adults who are relatively healthy and active. Concerns no longer focus only on quantity of life, but on the quality of those extended years of life (Donatelle, 2011). Research into the effects of body image on older adults started in

the 1990's but became more prolific in the 2000's. Unfortunately, studies have yielded mixed results. Body image dissatisfaction (BID) has been found to remain stable across all age groups (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010; Tiggemann & Lynch, 2001; Webster & Tiggemann, 2003), older women have demonstrated more positive feelings towards their bodies than younger women (Franzoi & Koehler, 1998; Hetherington & Burnett, 1994), and older women have reported a more negative body image compared to younger women (Cash & Henry, 1995; Ross et al., 1989).

The variation in results may be related to the dates the studies were completed. Studies that found differences, both positive and negative, were published in the late 1980's through late 1990's. In contrast, the studies indicating similar levels of body dissatisfaction were primarily conducted after 2001. Two factors could be involved: first, the mentality around body image and the assessments used have changed over the past two decades, and second, the attitudes of the women may have changed.

Roy and Payette (2012) conducted a systematic review of the literature on older adults and body image. Their review yielded 83 articles that passed a quality assessment to be included in their study. The results of the analysis indicated that there were more similarities than differences between the way body image impacted older and younger adults. Dissatisfaction with one's body and misperception of body size have been reported by both younger and older adult women (Bedford & Johnson, 2006; Janelli, 1986; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010; Tiggemann & Lynch, 2001; Webster & Tiggemann, 2003). Similarities also include the types of behaviors that were initiated in response to body image, a desire to lose weight and the existence of mental and physical consequences related to body image (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). Bedford and Johnson (2006)

also found that the most significant determinant of body image dissatisfaction for both older and younger women was pressure from the media to be thin.

Despite the many similarities, differences have been found between the younger and older populations. Older women have indicated less drive for thinness than younger women while still maintaining similar levels of body dissatisfaction (Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). Older women also report participating in more activities directed at countering the effects of aging than younger women (Baker & Gringart, 2009). Older adults place a higher value on body function over appearance. A stronger link exists between negative body image and higher manifestation of chronic diseases and cancer in the older adults. However, the difference in chronic disease manifestation may be due in part to the prevalence of these issues in the older population which allowed for easier assessment of the correlation (Roy & Payette, 2012).

Kathleen Slevin (2010) conducted interviews with 31 women between the ages of 60 and 89. Predominant themes that emerged from the interviews included: (1) the fear of getting old and particularly looking old; (2) lack of attention from men made heterosexual women perceive themselves as looking older; (3) all were motivated to fight the aging process and resist the social perception of being old; and (4) all developed mechanisms for maintaining a youthful appearance.

The Transition to Menopause

Menopause is the cessation of menses for at least 12 consecutive months. Around the time of menopause, a woman's body makes progressively less of the hormones progesterone and estrogen. Onset is typically between the ages of 45 and 55 (Center for Disease Control and Prevention, 2012). Changing hormones cause a woman's body to experience any or all of a

number of symptoms: hot flashes, trouble sleeping, vaginal dryness, urinary incontinence, mood changes, forgetfulness, stiff joints and muscles, muscle loss and fat gain (Office on Women's Health, 2010).

The changes brought on by menopause may affect how a woman feels about her body, thereby potentially effecting body image. Yet very little research has been conducted on this relationship. Most of the studies that look at menopause and body image are focused on women who experienced early onset of menopause due to medical reasons, like cancer, making the findings hard to generalize to the overall female population. The few studies that have been conducted were unable to identify a link between menopause and body image that was not potentially caused by age (Deeks & McCabe, 2001; Koch, Mansfield, Thurau, & Carey, 2005). Thus, the relationship between menopause, age, and body image is still unclear.

Generational Differences

A transition of the generations is taking place in the United States aging population. A generation is defined by demographics and major events that are experienced by a cohort (Zemke, 2001). These shared events help shape a generational persona that encompasses attitudes, values, religion, gender roles, lifestyles, and beliefs about family. These defining concepts do not tend to change with age (Strauss & Howe, 1997).

The Veteran Generation was born in 1922 to 1943 (ages 69 to 90). They experienced the Great Depression, World War II, and the Korean War. They have a tendency toward conformity, conservative spending, belief in hard work, and adherence to rules and duty before pleasure. This group is followed by the Boomers who were born between 1943 and 1960 (ages 52 to 69). They experienced the Civil Rights Movement, the Cold War, prosperity, television, the space

race, and the rise of the suburbs. They tend to value optimism, teamwork, youth, personal growth, personal gratification, and health and wellness (Zemke, 2001).

As evidenced by the descriptions, the Veterans and the Boomers have many differences that can be very polarizing. The Veterans would have been between the ages of approximately 52 to 78 years during the 1990's when the initial research on adults was performed. Generational persona may be impacting the results beyond just age.

McLaren and Kuh (2004) discuss the potential of a cohort effect on body image evaluation results. The cohort effect is when "women of a particular birth era may retain standards of beauty from when they were young, and use these standards to evaluate their current body" (pg 36). They go on to explain that prior to the 1960s the emphasis on low body weight was somewhat less strict and that it can be hard to distinguish between the effects of age and the effects of retained standards.

Research related to generational differences in body image was not found. This may be due to the fairly young nature of the current line of body image research. At this time, it would be difficult to distinguish generational differences from true age-related differences. However, this line of research may become more accessible as we are able to compare the research from this decade to research in future decades.

References

Algars, M., Santtila, P., Varjonen, M., Witting, K., Johansson, A., Jern, P., & Sandnabba, N. K. (2009). The adult body: How age, gender, and body mass index are related to body image. *Journal of Aging and Health, 21*(8), 1112-1132. doi: 10.1177/0898264309348023

Anderson, L. A., Eyler, A. A., Galuska, D. A., Brown, D. R., & Brownson, R. C. (2002). Relationship of satisfaction with body size and trying to lose weight in a national survey of overweight and obese women aged 40 and older, United States. *Preventive Medicine, 35*(4), 390-396. doi: 10.1006/pmed.2002.1079

Anderson, B. L., & LeGrand, J. (1991). Body image for women: Conceptualization, assessment, and a test of its importance to sexual dysfunction and medical illness. *The Journal of Sex Research, 28*(3), 457-477.

Baker, L., & Gringart, E. (2009). Body image and self-esteem in older adulthood. *Aging & Society, 29*(6), 977-995. doi: 10.1017/S0144686X09008721

Bedford, J. L., & Johnson, C. S. (2006). Societal influences on body image dissatisfaction in younger and older women. *Journal of Women and Aging, 18*(1), 41-55. doi: 10.1300/J074v18n01_04

Brown, T. A., Cash, T. F., & Mikulka, P. J. (1990). Attitudinal Body-Image assessment: Factor analysis of the Body-Self Relations Questionnaire. *Journal of Personality Assessment. 55*(1&2), 135-144.

Cash, T. F., & Henry, P. E. (1995). Women's body images: The results of a national survey in the U.S.A. *Sex Roles*, 33(1-2), 19-28. doi: 10.1007/BF01547933

Cash, T. F., & Smolak, L. (2011). Understanding body images: Historical and contemporary perspectives. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 3-10). New York, NY: Guilford Press.

Centers for Disease Control and Prevention. (2012). *Women's reproductive health: Menopause*. Retrieved from the CDC website: http://www.cdc.gov/reproductivehealth/womensrh/menopause.htm

Chrisler, J. C., & Ghiz, L. (1993). Body image issues of older women. *Women & Therapy, 14*(1-2), 67-75. doi: 10.1300/J015v14n01_07

Clark, L. H., & Griffin, M. (2008). Visible and invisible aging: beauty work as a response to ageism. *Aging & Society, 28*(5), 653-674. doi: 10.1017/S0144686X07007003

Clark, L. H., Repta, R., & Griffin, M. (2007). Non-surgical cosmetic procedures: Older women's perceptions and experiences. *Journal of Women & Aging, 19*(3/4), 69-87. doi: 10.1300/J074v19n03_06

Deeks, A. A., & McCabe, M. P. (2001). Menopausal stage and age and perceptions of body image. *Psychology & Health, 16*(3), 367-379. doi: 10.1080/08870440108405513

Donatelle, R. J. (2010). *Health: The basics* (Green ed.). San Francisco, CA: Pearson Education, Inc

Fisher, S., & Cleveland, S. E. (1968). *Body image and personality* (2nd ed.). New York, NY: Dover Publications.

Flegal, K. M., & Troiano, R. P. (2000). Changes in the distribution of body mass index of adults and children in the US population. *International Journal of Obesity, 24,* 807-818.

Franzoi, S. L., & Koehler, V. (1998). Age and gender differences in body attitudes: A comparison of young and elderly adults. *International Journal of Aging and Human Development, 47*(1), 1-10.

Grogan, S. (2011). Body image development in adulthood. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 93-96). New York, NY: Guilford Press.

Hayslip, B., Cooper, C. C., Dougherty, L. M., & Cook, D. B. (1997). Body image in adulthood: A projective approach. *Journal of Personality Assessment, 68*(3), 628-649.

Henderson-King, D., & Henderson-King E. (2005). Acceptance of cosmetic surgery: Scale development and validation. *Body Image, 2*(2), 137-149. doi: 10.1016/j.bodyim.2005.03.003

Hetherington, M. M., & Burnett, L. (1994). Ageing and the pursuit of slimness: Dietary restraint and weight satisfaction in elderly women. *British Journal of Clinical Psychology, 33*(3), 391-400.

Hurd, L. C. (2000). Older women's body image and embodied experience: An exploration. *Journal of Women and Aging, 12*(3/4), 77-97.

Janelli, L. M. (1986). The realities of body image.*Journal of Gerontological Nursing, 12*(10), 23-27.

Koch, P. B., Mansfield, P. K., Thurau, D., & Carey, M. (2005). "Feeling frumpy": The relationships between body image and sexual response changes in midlife women. *Journal of Sex Research, 42*(3), 215-223. doi: 10.1080/00224490509552276

Lewis, D. M., & Cachelin, F. M. (2001). Body image, body dissatisfaction, and eating attitudes in midlife and elderly women. *Eating Disorders, 9*(1), 29-39. doi: 10.1080/106402601300187713

Livshits, G., Malkin, I., Williams, F. M. K., Hart, D. J., Hakim, A., & Spector, T. D. (2012). Longitudinal study of variation in body mass index in middle-aged UK females. *Age, 34*(5), 1285-1294. doi 10.1007/s11357-011-9299-0

McLaren, L. & Kuh D. (2004). Body dissatisfaction in midlife women. *Journal of Women & Aging, 16*(1), 35-54. doi: 10.1300/J074v16n1_04

Office on Women's Health (2010). *Menopause Basics*. Retrieved from the Womenshealth.gov website: https://www.womenshealth.gov/menopause/menopause-basics/index.html

Ogden, C. L., Carroll, M. D., Kit, B. K., Flegal, K. M. (2013). Prevalence of obesity among adults: United States 2011-2012. National Center for Health Statistics, Data Brief 131.DHHS Publication No 2014-1209 CS 243446.

Pruis, T. A., & Janowsky, J. S. (2010). Assessment of body image in younger and older women. *Journal of General Psychology, 137*(3), 225-238. doi: 10.1080/00221309.2010.484446

Reboussin, B. A., Rejeski, W. J., Martin, K. A., Callahan, K., Dunn, A. L., King, A. C., & Sallis, J. F. (2000). Correlates of satisfaction with body function and body appearance in middle- and older aged adults: The Activity Counseling Trial (ACT). *Psychology and Health, 15*(2), 239-254. doi: 10.1080/08870440008400304

Ross, M. J., Tait, R. C., Grossberg, G. T., Handal, P. J., Brandeberry, L., & Nakra, R. (1989). Age differences in body consciousness. *Journal of Gerontology*, *44*(1), 23-24.

Roy, M., & Payette, H. (2012). The body image construct among Western seniors: A systematic review of the literature. *Archives of Gerontology and Geriatrics, 55*(3), 505-521. doi: 10.1016/j.archger.2012.04.007

Slevec, J., & Tiggemann, M. (2010). Attitudes toward cosmetic surgery in middle-aged women: Body image, aging anxiety, and the media. *Psychology of Women Quarterly*, *34*, 65-74.

Slevin, K. F. (2010). "If I had lots of money…I'd have a body makeover." Managing the aging body. *Social Forces, 88*(3), 1003-1020.

Smolak, L. (2011). Body image development in childhood. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.) [Kindle version] (pp. 67-75). New York, NY: Guilford Press.

Strauss, W., & Howe, N. (1997). *The fourth turning*. New York, NY: Broadway Books.

Tiggemann, M., & Lynch, J. E. (2001). Body image across the life span in adult women: The role of self-objectification. *Developmental Psychology, 37*(2), 243-253.

Webster, J., & Tiggeman, M. (2003). The relationship between women's body satisfaction and self-image across the life span: The role of cognitive control. *Journal of Genetic Psychology, 164*(2), 241-252.

Wertheim, E. H., & Paxton, S. J. (2011). Body image development in adolescent girls. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 75-83). New York, NY: Guilford Press.

Zemke, R., Raines, C., & Filipczak, B. (2000).*Generations at work: Managing the clash of Veterans, Boomers, Xers and Nexters in your workplace*. New York, NY: AMACOM.

Chapter 3: Methods

Data Management

Data were collected through SurveyMonkey®, one of the world's largest web-based survey companies ("Everything you wanted to know," n.d.). SurveyMonkey® identified participants from two member groups, SurveyMonkey® Contribute and SurveyMonkey® ZoomPanel. The two groups maintain a combined membership of close to one million people with thousands of new members joining daily ("Who is the SurveyMonkey® Audience," n.d.). SurveyMonkey® limits the number of surveys sent to the individuals in these groups in order to discourage professional survey takers and over-participation ("Reach your target audience," n.d.).

Incentives for completing the survey were given based upon member group. SurveyMonkey® Contribute members had a donation of $0.50 sent to a pre-designated charity of their choice and were entered in a $100 instant win sweepstake. SurveyMonkey® ZoomPanel members were awarded points that could be redeemed for merchandise, sweepstakes entries, or gift cards. Multiple surveys must be completed for ZoomPanel members to accrue enough points to redeem rewards ("Who is the SurveyMonkey® Audience," n.d.).

Data Security and Anonymity

SurveyMonkey® offers multiple data protection methods. Data transferred through SurveyMonkey® is protected using secure sockets layer (SSL) encryption that is similar to those used by online banking sites ["What is the enhanced security option (SSL encryption)?" n.d.]. Information is then stored in servers in a United States data center that is under surveillance and staffed at all times. Multiple backups and data protection practices are performed daily

("Security statement," n.d.). To preserve the anonymity of the respondents, SurveyMonkey® did not save the IP addresses ("How do I make surveys anonymous?" n.d.).

Instrumentation

The survey included two instruments: the Body Image Quality of Life Inventory (BIQLI) (Cash, 2002) and the Body-Image Ideals Questionnaire (BIQ)(Cash & Szymanski, 1995). Participants were also asked questions about cosmetic procedures. First, they were given a list of cosmetic procedures and extreme behaviors, and were asked if they had ever participated in the items on the list or planned to participate in them over the next three years. Next, they were given a list that had only cosmetic procedures and were asked if they would participate in the behaviors if cost and/or pain were not a concern. The cosmetic procedure questions and the BIQ are not included in further discussion, as they were not analyzed for the manuscripts associated with this dissertation.

Questions addressing other key areas of interest were included and used in the manuscript analysis. A question about relationship status was asked with the intent of determining whether or not the participant was currently involved with or interested in seeking a romantic or sexual partner. The purpose of another question was to identify where each participant was in relation to menopause. Height and weight were requested in order to determine body mass index (BMI). Other demographic questions included year of birth, sexual orientation, race, educational attainment, income, and state of residence. Exact wording for all of the demographic questions can be found in Appendix A.

Measures

The BIQLI measures the impact of body image on a person's quality of life. The inventory has 19 items which are answered on a 7-point bipolar scale that ranges from -3 to 3.

Response descriptions are “very negative effect” (-3), “moderate negative effect” (-2), “slight negative effect” (-1), “no effect” (0), “slight positive effect” (1), “moderate positive effect” (2) and “very positive effect” (3). The responses to all 19 items are averaged to yield one score, with higher numbers equating to higher quality of life (Cash, 2002). Items within the scale address interactions with others, personal feelings about self, personal ability, and personal habits.

Validation of the BIQLI

The BIQLI was originally validated for both female and male college students by Cash and Fleming in 2002. The survey was administered twice over a two- to three-week period. The internal consistency using Cronbach’s alpha was .95 for both administrations. None of the items reduced the composite score’s reliability. The test-retest reliability was .79 (Cash & Fleming, 2002).

A validation study, that included middle-aged and older adults, was conducted by Rusticus, Hubley, and Zumbo (2008). Their study examined the Appearance Schemas Inventory-Revised (ASI-R) and the BIQLI using a sample of 1,262 adults between the ages of 18 and 98 years. The purpose of the study was to determine if inventory validity was maintained when making score comparisons across age and gender groups. The BIQLI test results indicated that observed means could be compared across all age and gender groups with confidence. Three age categories were used to subdivide the sample, two of which are of interest to the current study. The middle age group ranged from 30 to 54 years of age, with 267 women (M = 40.6, SD = 7.5) and 131 men. The older adulthood age group included participants who were 55 years and older, with 209 women (M = 67.0, SD = 8.9) and 106 men. Three items on the BIQLI had significant amounts of missing data: item 6 (work and school experiences), item 11

(acceptability as a sexual partner), and item 12 (personal sex life). Tests on the data were run both with the inclusion and exclusion of these three items. Participants missing data on one or more of the three items were removed from the analysis when the questions were included. No differences were identified after comparing the mean score for both methods (Rusticus et al., 2008).

Rusticus et al. (2008) examined three levels of measurement invariance for the BIQLI. The first level was configural invariance, which examines overall model fit. Three indices were used to evaluate the configural invariance: comparative fit index (CFI), non-normed fit index (NNFI), and the consistent Akaike information criteria (CAIC). Acceptable fit for the CFI and NNFI is indicated by values of .90 or higher. Acceptable fit for CAIC occurs when the full model CAIC is less than the combination of the independence and saturated CAIC. Configural invariance was met; all three indices demonstrated acceptable fit, with the CFI equal to .93, the NNFI equal to .91, and the model CAIC (7,059) being less than the independence (60,699) and saturated (9,230). The second and third levels of invariance were metric and scalar. Metric invariance indicates similarity among the groups in how they interpret and respond to the measure. Scalar invariance indicates that regardless of group membership, a similar value on both the latent and observed variables would be obtained by a given individual. If scalar invariance is not met, a bias likely exists in how the groups responded. Both levels were assessed using chi-square and change in chi-square. Greater emphasis was placed on the change in chi-square since chi-square scores can be very sensitive to sample size. In both cases, the chi-square scores were not acceptable, but the change in chi-square was acceptable (Rusticus et al., 2008).

Participants

The goal was to obtain 800 women living in the United States between the ages of 40 and 79, with a breakdown of 200 women per decade. A total of 1,039 people started the survey. The entire survey was completed by 955 people. Eight people were disqualified, four were men and four were outside of the targeted age range. The remaining 947 women represented a completion rate of 91%. The targeted 200 per decade was not quite reached for women ages 40-49 (*M* = 44.69, *SD* = 2.87), with a total of 195 women. The three other decades had higher response rates than targeted: 219 respondents were ages 50 to 59 (*M* = 54.62, *SD* = 2.83), 271 respondents were ages 60 to 69 (*M* = 64.18, *SD* 2.82), and 262 respondents were ages 70 to 79 (*M* = 73.41, *SD* = 2.71).

A SurveyMonkey® Audience was used to collect the data with the hope that the sample would be more representative of the population of the United States than a sample collected in specific geographic locations. Forty-seven states and the District of Columbia were represented (no responses from North Dakota, South Dakota, and Delaware). The states were divided into four regions: Northeast, Southern, Western, and Midwest, using the definitions of the 2010 U.S. Census. The percentages for the U.S. included both genders, ages 45 and older, due to the reporting format of the U.S. Census. The sample percentage was 1% smaller than the U.S. population in the Northeast region, 2% smaller in the Western region, and 3% smaller in the Southern region. The sample percentage for the Midwest region was 6% larger than the U.S. population (Howden & Meyer, 2011).

The 2010 U.S. Census reports educational attainment by age for both sexes combined only. The percentages of educational attainment by sex for all ages are within 1.2% for all educational categories except for the associate's/vocational degree category where women

reported 2.2% more attainment (U.S. Census Bureau, 2010). Due to the low variance between sexes, the sample data were compared to the population data by age category without consideration for sex. The educational attainment of the sample was higher than the U.S. population, with the major differences existing among the lower three categories. The sample had lower percentages of people reporting no high school degree (-10%) and high school degree (-8%), while 13% more of the sample reported some college without a degree. The sample had a slightly higher level of attainment than the U.S. population for associate's degree (2%), bachelor's degree (2%), and advanced degree (1%)(U.S. Census Bureau, 2010).

Data for household income in the 2010 U.S. Census reports are divided into the same age groups as the educational attainment reports. Ages 45 to 74 were used from the sample data for comparison. The sample population had higher percentages than the U.S. population for $25,000 to $49,999 (9%) and $50,000 to $74,999 (4%). Percentages were the same for the $75,000 to $99,999 and slightly lower (by 1%) than the U.S. population for $0 to $24,999. The sample was lower than the U.S. population in the top three categories: $100,000 to $149,999 (-4%), $150,000 to $199,999 (-4%), and $200,000 and up (-3%)(U.S. Census Bureau, 2012).

Participants were required to choose only one of five race/ethnicity options: American Indian or Alaskan Native, Asian/Pacific Islander, Black or African American, Hispanic American, and White/Caucasian. The sample was comprised of 81% Caucasian participants, which is 8% higher than the U.S. population. The sample and U.S. population had the same percentage for American Indian/Alaskan Natives (1%). Asian/Pacific Islanders (1.5%) and African Americans (6%) were both underrepresented in the sample when compared to the U.S. population at 5% Asian/Pacific Islanders and 12% African Americans (U.S. Census Bureau, 2013). The sample had 2.5% of the women claiming Hispanic American only, but a comparison

to the U.S. population was not possible. The U.S. Census reports data for Hispanic American in combination with other races, and not as a separate category.

Table 1
Percentage of Sample by Demographic Variable

	Total (n=947)		40s (n=195)		50s (n=219)		60s (n=271)		70s (n=262)	
BMI Category* (n)										
Underweight	1.0	(9)	1.5	(3)	1.8	(4)	0.70	(2)	0.0	(0)
Normal Weight	29.9	(283)	35.9	(70)	30.1	(66)	24.4	(66)	30.9	(81)
Overweight	28.8	(273)	23.1	(45)	27.4	(60)	27.3	(74)	35.9	(94)
Obese I & II	31.5	(298)	29.7	(58)	31.5	(69)	37.3	(101)	26.7	(70)
Obese III	8.9	(84)	9.7	(19)	9.1	(20)	10.3	(28)	6.5	(17)
missing	0.0	(0)	0.0	(0)	0.0	(0)	0.0	(0)	0.0	(0)
Relationship Status (n)										
In Relationship	63.7	(603)	80.5	(157)	64.8	(142)	64.9	(176)	48.9	(128)
Single and Looking	15.6	(148)	12.3	(24)	19.2	(42)	17.0	(46)	13.7	(36)
Single and Not Looking	20.2	(191)	6.2	(12)	15.5	(34)	17.7	(48)	37.0	(97)
missing	0.5	(5)	1.0	(2)	0.50	(1)	0.4	(1)	0.4	(1)
Menstrual Status (n)										
Pre/Peri-Menopausal	21.2	(201)	79.5	(155)	19.6	(43)	1.1	(3)	0.0	(0)
Postmenopausal	75.0	(710)	15.9	(31)	75.8	(166)	95.2	(258)	97.3	(255)
missing	3.8	(36)	4.6	(9)	4.6	(10)	3.7	(10)	2.7	(7)
Sexual Orientation (n)										
Heterosexual	96.4	(913)	95.8	(187)	95.0	(208)	97.8	(265)	96.6	(253)
Bisexual	1.5	(14)	2.6	(5)	2.7	(6)	0.4	(1)	0.8	(2)
Gay/Lesbian	0.8	(8)	0.5	(1)	0.9	(2)	0.7	(2)	1.1	(3)
Unsure	0.8	(8)	0.0	(0)	0.9	(2)	1.1	(3)	1.1	(3)
missing	0.5	(5)	1.0	(2)	0.5	(1)	0.4	(1)	0.4	(1)

*BMI was divided using the following categories: underweight (≤ 17.9), normal weight (18.0-24.9), overweight (25.0-29.9), obese I (30.0-34.9), obese II (35.0-39.9), and obese III (≥ 40.0)

Statistical Analysis for BIQLI Validation Article

The BIQLI has been validated for young adults (Cash & Flemming, 2002). It was also shown to have robustness when comparing means across all age and gender groups (Rusticus et al., 2008). The purpose of performing the validation for this study was to determine if the BIQLI was reliable and valid for use in older adults. Given the potential differences between different decades, the analysis was run on the entire sample and on each decade individually. Internal

consistency was tested using Cronbach's alpha. An exploratory principal component analysis with varimax rotation was conducted for one, two, and three factors using an eigenvalue of at least 1. Individual items and their means were examined to determine if all questions should be kept in the inventory.

Statistical Analysis for the BIQLI Results Article

Tests for the ANOVA assumptions were conducted and violations were identified. The Levene statistic was significant for all tests indicating a violation of the homogeneity of variance assumption. To account for the violation, Welch's adjusted *F* statistic was used. Tamhane's T2 was used for post hoc testing due to its ability to handle unequal variances. Normality was initially examined for BMI category, decade, educational attainment, two-category menopause, three-category menopause, and the BIQLI total scores using the Shapiro-Wilk test. All tests returned significant results indicating a violation of the normality assumption. This finding was not surprising, considering the large sample size; therefore, skewness and kurtosis scores were examined to determine the degree of non-normality. None of the scores yielded a value greater than .80, indicating that the violation was not big enough to substantially impact the outcome of the statistical tests (Maxwell & Delaney, 2004). Issues with cell sizes made factorial ANOVAs unusable. One-way ANOVAs were used to examine the relationship between total BIQLI score and six variables: decade, BMI, menopause status, relationship status, educational attainment, and household income. Pearson correlations were also obtained for these variables to determine strength and direction of the relationships.

References

Cash T. F. (2002). *BIQLI: Body Image Quality of Life Inventory* [inventory and manual]. Released by Body Images Research Consulting, Naples, FL. Ordered from http://www.body-images.com/assessments/

Cash, T. F., & Fleming, E.C. (2002). The impact of body-image experiences: Development of the Body Image Quality of Life Inventory. *International Journal of Eating Disorders*, *31*, 455-460.

Cash, T. F., & Szymanski, M. L. (1995). The development and validation of the Body-Image Ideals Questionnaire. *Journal of Personality Assessment*, *64*(3), 466-477.

Everything you wanted to know, but were afraid to ask. (n.d.). Retrieved from SurveyMonkey® website: http://www.SurveyMonkey®.com/mp/aboutus/

How do I make surveys anonymous? (n.d.). Retrieved from SurveyMonkey® website: http://help.SurveyMonkey®.com/app/answers/detail/a_id/335/c/10

Howden, L. M., & Meyer, H. A. (2011). Age and sex composition: 2010. 2010 Census Briefs (Census Publication No.C2010BR-03). Retrieved from U.S. Census Bureau website: http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf

Maxwell, S. E., & Delaney, H. D. (2004). *Designing experiments and analyzing data: A model comparison perspective* (2nd ed.). New York, New York: Psychology Press, Taylor & Francis Group.

Reach your target audience. (n.d.). Retrieved from SurveyMonkey® website: http://www. SurveyMonkey®.com/mp/audience/

Rusticus, S. A., Hubley, A. M., & Zumbo, B. D. (2008). Measurement invariance of the Appearance Schemas Inventory-Revised and the Body Image Quality of Life Inventory across age and gender. *Assessment*, *15*(1), 60-71.

Security statement.(n.d.). Retrieved from SurveyMonkey® website: http://www.SurveyMonkey®. com/mp/policy/security/ on November 1, 2012.

U.S. Census Bureau. (2012a). *Selected characteristics of households, by total money income in 2011* (Table HINC-01). Retrieved from U.S. Census Bureau website: http://www. census.gov/hhes/www/cpstables/032012/hhinc/hinc01_000.htm

U.S. Census Bureau. (2012b). Educational attainment by selected characteristics: 2010 (Table 231). Retrieved from U.S. Census Bureau website: https://www.census.gov/compendia/ statab/cats/education.html

U.S. Census Bureau. (2013). *Annual estimates of the resident population by sex, age, race and Hispanic origin for the United States and States: April 1, 2010 to July 1, 2012*. Retrieved from U.S. Census Bureau website: http://factfinder2.census.gov/faces/tableservices/jsf/ pages/productview.xhtml?src=bkmk

What is the enhanced security option (SSL encryption)? (n.d.). Retrieved from SurveyMonkey® website: http://help.SurveyMonkey®.com/articles/en_US/kb/What-is-the-enhanced-security-option-SSL-encryption

Who is the SurveyMonkey® Audience? (n.d.). Retrieved from the SurveyMonkey® website: http://help. SurveyMonkey®.com/app/answers/detail/a_id/5654

Appendix A: Demographic Questions

In what state or U.S. territory do you life? Drop down menu provided

In what year were you born? (enter 4-digit birth year; for example, 1976) _____

Which race/ethnicity best describes you? (Please choose only one.)
- American Indian or Alaskan Native
- Asian / Pacific Islander
- Black or African American
- Hispanic American
- White / Caucasian

What is your height in feet and inches? (Remove shoes before measuring.)
- Feet _____
- Inches _____

What is your current weight in pounds? _____

What is the highest level of school you have completed or the highest degree you have received?
- Less than high school degree
- High school degree or equivalent (e.g. GED)
- Some college but no degree
- Associate degree
- Bachelor degree
- Graduate degree

What is your approximate average household income?
- $0-$24,999
- $25,000-$49,999
- $50,000-$74,999
- $75,000-$99,999
- $100,000-$124,999
- $125,000-$149,999
- $150,000-$174,999
- $175,000-$199,999
- $200,000 and up

Which of the following best describes your current relationship status?
- I am in a monogamous committed relationship
- I am in an open committed relationship
- I am in a casual dating relationship
- I am not in a relationship, but I want to be in a relationship
- I am not in a relationship and I do not want to be in a relationship

Which of the following best describes your sexual orientation?

- Heterosexual
- Bisexual
- Gay/Lesbian
- Unsure

Identify which of the following statements best descries your menstrual cycle? Symptoms of menopause include irregular periods, hot flashes, sleep disturbances, mood swings, vaginal dryness, thinning hair, increased abdominal fat and loss of breast fullness.

- I have not experienced menopause yet
- I have had a menstrual cycle in the past 12 months, but I am experiencing symptoms of menopause
- I have NOT had a menstrual cycle in the past 12 months and I am still experiencing symptoms of menopause
- I no longer experience any symptoms of menopause
- Other (please specify)

Appendix B

January 4, 2013

MEMORANDUM

TO:	Rachel Avants Jean Henry
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	12-12-359
Protocol Title:	*The Impact of Body Image on Women in Later Life: Effects on Quality of Life and Body Perception*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 01/04/2013 Expiration Date: 01/03/2014

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 800 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu

Chapter 4: Validation of the Body Image Quality of Life Inventory in adult women between the ages of 40 and 79

Abstract

Physical, mental, and emotional changes can occur throughout the aging process. Even the possibility of these changes makes it important to treat different age groups as separate populations when researching body image. Many instruments have been used to study body image in adult women, but very few have been validated for middle-aged and older adults. This study utilized an online survey to perform a validation of the Body Image Quality of Life Inventory (BIQLI), with a sample of 947 women, ages 40-79, from across the United States. Convergent validity and a principal component analysis (PCA) support the use of the BIQLI for women ages 40 to 79. Distinct two- and three-factor patterns were found, but they differed for each decade. Therefore, a one-factor model is strongly suggested when comparing across age groups.

Introduction

Body image is an important component of a person's self-concept and identity (Chrisler & Ghiz, 1993). It is made up of the perceptions, thoughts, and feelings a person has about his/her own body (Cash & Smolak, 2011). Negative body image has been described as negative thoughts about one's own body (Cash & Smolak, 2011) and the discrepancy between a person's ideal and current body image (Bedford & Johnson, 2006). Negative body image has been linked to depression (Gavin, Simon, & Ludman, 2010; Reboussin et al., 2000), clinical eating disorders (Peat, Peyerl, & Muehlenkamp, 2008), utilization of unhealthy weight loss strategies (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Patrick, Stahl, & Sundaram, 2011; Slevec &

Tiggemann, 2011), and cosmetic procedures (Clarke & Griffin, 2008; Clarke, Repta, & Griffin, 2008; Henderson-King & Henderson-King, 2005; Slevec & Tiggemann, 2011).

Body image has primarily been studied in young adult females (Grogan, 2011), though recently the field has been expanding to include both genders and a wider age range (Roy & Payette, 2012, Slevec & Tiggemann, 2011; Tiggemann, 2004). An area of interest is determining how body image impacts generally healthy women across the lifespan. However, there is a shortage of validated instruments to measure body image in older adults (Roy & Payette, 2012).

The Body-Cathexis Self-Cathexis (Secord & Jourard, 1953) and the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987) focus primarily on measuring levels of body satisfaction. The Body Esteem Scale has three subscales that measure attitudes about weight concern, sexual attractiveness, and physical condition (Franzoi, 1994). All three inventories have been used in older adult populations (Cornwell & Schmidt, 1990; Ferraro, Muehlenkamp, Paintner, Wasson, Hager, & Hoverson, 2008; Franzoi & Koehler, 1998; Janelli, 1988; Lentillon-Kaestner, Berchtold, Rousseau, & Ferrand, 2013), but evidence of the scales being validated for older adults was not found. Pictorial representations of varying body sizes, like Stunkard Silhouettes, have been used with some degree of frequency in older adults (Hallinan & Schuler, 1993; Lewis & Cachelin, 2001; Schuler, Broxon-Hutherson, Philipp, Ryan, Isosaari, & Robinson, 2004; Schuler et al., 2008). However, they are only able to indicate discrepancy between current perceived body size and perceived ideal body size.

The Multidimensional Body-Self Relations Questionnaire (MBSRQ) and its abbreviated version, the MBSRQ-Appearance Scales (MBSRQ-AS), have also been used in older adults (Cash & Henry, 1995; Rusticus & Hubley, 2006). The MBSRQ measures feelings toward and/or

investment in appearance, health, fitness, being or becoming ill, and body size. The MBSRQ was initially validated using an age range of 15 to 87 years (Brown, Cash, & Mikulka, 1990). However, Rusticus and Hubley (2006) found that some of the subscales were not comparable across age and gender groups.

The Appearance Schemas Inventory-Revised (ASI-R) is a 20-item inventory with two subscales, self evaluative salience and motivational salience. It measures the level of importance placed on personal appearance, the impact that has on the person's self-definition, and how much effort is spent in appearance-managing behaviors (Cash, Melnyk, & Hrabosky, 2004). It was validated for use across genders and age groups by Rusticus, Hubley, and Zumbo (2008), using a sample of 1,262 adults between the ages of 18 and 98 years. However, its usage in non-college students is mostly limited to women with a mean age around 40 to 45 (Muise & Desmarais, 2010; Slevec & Tiggemann, 2010; Slevec & Tiggemann, 2011).

Although the measurement of body satisfaction and perception is important, it is also necessary to understand the impact of body image upon daily life. The purpose of this study was to validate an instrument that measures how body image impacts daily life for an older population of women. Three inventories were identified for potential use: the ASI-R, the Body Image Coping Strategies Inventory (BICSI), and the Body Image Quality of Life Inventory (BIQLI). As mentioned above, the ASI-R explores the impact on daily life through evaluation of the effort spent in appearance-managing behaviors (Cash et al, 2004) and has been used with adult samples (Muise & Desmarais, 2010; Rusticus et al., 2008; Slevec & Tiggemann, 2010; Slevec & Tiggemann, 2011). The BICSI is a 29-item measure that examines a person's coping tendencies when faced with negative body image situations (Cash, Santos, & Williams, 2005), but examples of its use in adult populations were not found. The BIQLI is a 19-item inventory

that is used to measure the impact of body image on quality of life (Cash, 2002). Evidence of the BIQLI being used in an older adult population that was not disease or condition specific was not readily found. However, Rusticus et al. (2008) examined the measurement invariance of the BIQLI and found that it could be compared across age and gender groups.

Previous Validation of the Body Image Quality of Life Inventory

The BIQLI was initially validated with 116 college-age women. A test-retest model was used with two to three weeks between testing. The test-retest reliability was .79 and Cronbach's alpha was .95 for both administrations. The means were similar and the item scale correlations ranged from .46 to .86 (Cash & Flemming, 2001). A second validation was conducted with 603 college students, 135 men and 468 women. The test-retest reliability was the same as the original validation at .79 and internal consistency was .94 for both sexes. An exploratory principal component analysis with varimax rotation was conducted and all factors above 1 eigenvalue were examined. It was determined that a single-factor solution was best. Single factor loadings for the entire sample ranged from .49 to .85, with 50.1% of variance accounted for in the set of items. Females alone had single factor loadings ranging from .45 to .85, with 50.7% variance explained (Cash, Jakatdar, & Williams, 2003).

Only one study was found that performed BIQLI validation for an adult population that was not focused on a specific disease or condition. Rusticus et al. (2008) looked at the measurement invariance of the BIQLI using 2,262 adults between the ages of 18 and 98. The sample was divided by gender and into three age categories, two of which are of interest to the current study. The middle age group ranged from 30 to 54 years of age, with 267 women (M = 40.6, SD = 7.5) and 131 men (M = 42.3, SD = 7.4). The older adulthood age group included participants who were 55 years and older, with 209 women (M = 67.0, SD = 8.9) and 106 men

(M = 67.2, SD = 8.4). A one-factor model was used for a confirmatory factor analysis, with configural, metric, and scalar criteria being met for the six age and gender groups. The test results indicated that observed means and correlations could be compared across all age and gender groups.

The purpose of the study was to further examine the validity of the BIQLI for use in samples of older adult women. This research sought to build upon the BIQLI validation conducted by Rusticus et al. (2008). The sample for the current study was limited to women between the ages of 40 and 79, but used smaller age divisions to allow for a more detailed analysis of the differences between age groups.

Method

Participants

A total of 1,039 people started the survey, 71 completed only the first four demographic questions and twenty-one responses had to be deleted because they were males (17 responses) or outside the age range (4 responses). The final sample contained a total of 947 women between the ages of 40 and 79. As expected, the sample was slightly skewed towards higher education and income levels than the general U.S. female population of similar age, but only between the low and middle levels.

The primary difference in educational attainment was that the sample had more women reporting some college with no degree and fewer women reporting high school degree or lower (U.S. Census Bureau, 2012a). Income levels had a similar trend with the sample having higher percentages in the $25,000 to $49,999 range, but fewer in the less than $25,000 range and fewer in the three highest categories starting at $100,000 (U.S. Census Bureau, 2012b). The National Health and Nutrition Examination Survey (NHANES) was used to compare the sample BMI to

the U.S. female population of similar age. The NHANES data provided information for overweight (BMI of 25.00 to 29.99), obese (BMI of 30.00 to 39.99), and obese III (BMI ≥ 40.00). The sample was 1% higher in the overweight category, 3% higher in the obese category, and equal in the obese III category (Flegal, Carroll, Kit, & Ogden, 2012). Table 1 provides a reporting of U.S. and sample percentages for education, income, and body mass index. Distribution for body mass index across the entire sample and by decade is provided in Table 2.

The District of Columbia and 47 states were represented, with no participants from North Dakota, South Dakota, and Delaware. The states were divided into four regions, using the definitions of the 2010 U.S. Census: Northeast, Southern, Western, and Midwest. The sample percentage was equal to the U.S. female population percentage for the Northeast region. In the Southern and Western regions the sample was smaller than the population by approximately 3%. The Midwest region sample was almost 7% larger than the U.S. population (Howden & Meyer, 2011).

The sample was primarily heterosexual (96.4%) and Caucasian (81%). Sexual preference is not requested by the Census Bureau, making accurate comparison to the U.S. population extremely difficult. The percentage of Caucasian participants was 8% higher than the U.S. population. The sample and U.S. population had the same percentage for American Indian/Alaskan Native (1%). Asian/Pacific Islanders (1.5%) and African Americans (6%) were both underrepresented in the sample when compared to the U.S. population, which is comprised of 5% Asian/Pacific Islanders and 12% African Americans (U.S. Census Bureau, 2013). The sample had 2.5% of the women claiming Hispanic American only, but a comparison to the U.S. population was not possible. The U.S. Census reports data for Hispanic American in combination with other races, and not as a separate category.

Measures

The BIQLI has 19 items that measure the impact of body image on quality of life. It uses a 7-point scale that ranges from -3 to +3, with a -3 indicating a very negative impact, a 0 indicating no effect, and a +3 indicating a very positive impact. A total score is obtained by calculating the average after reverse coding certain items. Items within the scale address interactions with others, feelings about self, personal habits, and feelings about personal control and ability to perform health-enhancing behaviors (Cash, 2002).

Body mass index (BMI) has repeatedly shown to have one of the strongest relationships with body image (Algars et al., 2009; Anderson et al., 2002; Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Reboussin et al., 2000). Height and weight were requested to calculate BMI. A correlation also exists between total BIQLI score and total score on the Body Image Ideals Questionnaire (BIQ). The BIQ determines level of body image by looking at the discrepancy between a person's perceived ideal body image and the extent to which the individual believes that he/she compares to that ideal, moderated by how important the ideal is to that individual (Cash & Szymanski, 1995). A lower score on the BIQ would be considered a more desirable score and should correlate to a higher total BIQLI score (Cash, Jakatdar, and Williams, 2003).

Procedure

The sample was obtained through the purchase of a SurveyMonkey® Audience. SurveyMonkey® is a large, web-based survey company. Purchase of an Audience allowed the online survey to be sent only to participants who were females between the ages of 40 and 79. It also ensured the desired sample size of at least 800 women, with a breakdown of at least 200 women in each decade.

The SurveyMonkey® Audience has a membership of close to one million people and is fairly representative of the U.S. population, except that all of the members must have computer and internet access and they have chosen to join a survey group. This causes the sample to skew towards slightly higher education and income levels, but it is fairly representative in other demographic areas. Members are sent a limited number of surveys to discourage professional survey takers and over-participation. Incentives for completion can be a $0.50 donation to a designated charity, inclusion in a drawing for a $100 sweepstake, or points that are added to an account and can eventually be redeemed for gift cards ("Who is the SurveyMonkey® Audience," n.d.).

Analysis

Though small, age differences in body image are commonly found (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010, Rusticus et al., 2008). The aging process causes many changes to appearance and how a woman experiences her body. To identify potential age-related differences, the analysis was conducted identically in five ways: on all ages as one unit and once for each decade (40s, 50s, 60s, and 70s).

Results & Discussion

Cronbach's alpha was used to determine reliability and a principal component analysis (PCA) was conducted for a one-factor model, based on the findings of Cash et al. (2004). Cronbach's alpha was .970 for the entire sample and ranged from .965 to .973 for the decade cohorts. Factor loadings were between .69 and .91 for the entire sample and .65 and .93 for the individual decade cohorts. The 70s cohort had the least variance explained (63%), the 50s cohort had the highest variance explained (68%), and the total sample had 66% of the variance explained (see Table 3). Inter-item correlations can be found in Table 4.

Cash et al. (2004) ran a PCA on both genders together and women only (n = 468). The results for the women only indicated a single-factor model with 50.7% of the variance explained and factor loadings of .45 to .85. Although the differences between these results and the current study results are not large, it does raise questions about the effects of age. There was not an evident trend in the results of the PCA by age for the current study. However, the youngest age in the current study was almost 20 years older than the average age of the participants in the Cash et al. study. Another potential cause for the difference is the diversity of the samples. The current study was 81% Caucasian, while the Cash et al. (2004) study was 57% Caucasian. A difference has been identified in how African American women experience body image compared to Caucasian women (Anderson, Eyler, Galuska, Brown, & Brownson, 2002; Cash & Henry, 1995; Livshits, Malkin, Williams, Hart, Hakim, & Spector, 2012; Schieman, Pudrovska, & Eccles, 2007). It is possible that this difference impacted the results of the factor analysis. Finally, the population from Cash et al. (2004) was obtained from one university versus the geographically diverse sample of the current study.

To compare to prior studies with other age groups, BIQLI total scores were correlated with BMI. Convergent validity was tested by examining the relationship between BIQLI score and total score on the BIQ. Correlations for BMI were -.32 ($p < .001$) for all ages and between -.27 and -.39 ($p < .001$) for the different decade cohorts, with the correlation weakening as age increased. The pattern and range of correlations for BMI were consistent with what had been observed in prior studies. Though body image has been shown to impact women differently as they age, it does not differ to a large degree. BIQLI total score correlations with BMI in the validation studies with young adult women was -.52 with $p < .001$ (Cash & Flemming, 2002) and -.22 with $p < .001$ (Cash, Jakatdar, & Williams, 2004).

Cash et al. (2004) was the only study to examine convergent validity using the BIQ. They found a correlation of -.54 for ($p < .001$) for the female college students in their sample. The correlation between the BIQ and BIQLI for all ages in the current study was -.47 and between -.34 and -.56 for the decades ($p < .001$ for all correlations). Table 5 provides detailed reporting of all correlations for BIQLI total score to BMI and BIQ.

A two-factor exploratory PCA with promax rotation and a cutoff of .40 was conducted to determine if the scale functioned differently by decade. Factor loadings for the one- and two-factor models are presented by decade in Tables 6 to 9. The two-factor model loaded differently for each age category and the full sample. The 50s cohort and the 60s cohort demonstrated clear loadings with a two-factor model and increased the total variance explained by 7% for both models. The 50s cohort had questions 11 to 16 load on the second factor bringing the total variance explained to 75%. The 60s cohort had only questions 13 to 16 load on the second factor, increasing the total variance explained to 73%. The 70s cohort also loaded 11 to 16 on the second factor, but question 10 was evenly split between the two factors. The two-factor model for the 70s cohort increased the total variance explained from 63% to 70%. The one group which had a different grouping of items load on a second factor was the women in their 40's. Question 16 did not load for the 40s cohort and questions 3 to 8 made up the second factor. The two-factor model increased the total variance explained from 65% to 73%.

These results indicate that for the women in their 50's and 70's, the set of questions from 11 to 16 which focus on the topics of feelings about acceptability as a sexual partner, enjoyment of sex life, control over eating and weight, physical exercise, and willingness to do things that might call attention to appearance, were measuring a slightly different concept for them than the remaining items, which focused on day-to-day emotions, satisfaction with life, confidence,

happiness, interactions with people, experiences, relationships, daily grooming, and feelings about adequacy, self-worth and femininity. The only difference for women in their 60s was that the sexuality items loaded with the larger body of items, instead of the small grouping. This was not the case for the women in their 40's, where it was the group of items measuring interactions with people, experiences, and relationships that were drawn to a second factor in the two-factor model.

Caution is urged when considering the loadings for the models with more than one factor. Age by decade had a clear effect, indicating that a 'one size fits all' approach may lead to incorrect interpretations if multiple factor models are used. The one-factor model was stable across all groups, making it the more appropriate model to use for BIQLI score comparison. However, the multiple-factor models may be useful when using the BIQLI in a sample with decade-specific age ranges.

Though a multiple factor model is not suggested for larger age ranges, general trends in the loadings were observed and could be useful for identifying problem areas and targeting interventions. Questions 13 to 16 tended to load together addressing the ability to control food intake and weight, physical exercise, and willingness to do things that would call attention to appearance. Questions 17 to 19 loaded together, covering daily grooming activities, confidence in daily life, and happiness in daily life. Questions 3 to 8 generally loaded together, being questions about interactions with people of the same and opposite sex, experiences with new people and people at work, and relationships with friends and family members.

These trends were also evident when the box plots for each answer were examined (see Figure 1). Once again, age by decade had an impact on how the participants answered. In general, the answer ranges became more positive as the decade increased. Women in their 40s

had more negative responses than the other decades. With each increase in decade, the women answered more positively than the prior decade. This was especially true for women in their 70s, where a dramatic positive shift occurs beyond the levels reported by women in their 60s. The only questions that remained more negative for women in their 70s were questions 13 to 16, which were also among the most negative ranges for the other three age groups. This is not surprising, given that these were questions that would be directly associated with weight and appearance. The findings regarding questions 13 to 16 suggest that body image may be hindering the adoption or continuation of healthy behaviors associated with diet and exercise. Practitioners may need to address body image concerns at the beginning of an intervention, instead of expecting the intervention to correct the body image issues organically. For all groups except the 40s, the questions regarding relationships with friends (question 7) and family (question 8) maintained one of the most positive ranges. This may also be beneficial for practitioners by providing an area to focus on for increasing body image.

The question arose regarding how much individual participants varied in their answers. The majority of participants had a range of at least two and 34% had an answer range of 4 or more (see Figure 2). A total of 64 women (7%) answered the same way for all items. An attempt was made to determine whether the women answered without thinking, or if the answers were genuine reflections of their body image experience. The majority answered with no effect (48%), followed by very positive effect (28%), moderate positive effect (11%), slight positive effect (8%), slight negative effect (3%), and very negative effect (2%). The ages of the 64 women were spread across the decades and had the same spread of BMI as the total sample. The correlation of BMI to BIQLI was -.367 ($p<.01$, $n = 64$) compared to the total sample correlation of -.322 ($p<.001$, $n = 927$). It is impossible to know why the women answered with only one

level, but the similar correlations between the non-varied responses and the total sample may indicate that at least some of the women were reporting honestly.

Conclusion

The purpose of this study was to determine the validity and reliability of the BIQLI using a sample of older women. The reliability, convergent validity, and principal component analysis returned results that indicated the BIQLI can be used for women between the ages of 40 and 79. The one-factor model is strongly suggested when comparing across age groups, but a second subscale that measures ability to control food intake and weight, physical exercise, and willingness to do things that would call attention to appearance might be considered for samples age 50 and older. Even when using the one-factor model, practitioners should be aware of the potential answer patterns. Removal of questions may not impact the overall strength of the inventory; however, each question addresses a unique area that may assist the health practitioner in determining areas that should be targeted. Further research into the differing patterns across the decades should be conducted.

References

Anderson, L. A., Eyler, A. A., Galuska, D. A., Brown, D. R., & Brownson, R. C. (2002). Relationship of satisfaction with body size and trying to lose weight in a national survey of overweight and obese women aged 40 and older, United States. *Preventive Medicine, 35*, 390-396.

Bedford, J. L., & Johnson, C. S. (2006). Societal influences on body image dissatisfaction in younger and older women. *Journal of Women and Aging, 18*(1), 41-55.

Brown, T.A., Cash, T.F., & Mikulka, P.J. (1990). Attitudinal Body-Image assessment: Factor analysis of the Body-Self Relations Questionnaire. *Journal of Personality Assessment, 55*(1 & 2), 135-144.

Cash T. F. (2002). *BIQLI: Body Image Quality of Life Inventory* [inventory and manual]. Released by Body Images Research Consulting, Naples, FL. Ordered from http://www.body-images.com/assessments/

Cash, T. F., & Henry, P. E. (1995). Women's body images: The results of a national survey in the U.S.A. *Sex Roles, 33*(1/2), 19-28.

Cash, T. F., & Fleming, E.C. (2002). The impact of body-image experiences: Development of the Body Image Quality of Life Inventory. *International Journal of Eating Disorders, 31*, 455-460.

Cash, T. F., Jakatdar, T. A., & Williams, E. F. (2004). The body image quality of life inventory: further validation with college men and women. *Body Image, 1*, 279-287. doi: 10.1016/S1740-1445(03)00023-8

Cash, T. F., Melnyk, S. E., & Hrabosky, J. I. (2004). The assessment of body image investment: An extensive revision of the Appearance Schemas Inventory. *International Journal of Eating Disorders, 35*, 305-316. doi: 10.1002/eat.10264

Cash, T.F., Santos, M.T., & Williams, E.F. (2005). Coping with body-image threats and challenges: Validation of the Body Image Coping Strategies Inventory. *Journal of Psychosomatic Research, 58*, 191-199.

Cash, T. F., & Smolak, L. (2011). Understanding body images: Historical and contemporary perspectives. In T. F. Cash & L. Smolak (Eds.), *Body image: A handbook of science, practice and prevention(2nd ed.).* [Kindle version] (pp. 3-10). New York, NY: Guilford Press.

Cash, T. F., Szymanski, M. L. (1995).The development and validation of the Body-Image Ideals Questionnaire. *Journal of Personality Assessment, 64*(3), 466-477.

Chrisler, J. C., & Ghiz, L. (1993). Body image issues of older women. *Women & Therapy, 14*(1-2), 67-75.

Clark, L. H., & Griffin, M. (2008). Visible and invisible aging: beauty work as a response to ageism. *Aging & Society, 28*, 653-674. Doi: 10.1017/S0144686X07007003

Clark, L. H., Repta, R., & Griffin, M. (2007). Non-surgical cosmetic procedures: Older women's perceptions and experiences. *Journal of Women & Aging, 19*(3/4), 69-87. doi: 10.1300/J074v19n03_06

Cooper, P. J., Taylor, M. J., Cooper, Z., & Fairburn, C. G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders, 6*(4), 485-494.

Cornwell, C. J., & Schmitt, M. H. (1990). Perceived health status, self-esteem and body image in women with rheumatoid arthritis or systemic lupus erythematosus. *Research in Nursing & Health, 13*, 99-107.

Ferraro, F. R., Muehlenkamp, J. J., Paintner, A., Wasson, K., Hager, T., & Hoverson, F. (2008). Aging, body image, and body shape. *The Journal of General Psychology, 135*(4), 379-392.

Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *Journal of the American Medical Association, 307*(5), 491-497. doi: 10.1001/jama.2012.39

Franzoi, S. L., & Koehler, V. (1998). Age and gender differences in body attitudes: A comparison of young and elderly adults. *International Journal of Aging and Human Development, 47*(1), 1-10.

Franzoi, S. L. (1994). Further evidence of the reliability and validity of the body esteem scale. *Journal of Clinical Psychology*, *50*(2), 237-239.

Gavin, A. R., Simon, G. E., & Ludman, E. J. (2010). The association between obesity, depression, and educational attainment in women: The mediating role of body image dissatisfaction. *Journal of Psychosomatic Research, 69*, 573-581. doi: 10.1016/j.jpsychores.2010.05.001

Grogan, S. (2011). Body image development in adulthood. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 93-96). New York, NY: Guilford Press.

Hallinan, C. J., & Schuler, P. B. (1993). Body-shape perceptions of elderly women exercisers and nonexercisers. *Perceptual and Motor Skills, 77*, 451-456.

Henderson-King, D., & Henderson-King E. (2005). Acceptance of cosmetic surgery: Scale development and validation. *Body Image, 2*, 137-149.

Howden, L. M., & Meyer, H. A. (2011). Age and sex composition: 2010 (Publication No.C2010BR-03). Retrieved from U.S. Census Bureau website: http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf

Janelli, L. M. (1988). The impact of health status on body image in older women. *Rehabilitation Nursing*, *13*(4), 178-180.

Lentillon-Kaestner, V., Berchtold, A., Rousseau, A., & Ferrand, C. (2013). Validity and reliability of the French versions of the Body Shape Questionnaire. *Journal of Personality Assessment*, 1-7. doi: 10.1080/00223891.2012.843537

Lewis, D. M., & Cachelin, F. M. (2001). Body image, body dissatisfaction, and eating attitudes in midlife and elderly women. *Eating Disorders, 9*, 29-39.

Livshits, G., Malkin, I., Williams, F. M. K., Hart, D. J., Hakim, A., & Spector, T. D. (2012). Longitudinal study of variation in body mass index in middle-aged UK females. *Age*, *34*, 1285-1294. doi 10.1007/s11357-011-9299-0

Muise, A., & Desmarais S. (2010). Women's perceptions and use of "anti-aging" products. *Sex Roles, 63*, 126-137. doi: 10.1007/s11199-010-9791-5

Patrick, J. H., Stahl, S. T., & Sundaram, M. (2011). Disordered eating and psychological distress among adults. *International Journal of Aging and Human Development, 73*(3), 209-226. doi: 10.2190/AG.73.3b

Peat, C. M., Peyerl, N. L., & Muehlenkamp, J. J. (2008). Body image and eating disorders in older adults: A review. *The Journal of General Psychology, 135*(4), 343-358.

Reboussin, B. A., Rejeski, W. J., Martin, K. A., Callahan, K., Dunn, A. L., King, A. C., & Sallis, J. F. (2000). Correlates of satisfaction with body function and body appearance in middle- and older aged adults: The Activity Counseling Trial (ACT). *Psychology and Health, 15,* 239-254.

Roy, M., & Payette, H. (2012). The body image construct among Western seniors: A systematic review of the literature. *Archives of Gerontology and Geriatrics, 55,* 505-521.

Rusticus, S. A., Hubley, A. M., & Zumbo, B. D. (2008). Measurement invariance of the Appearance Schemas Inventory-Revised and the Body Image Quality of Life Inventory across age and gender. *Assessment, 15*(1), 60-71.

Schieman, S., Pudrovska, T., & Eccles R. (2007). Perceptions of body weight among older adults: Analysis of the intersection of gender, race, and socioeconomic status. *Journal of Gerontology, 62B*(6), 415-453.

Schuler, P. B., Broxon-Hutherson, A., Philipp, S. F., Ryan, S., Isosaari, R. M., & Robinson, D. (2004). Body-shape perceptions in older adults and motivations for exercise. *Perceptual and Motor Skills, 98,* 1251-1260.

Schuler, P. B., Vinci, D., Isosaari, R. M., Philipp, S. F., Todorovich, J., Roy, J. L. P., & Evans, R. R. (2008). Body-shape perceptions and body mass index of older African American and European American women. *Journal of Cross Cultural Gerontology, 23,* 255-264. Doi 10.1007/s10823-008-9061-y

Secord, P. F., & Jourard, S. M. (1953). The appraisal of body-cathexis: Body-cathexis and the self. *Journal of Consulting Psychology, 17*(3), 343-347.

Slevec, J., & Tiggemann, M. (2010). Attitudes toward cosmetic surgery in middle-aged women: Body image, aging anxiety, and the media. *Psychology of Women Quarterly, 34,* 65-74.

Slevec, J., & Tiggemann, M. (2011). Media exposure, body dissatisfaction, and disordered eating in middle-aged women: A test of the sociocultural model of disordered eating. *Psychology of Women Quarterly, 35*(4), 617-627. doi: 10.1177/0361684311420249

Tiggemann, M. (2004). Body image across the adult life span: stability and change. *Body Image, 1,* 29-41. doi: 10.1016/S1740-1445(03)00002-0

U.S. Census Bureau. (2012a). *Educational attainment by selected characteristics:2010* (Table 231). Retrieved from U.S. Census Bureau website: https://www.census.gov/compendia/statab/cats/education.html

U.S. Census Bureau. (2012b). *Selected characteristics of households, by total money income in 2011* (Table HINC-01). Retrieved from U.S. Census Bureau website: http://www.census.gov/hhes/www/cpstables/032012/hhinc/hinc01_000.htm

U.S. Census Bureau. (2013). *Annual estimates of the resident population by sex, age, race and Hispanic origin for the United States and States: April 1, 2010 to July 1, 2012*. Retrieved from U.S. Census Bureau website: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Who is the SurveyMonkey® Audience? (n.d.). *SurveyMonkey®*. Retrieved from http://help.SurveyMonkey®.com/app/answers/detail/a_id/5654

Table 1
Educational attainment, household income, and BMI percentage comparisons for the U.S. population and the sample

	Study Sample	U.S. Population	Difference
Educational Attainment			
No high school degree	2%	12%	-10%
High school degree	25%	31%	-6%
Some college, no degree	30%	17%	13%
Associate's degree	11%	10%	1%
Bachelor's degree	20%	19%	1%
Advanced degree	12%	10%	2%
Household Income			
$0 to $24,999	21%	22%	-1%
$25,000 to $49,999	32%	23%	9%
$50,000 to $74,999	22%	18%	4%
$75,000 to $99,999	12%	12%	0%
$100,000 to $149,999	9%	13%	-4%
$150,000 to $199,999	2%	6%	-4%
$200,000 and higher	2%	5%	-3%
Body Mass Index			
Overweight	29%	28%	1%
Obese I & II	31%	28%	3%
Obese III	9%	9%	0%

Table 2
Percentage of sample by demographic variable

	Total (n=947)		40s (n=195)		50s (n=219)		60s (n=271)		70s (n=262)	
BMI (n)										
Normal (18.00-24.99)	29.1	(276)	35.9	(70)	29.2	(64)	23.2	(63)	30.2	(79)
Overweight (25.00-29.99)	28.8	(273)	22.6	(44)	27.4	(60)	27.7	(75)	35.9	(94)
Obese I (30.00-34.99)	20.6	(195)	19.0	(37)	23.3	(51)	25.1	(68)	14.9	(39)
Obese II (35.00-39.99)	10.7	(102)	10.8	(21)	8.2	(18)	11.8	(32)	11.8	(31)
Obese III (40.00+)	8.8	(83)	9.7	(19)	8.7	(19)	10.3	(28)	6.5	(17)
missing	1.9	(18)	2.0	(4)	3.2	(7)	1.8	(5)	0.8	(2)

Table 3
One-factor principal component analysis results

	Eigenvalue	Variance Explained	Factor Loadings	Cronbach's Alpha
All Ages	12.54	66%	.69 to .91	.970
Ages 40-49	12.44	65%	.72 to .88	.970
Ages 50-59	11.52	68%	.74 to .93	.973
Ages 60-69	12.49	66%	.66 to .91	.970
Ages 70-79	11.87	63%	.65 to .89	.965

Table 4.
Inter-item correlation matrix for all ages

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1																			
2	.83																		
3	.69	.71																	
4	.73	.75	.78																
5	.70	.70	.73	.81															
6	.63	.62	.65	.69	.72														
7	.66	.67	.78	.75	.73	.69													
8	.60	.63	.68	.67	.66	.64	.81												
9	.79	.74	.68	.72	.68	.65	.71	.69											
10	.78	.72	.64	.68	.63	.59	.66	.65	.86										
11	.66	.71	.56	.66	.60	.55	.53	.54	.68	.70									
12	.60	.64	.48	.57	.52	.50	.46	.47	.60	.61	.88								
13	.61	.59	.49	.58	.54	.49	.51	.50	.61	.57	.56	.53							
14	.61	.58	.47	.56	.52	.47	.47	.45	.59	.55	.55	.51	.86						
15	.57	.53	.42	.51	.49	.45	.42	.40	.57	.57	.53	.49	.69	.74					
16	.63	.65	.56	.64	.64	.58	.55	.54	.66	.60	.61	.55	.64	.65	.62				
17	.66	.67	.64	.68	.64	.57	.67	.66	.73	.70	.59	.53	.61	.54	.56	.65			
18	.80	.76	.69	.73	.70	.64	.69	.68	.83	.84	.71	.62	.64	.61	.59	.68	.79		
19	.77	.72	.64	.68	.65	.60	.66	.67	.84	.88	.69	.62	.60	.57	.57	.64	.74	.91	

All correlations are significant at $p < .001$

Table 5.
Correlations for BMI and BIQ to total BIQLI score

	r	*p*	*n*
BMI			
Full Sample	-.320**	.000	929
40s Cohort	-.385**	.000	260
50s Cohort	-.377**	.000	266
60s Cohort	-.272**	.000	212
70s Cohort	-.278**	.000	191
BIQ			
Full Sample	-.468**	.000	937
40s Cohort	-.344**	.000	192
50s Cohort	-.562**	.000	216
60s Cohort	-.504**	.000	268
70s Cohort	-.419**	.000	261

**$p < .001$

Table 6.
Factor loadings for women in their 40s

Question Number	1-Factor Model	2-Factor Model	
		Factor 1	Factor 2
1	85*	63*	18
2	85*	55*	24
3	81*	11	78*
4	87*	22	60*
5	81*	11	79*
6	79*	3	97*
7	76*	3	100*
8	75*	4	96*
9	88*	44*	33
10	85*	65*	16
11	84*	74*	11
12	77*	81*	7
13	75*	84*	6
14	73*	94*	2
15	72*	100*	1
16	81*	39	39
17	77*	51*	27
18	87*	68*	15
19	87*	67*	16

Values are multiplied by 100 and rounded to the nearest integer
*Values greater than 0.4

Table 7.
Factor loadings for women in their 50s

Question Number	1-Factor Model	2-Factor Model	
		Factor 1	Factor 2
1	87*	61*	21
2	87*	64*	19
3	77*	100*	2
4	86*	76*	11
5	82*	86*	7
6	78*	74*	13
7	84*	95*	3
8	76*	99*	2
9	89*	69*	16
10	88*	68*	16
11	82*	37	42*
12	74*	24	58*
13	76*	4	97*
14	78*	4	97*
15	73*	3	100*
16	78*	17	69*
17	83*	59*	23
18	93*	65*	18
19	88*	65*	18

Values are multiplied by 100 and rounded to the nearest integer
*Values greater than 0.4

Table 8.
Factor loadings for women in their 60s

Question Number	1-Factor Model	2-Factor Model	
		Factor 1	Factor 2
1	87*	58*	20
2	83*	78*	8
3	81*	95*	2
4	84*	83*	6
5	85*	78*	8
6	79*	78*	8
7	80*	100*	1
8	79*	97*	1
9	90*	65*	15
10	85*	74*	10
11	79*	68*	14
12	74*	55*	23
13	73*	5	88*
14	69*	2	100*
15	66*	3	96*
16	79*	23	56*
17	84*	61*	18
18	91*	68*	14
19	88*	69*	13

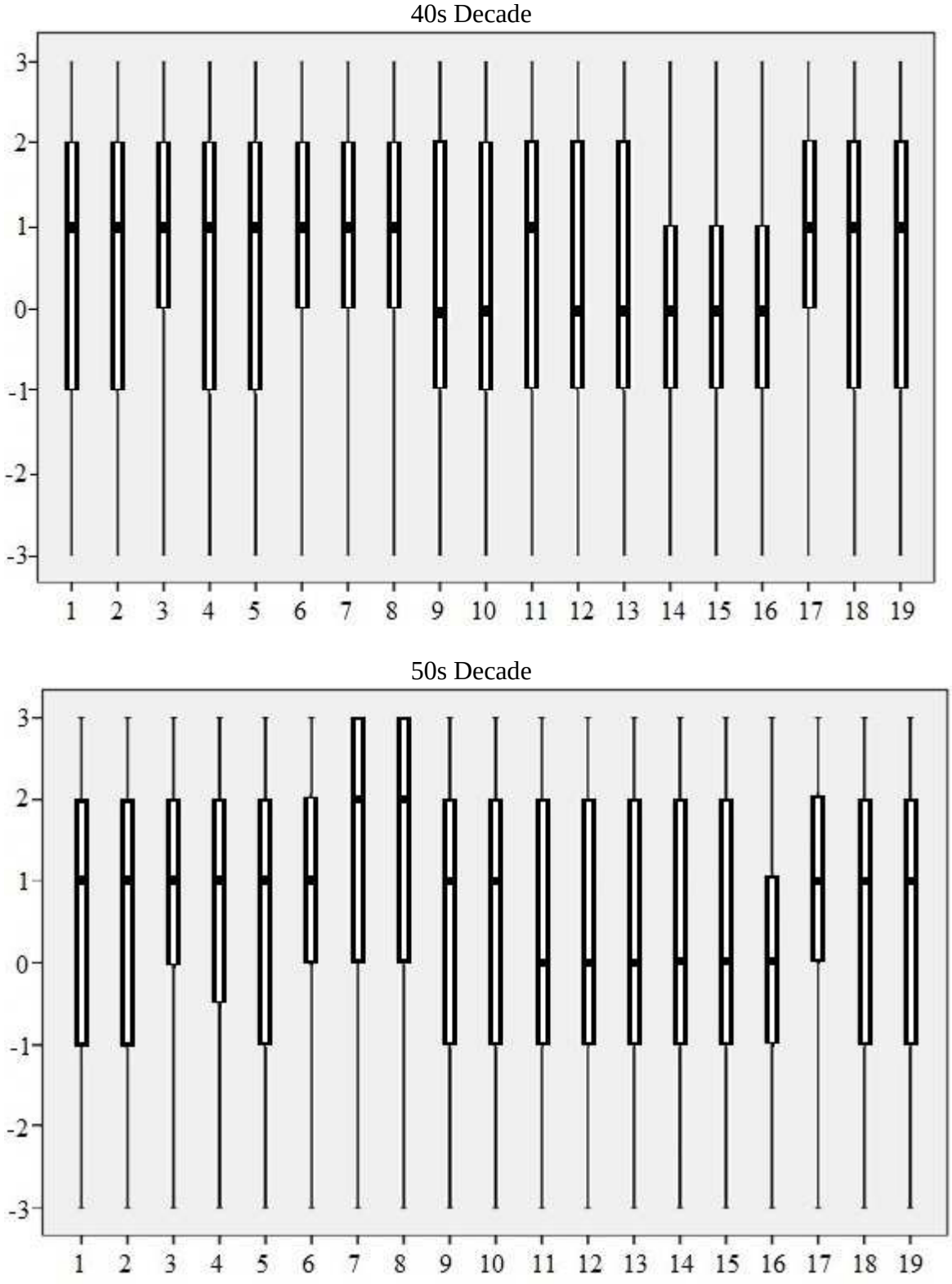
Values are multiplied by 100 and rounded to the nearest integer
*Values greater than 0.4

Table 9.
Factor loadings for women in their 70s

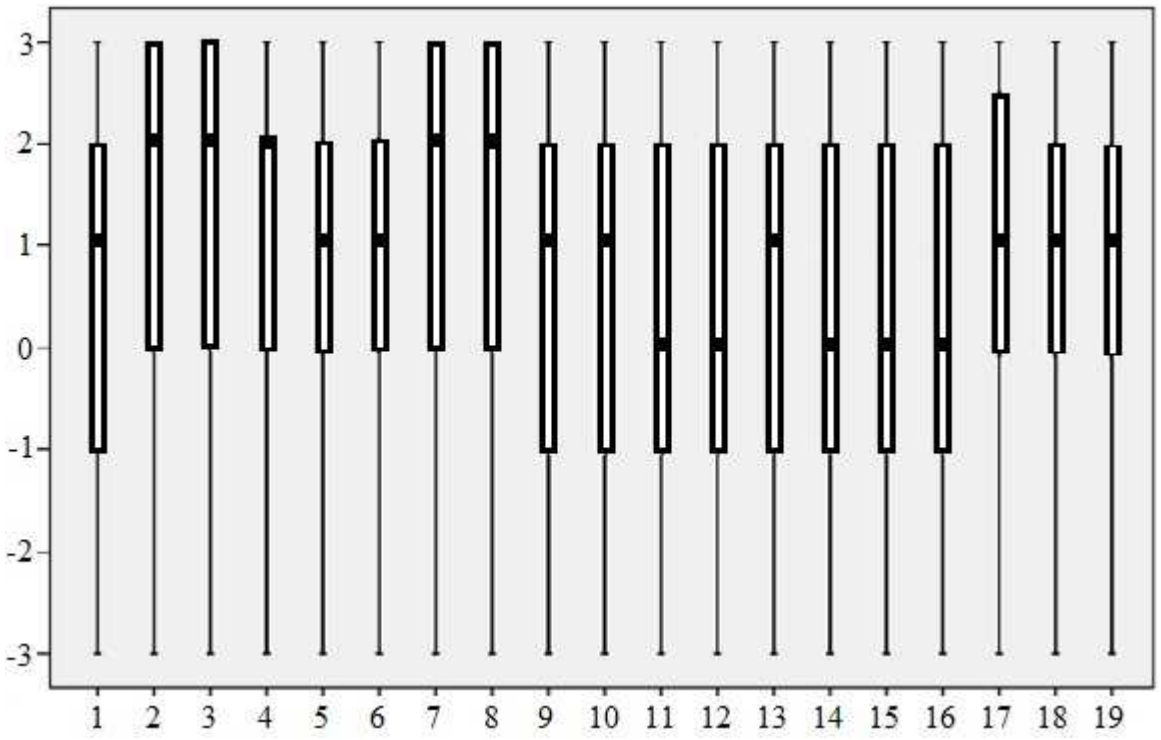
Question Number	1-Factor Model	2-Factor Model	
		Factor 1	Factor 2
1	86*	57*	23
2	88*	53*	25
3	80*	98*	2
4	85*	83*	7
5	80*	85*	6
6	65*	91*	4
7	81*	100*	1
8	76*	93*	3
9	88*	49*	29
10	87*	39	38
11	73*	6	86*
12	65*	3	95*
13	74*	4	91*
14	70*	4	92*
15	65*	2	100*
16	75*	22	58*
17	81*	57*	23
18	89*	43*	34
19	86*	41*	37

Values are multiplied by 100 and rounded to the nearest integer
*Values greater than 0.4

Figure 1
Box plots for item means



60s Decade



70s Decade

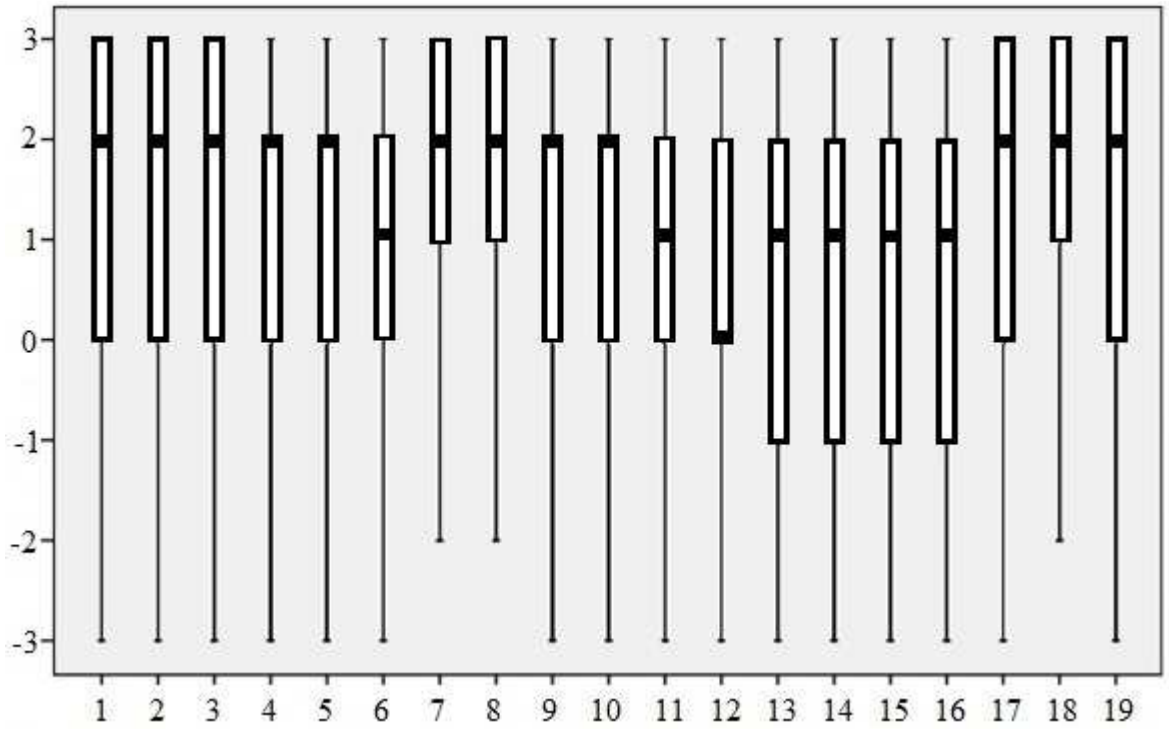
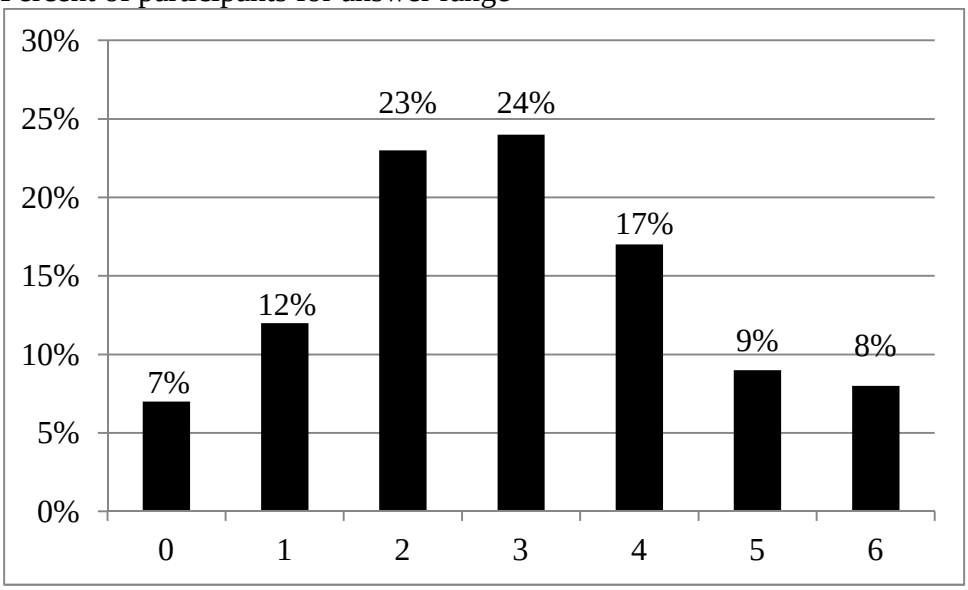


Figure 2
Percent of participants for answer range



Appendix A

January 4, 2013

MEMORANDUM

TO:	Rachel Avants Jean Henry
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	12-12-359
Protocol Title:	*The Impact of Body Image on Women in Later Life: Effects on Quality of Life and Body Perception*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 01/04/2013 Expiration Date: 01/03/2014

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 800 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu

Chapter 5: Body image quality of life for women ages 40 to 79

Abstract

Objectives. Few studies have examined body image in women, over the age of 40, in the United States, with a sample size of at least 200. The purpose of this study was to gather information about body image quality of life and potential demographic correlates using a large, diverse sample of women, over the age of 40.

Method. The Body Image Quality of Life Inventory (BIQLI) and various demographic questions were completed by 947 women between the ages of 40 and 79. ANOVAs and Pearson correlations were run on the full sample and Caucasians only for all ages combined and by decade.

Results. Medium to large effect sizes were identified between various Body Mass Index (BMI) categories, especially comparisons that included the obese III category (BMI $\geq$ 40.0). Body image quality of life decreased as BMI increased, but the relationship weakened with increased age. Medium effect sizes were identified for mean differences between the 70s cohort and both the 40s cohort and 50s cohort, with small effect size for differences between the 70s cohort and the 60s cohort. The 60s cohort had the only significant results for BIQLI total score when compared separately to income level and relationship status.

Discussion. Body mass index had the strongest relationship with body image quality of life, followed by age. Body image becomes more positive with age, especially moving into the 70s decade of life. These findings support previous body image research on age and BMI, though analyses that combine all ethnicities should be avoided. Additional findings associated with the 60s cohort suggest that this might be a time of transition for body image and deserves further study.

Main Body

Body image is an important component of a person's self-concept and identity (Chrisler & Ghiz, 1993). It is made up of the perceptions, thoughts and feelings a person has about his/her own body (Cash & Smolak, 2011). Body image is influenced by interactions with other people; they can be friends, family, or a random person shopping in the same store. These interactions and the media help to shape a person's understanding of how society expects him/her to act and look (Wertheim & Paxton, 2011).

Negative body image has been described as negative thoughts about one's own body (Cash & Smolak, 2011) and the discrepancy between a person's ideal and current body image (Bedford & Johnson, 2006). Coping strategies are often employed in an attempt to fix or control the impact of negative body image (Cash & Smolak, 2011; Bedford & Johnson, 2006). These can have a negative impact on psychological health (Gavin, Simon, & Ludman, 2010; Patrick, Stahl, & Sundaram, 2011).

Body image research is based largely on young women, as research has been conducted primarily on college campuses (Grogan, 2011). However, body image research that examines a larger age span is growing. More similarities than differences have been identified between younger and older women (Bedford & Johnson, 2006; Grippo & Hill, 2008; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). Similarities include behavioral responses, a desire to lose weight, and the existence of mental and physical consequences related to body image (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). Identified differences are that older women present less drive for thinness (Lewis & Cachelin, 2001; Pruis & Janowsky, 2010), more activities directed at countering the effects of aging (Baker & Gringart, 2009), and a higher value placed on body function over appearance (Roy & Payette, 2012). Although body

dissatisfaction does exist in older women, it tends to lessen with age, particularly around the 60s (Anderson et al., 2002; Rusticus, Hubley, & Zumbo, 2008). Research examining the difference between genders has typically found that while men are affected by body image, it is to a lesser degree than the effects on women (Algars et al., 2009; Baker & Gringart, 2009; Davison & McCabe, 2005; Roy & Payette, 2012; Rusticus, Hubley, & Zumbo, 2008). Therefore, the current study and further discussion is focused on women.

Older women face additional body image challenges beyond those faced by younger women. The Western culture's "ideal woman" is young, attractive, and slender (Grogan, 2011). A woman's sense of self-worth can be tied to her ability to be as close as possible to that ideal standard. Graying hair, wrinkling and sagging skin, and changes to body fat distribution move women further away from the young ideal. Older women have associated the appearance of age to loss of self-esteem, discrimination in the workplace, anxiety over their ability with current or potential sexual partners, and perceived invisibility (Clarke & Griffin, 2008; Duncan & Loretto, 2004; Puhl, Andreyeva, & Brownell, 2008).

A variety of behavioral coping strategies have been identified in older women. Bedford and Johnson (2006) found multiple strategies aimed at weight loss that were used by women ages 65 to 74 that include exercise, dieting, use of herbal or health food store supplements, fasting, diet pills, fad diets, laxative use, diuretic use, and smoking. On average, their participants utilized at least two of these methods. One of the most commonly identified coping strategies for negative body image in older women is disordered eating (Allaz et al., 1998; Lewis & Cachelin, 2001; McLean, Paxton, & Wertheim, 2010; Midlarsky & Nitzburg, 2008; Patrick, Stahl, & Sundaram, 2011; Slevec & Tiggemann, 2010). Older women have also demonstrated similar rates of clinical-level eating disorders when compared to younger women (Peat, Peyerl,

& Muehlenkamp, 2008). However, behavioral coping strategies cannot fully address the signs of aging. This can cause some women to see cosmetic procedures as a way to recover or reduce loss of social capital associated with the aging process (Clarke & Griffin, 2008; Clarke, Repta, & Griffin, 2008; Henderson-King & Henderson-King, 2005; Slevec & Tiggemann, 2010).

Another result of the aging process is menopause. The process of menopause involves a change in hormone levels that can lead to increased visceral fat (Janssen et al., 2009) and a change in weight distribution (Voda, Christy, & Morgan, 1991). Weight gain can occur at this time, but it is unclear whether this is related to age or menopause (McLaren, Hardy, &Kuh, 2003). Very few studies have been conducted on the relationship between body image and menopausal status. The articles that were reviewed for this study had very conflicting conclusions, showing menopause had no effect (Koch et al., 2005), postmenopausal women had more negative body attitudes (Deeks & McCabe, 2001), and that postmenopausal women had more positive body satisfaction (McLaren et al., 2003).

Weight is generally thought to increase with age. The research on this trend has failed to show that this is due to aging beyond the effect of behavioral changes (Ferraro et al., 2008; Voda, Christy, & Morgan, 1991). One measure that is easily obtained is body mass index (BMI). Body mass index is an assessment of the relationship between weight and height; thus, it does not account for body composition. However, a BMI of 30 or higher has been linked to increased risk of hypertension, coronary heart disease, and mortality (Thompson, Gordon, & Pescatello, 2010).

Body mass index has consistently had one of the strongest relationships with body image (Algars et al., 2009; Anderson et al., 2002; Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Reboussin et al., 2000). Research into BMI changes in relation to age are mostly limited to

cross-sectional studies. The large U.S. population-based studies that give age breakdowns for BMI include the U.S. Census, the National Health and Nutrition Examination Survey (NHANES), and the National Health Interview Study (NHIS). All three show that the prevalence of obesity increases as age increases until somewhere in the 60s when a leveling or slight decrease is observed (Flegal, Carroll, Kit, & Ogden, 2012; Schiller, Ward, & Freeman, 2013; U.S. Census Bureau, 2012c). These studies seem to indicate that increased BMI is related to age up to approximately the 60s and possibly older. Whether this trend is reflected at the individual level, or is simply a current state of the nation, is not clear from this data.

Another consideration is that the highest age group for the NHANES and NHIS is 60 and older. The two oldest categories for the U.S. Census are 65-74 and 75 and older, though their data does not separate out gender by age. The more detailed division shows a very slight decrease in obesity prevalence for ages 65-74 and a dramatic decrease for the oldest group (U.S. Census Bureau, 2012c). This may be due to the increased mortality that is associated with a BMI of 30 or more and could be skewing the results for the NHANES and NHIS oldest age groups. The NHANES is the only one of the three to separate out females by age and race. When only non-Hispanic, White women are examined, both overweight and obese prevalence increased consistently with every increase in age group, including the eldest group. All other ethnicities follow a similar pattern to the overall NHIS and NHANES data (Flegal, Carroll, Kit, & Ogden, 2012). The ethnic differences in BMI trends carry over into body image. In particular, black women tend to have a more positive body image and body perception than white women (Anderson et al., 2002; Cash & Henry, 1995; Livshits et al., 2012; Schieman, Pudrovska, & Eccles, 2007).

The literature search for this study focused on research related to body image in females above the age of 40 that was not specific to a disease or condition. Only six studies were identified that had been conducted in the United States, since the year 2000, withat least 200 women over the age of 40. Two of the six studies focused primarily on the participants' ability to correctly identify their weight category (Schieman, Pudrovska, & Eccles, 2007; Schuler et al., 2008). Another study examined potential demographic correlates to body size satisfaction and was the only study out of the six that sampled across the United States (Anderson et al., 2002). The fourth study explored the relationships between fear of aging, disordered eating, drive for thinness, and the use of weight control strategies (Lewis & Cachelin, 2001). The final two studies demonstrated a link between depression and body dissatisfaction (Gavin, Simon, & Ludman, 2010; Reboussin et al., 2000).

Only three of the six studies examined the psychological or behavioral impact of negative body image. Determining the degree of body image issues is important, but it is also necessary to understand how body image is impacting physical and psychological health. A common trend in the adult female body image literature is small sample sizes that are geographically limited. The current study was designed to add to the research regarding the psychological impact of negative body image by examining body image related quality of life in a large, diverse, contemporary sample of women ages 40 to 79 from the United States.

Methods

Sample

The desired sample was women between the ages of 40 and 79. The purpose of the study was to examine the body image quality of life for a general cross-section of women in the United States. Therefore, no other criterion was set for defining the sample.

Data Collection Method

Data were collected using SurveyMonkey®, a survey collection agency. A SurveyMonkey® Audience was purchased to obtain the desired number of female participants within certain age groups. The SurveyMonkey® Audience has a membership of close to one million people and is fairly representative of the U.S. population, except that all of the members must have computer and internet access and they have chosen to join a survey group. This causes the sample to skew towards slightly higher education and income levels. Otherwise, the audience is fairly representative of the U.S. population. Members are sent a limited number of surveys to discourage professional survey takers and over-participation. Incentives for completion can be a $0.50 donation to a designated charity, inclusion in a drawing for a $100 sweepstake, or points that are added to an account and can eventually be redeemed for gift cards ("Who is the," n.d.).

Outcome Measures

Body Image Quality of Life (BIQLI). – The BIQLI measures the impact of body image on a person's quality of life. The inventory has 19 items which are answered on a 7-point bipolar scale that ranges from -3 to 3. Response descriptions are "very negative effect" (-3), "moderate negative effect" (-2), "slight negative effect" (-1), "no effect" (0), "slight positive effect" (1), "moderate positive effect" (2), and "very positive effect" (3). The responses to all 19 items are averaged to yield one score with higher numbers equating to higher body image-related quality of life (Cash, 2002). Items within the scale address interactions with others, feelings about self, personal ability, and personal habits. The BIQLI was originally validated for college students (Cash & Fleming, 2002; Cash, Jakatdar, & Williams, 2004). It has since proven to be a valid tool for older age groups (Avants, 2014; Rusticus, Hubley, & Zumbo, 2008).

Body Mass Index (BMI). – Six categories of BMI were used for this study: underweight (≤ 18.49), normal weight (18.50 to 24.99), overweight (25.00 to 29.99), obese I (30.00 to 34.99), obese II (35.00 to 39.99), and obese III (≥ 40.00). Although it is common for the highest three categories to be grouped together, the more detailed breakdown provides more accurate insights into the relationship between body image and BMI.

Relationship Status. – Participants were asked to identify if they were (1) in a monogamous committed relationship, (2) an open committed relationship, (3) a casual dating relationship, (4) not in a relationship and looking for a relationship, and (5) not in a relationship and not looking for a relationship. These five options were combined into three categories for analysis: in a monogamous relationship (option 1), looking for a partner (options 2, 3, and 4), and not looking for a partner (options 5).

Menopause Status. –To determine menopausal status, women were asked to choose one of four options or to define their situation in an open-ended fashion. Women were also provided with examples of common symptoms of menopause to help them answer the question. The set options were (1) I have not experienced menopause symptoms yet, (2) I have had a menstrual cycle in the past 12 months and I am experiencing symptoms of menopause, (3) I have not had a menstrual cycle in the past 12 months and I am still experiencing symptoms of menopause, and (4) I no longer experience any symptoms of menopause. Options 2 and 3 were combined for perimenopausal, option 1 is premenopausal, and option 4 is postmenopausal.

Results

Sample

A total of 1,039 people started the survey, 71completed only the first four demographic questions, and twenty-one responses had to be deleted because they were men (n = 17) or outside

the age range (n = 4). The final sample contained a total of 947 women between the ages of 40 and 79. The sample was primarily heterosexual (96.4%) and Caucasian (81%). The distributions for BMI, relationship status, and menstrual status are provided in Table 1.

The sample percentages for educational attainment, household income, geographic dispersion, and race were compared to U.S. percentages using the most recent data available through the U.S. Census Bureau. The sample percentages for educational attainment were compared to U.S. data for women age 25 and older. The primary difference was that the sample had more women reporting some college with no degree and fewer women reporting no high school degree or high school degree (U.S. Census Bureau, 2012a). Household income for the sample was compared to the U.S. Census data for ages 45 to 74. The sample had higher percentages in the $25-49 thousand category, but less in the $0-24 thousand and less in the three highest categories starting at $100 thousand (U.S. Census Bureau, 2012b). Table 2 provides detailed comparisons for educational attainment and household comparisons.

The geographic dispersion of the sample was compared by region to the total U.S. population over the age of 45. The largest difference was in the Midwest region, where the sample was 6% larger than the population. The other three regions were between 1% and 3% smaller than the population (Howden & Meyer, 2011). Three race categories were at least 4% different from the U.S. population. The sample had 8% more Caucasians, 6% less African Americans, and 4% less Asian/Pacific Islanders (U.S. Census Bureau, 2013). The sample had 2.5% of the women claiming Hispanic American only, but a comparison to the U.S. population was not possible. The U.S. Census reports data for Hispanic American in combination with other races, and not as a separate category.

Analysis

Tests for the ANOVA assumptions were conducted and violations were identified for some of the tests. The Levene statistic was significant for some tests, indicating a violation of the homogeneity of variance assumption. To account for the violation, Welch's adjusted *F* statistic was used (Maxwell & Delaney, 2004) along with a weighted coefficient of determination that accounted for unequal variances (Kulinskaya & Staudte, 2006). Tamhane's T2 is a post hoc test offered in SPSS 20 that uses pairwise comparisons based on a t-test and is able to handle unequal variances.

Normality was examined for all demographic variables using the Shapiro-Wilk test. Some tests returned significant results indicating a violation of the normality assumption. This finding was not surprising, considering the large sample size. Skewness and kurtosis scores were examined to determine the degree of non-normality. The range for skewness was -0.08 to -0.65 (M = -0.32, SD = 0.22) and for kurtosis was -0.10 to -0.89 (M = -0.56, SD = 0.22). According to Maxwell and Delaney (2004), these values fall within a range that does not threaten the accuracy of the ANOVA test.

Factorial ANOVAs were attempted with three- and two-way models using BMI, decade, menopause, education, and relationship status. The three-way models yielded multiple cells with zero values in them. All of the two-way models had cells with only one to three participants in them, making the analyses inappropriate. Ultimately, the issues with filling cells made factorial ANOVAs unusable.

The analyses were ran using the entire sample (full sample) and then on the sample using only heterosexual Caucasian women (reduced sample) to account for potential body image differences between ethnicities and the unknown effect of sexual orientation. The sample size

was not large enough to conduct tests solely on non-Caucasians or non-heterosexual women. Both samples were run in total and by decade to better analyze the potential differences among the age cohorts.

Pearson correlations and one-way ANOVAs with a between-subjects design were conducted for total BIQLI score compared to educational attainment, household income, relationship status, menopause status, decade, and BMI. Educational attainment did not return statistically significant results for either sample in total or for age cohorts. Income had a significant correlation for the 60s cohort of both the reduced sample ($r = .178$, $p < .01$, n = 239) and the full sample ($r = .169$, $p < .01$, n = 271). Relationship status returned statistically significant results from the ANOVA for the reduced sample [*Welch's* $F(2, 249) = 3.758$, $p < .05$, $R^2 = .01$] and the 60s cohort for both the reduced sample [$F(2, 236) = 3.851$, $p < .05$, $R^2 = .03$] and the full sample [$F(2, 267) = 3.304$, $p < .05$, $R^2 = .02$].

Menopause status had statistically significant results for both the full and reduced samples, but not for any of the age cohorts. The reduced sample had the strongest relationships [$r = .134$, $p < .001$, $F(2, 785) = 7.266$, $p < .001$, $R^2 = .02$] and yielded significant post hoc relationships between postmenopausal and both premenopausal (mean difference = .361, $p = .053$, $d = 0.27$) and perimenopausal (mean difference = .528, $p < .01$, $d = 0.40$). The full sample had slightly weaker relationships [$r = .100$, $p < .01$, $F(1, 309) = 9.655$, $p < .01$, $R^2 = .01$] and only postmenopausal to premenopausal was significant in post hoc testing (mean difference = .333, $p < .05$, $d = 0.25$).

Total BIQLI Score and Age

Cohorts were not separated out for the initial tests on the full and reduced samples. Instead, decade was used to divide the samples for comparison. Decade was statistically

significant for the full sample [*Welch's F*(3, 503) = 13.40, $p < .001$, adjusted $R^2 = .04$] and the reduced sample [*Welch's F*(3, 416) = 15.107, $p < .001$, adjusted $R^2 = .05$]. Tamhane post hoc comparisons indicated that the only significant differences were between the 70s cohort and each of the other decade cohorts for the full and reduced sample and the 60s cohort to the 40s cohort for the reduced sample only. The 70s cohort scored significantly higher than other age groups for both samples. The difference increased as the age groups got further apart. The reduced sample had lower mean scores, higher mean differences, and larger effects sizes than the full sample. The mean differences are provided in Table 3 and Table 4 along with Cohen's *d* for effect size. A plot of the cohort means can be found in Figure 1 for the full sample and Figure 2 for the reduced sample. The Pearson correlation was also stronger for the reduced sample ($r = .215$, $p < .001$) compared to the full sample ($r = .186$, $p < .001$).

Age was broken down into five categories within each decade cohort (ex: 60-61, 62-63, 64-65, 66-67, and 68-69). The only cohorts with significant results were the 60s for both samples. The 60s cohort from the full sample [$F(4, 266) = 2.403$, $p < .05$, $R^2 = .04$] had a significant post hoc relationship between 64-65 and 62-63 (mean difference = .698, $p < .05$, $d = 0.53$). The 60s cohort from the reduced sample [$F(4, 234) = 2.504$, $p < .05$, $R^2 = .04$], also had a significant difference between 64-65 and 62-63 (mean difference = .794, $p < .05$, $d = 0.60$). The 60s cohort from the reduced sample was the only cohort from either sample to return a significant correlation ($r = .139$, $p < .05$).

Relationship between Total BIQLI Score and BMI

The only variable that was statistically significant for both samples and all of their cohorts was BMI. It also demonstrated the strongest relationships of all the variables. Pearson correlations for both samples and their cohorts are presented in Table 5. The ANOVAs for both

samples and the 60s cohort in both samples were run with Welch's adjusted *F*, a weighted coefficient of determination, and Tamhane's T2 post hoc test (Table 6). The rest of the tests met the homogeneity of variance assumption and were run without adjustments (Table 7).

BMI accounted for 11% of the variance in BIQLI total score for the full sample [*Welch's* $F(4, 313) = 26.446$, $p < .001$, $R^2 = .11$] and 12% of the variance for the reduced sample [*Welch's* $F(4, 271) = 27.062$, $p < .001$, $R^2 = .12$]. Total variance explained lessened with each increase in age for both the full and reduced sample cohorts. Means and standard deviations are provided in Table 8, and significant mean differences from the post hoc tests and Cohen's d are presented in Table 9. For every comparison, the higher BMI category had a lower mean BIQLI score and the mean difference increased with the increase in gap between BMI categories.

Discussion

This study examined the potential relationships between body image quality of life and various demographic traits. Household income, relationship status, menopause status, decade, and BMI were all found to have statistically significant relationships with total BIQLI score. However, caution is warranted when interpreting the results for all ages combined, due to the distinct differences between the decade cohorts.

While it was not possible to do a detailed statistical analysis of the relationship between race and body image quality of life, the full sample had consistently smaller and less powerful relationships than the reduced sample. Means for the reduced sample indicated a slightly more negative body image quality of life compared to the full sample. This is further supported by previous findings that white women have lower body image than black women (Anderson et al., 2002; Cash & Henry, 1995; Livshits et al., 2012; Schieman, Pudrovska, & Eccles, 2007). The differences between the samples suggest that combining ethnicities for analysis may yield

inaccurate results and generalizations to one race based upon data from another race should be avoided. The discussion of results for the current study will focus solely on the reduced sample.

Menopause status returned a very small measure of association (R^2 =.02). The findings for menopause may have been skewed by the nature of the sample. The sample age range resulted in three-quarters of the sample being postmenopausal with only a quarter left to spread over the other categories. The few studies that have examined the relationship between menopause and body image were unable to identify a link that was not potentially caused by age (Deeks & McCabe, 2001; Koch et al., 2005; McLaren et al., 2003). The current study was unable to significantly contribute to the clarification of this relationship, though it is still possible that a relationship exists.

Age by decade yielded moderate effect sizes for the 70s cohort compared to the 40s cohort (d = .58) and the 50s cohort (d = .50) and small effect sizes for the 70s cohort compared to the 60s cohort (d = .29) and the 60s cohort compared to the 40s cohort (d = .29). In all cases, the older cohort had higher BIQLI scores. Mean BIQLI scores for women increased and standard deviations decreased as age increased, with mean scores ranging from M = 0.42 (SD = 1.33) for the 40s cohort to M = 1.17 (SD = 1.15) for the 70s cohort. The study conducted by Rusticus et al. (2008) demonstrated the same pattern and general range for means and standard deviations (middle-aged M = .70, SD = 1.25; older M = 1.23, SD = 1.02). Previous studies have reported very little difference in body dissatisfaction across the ages (Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). However, the findings from the current study suggest that a distinct difference does exist in how body image impacts quality of life.

The 60s cohort and the 70s cohort stood out from the other cohorts.

The 60s cohort was the only cohort to have statistically significant correlations between BIQLI score and income (r = .178). Relationship status had statistically significant measures of association with BIQLI score for the 60s cohort (R^2 = .03), but not for any other cohort. The presence of these relationships in only the 60s cohort may indicate that body image is influenced by a wider variety of variables for women in their 60s and that they are experiencing body image in a unique way compared to other decade cohorts.

The 70s cohort reported distinctly more positive body image quality of life, even over the 60s cohort. The 70s cohort also have the smallest correlation between BIQLI score and BMI (r = -.293, $p < .001$). It is possible that the higher BIQLI scores in the 70s cohort are a rebound that occurs as a result of working through body image issues in the 60s decade of life. Another possibility is that there is a generational difference between the 60s cohort and the 70s cohort. The only way to determine the actual cause would be to conduct a longitudinal study that observes the individual body image transitions throughout the aging process.

The largest effect sizes and strongest correlations existed between BMI and BIQLI score. Higher BMI has shown, repeatedly, to be related to lower body image (Algars et al., 2009; Anderson et al., 2002; Lewis & Cachelin, 2001; Reboussin et al., 2000); the current study supported these findings. As was expected, the size of the difference between the means increased as the gap between the categories increased. In all cases, the higher BMI category reported a lower BIQLI score when compared to a lower BMI category. The lowest effect size for BMI was 0.69 between normal and obese I for the 50's cohort. Normal had significantly more positive BIQLI scores compared to obese III for all four cohorts and it had the highest effect sizes ranging from 0.97 to 1.45. Overweight was found to be significantly more positive

than obese I and obese II for only the 40s cohort. It is possible that the transition between overweight and obese I and/or obese II is more meaningful at a younger age.

Once again, the 70s cohort and 60s cohort were unique. The 70s cohort was the only cohort to have obese III be significantly lower than obese I (d = 1.13) and obese II (d = .97). All cohorts, except the 70s cohort, had significant differences between at least one pair of categories that did not involve obese III. The 70s cohort required the highest BMI as a comparison in order to demonstrate a significant difference, suggesting that BMI may not play as strong of a role in body image quality of life for women in their 70s. The 60s cohort was the only cohort with a significant differences limited to those that included normal. The 60s cohort showed significantly higher BIQLI scores for normal weight compared to obese I (d = .83), obese II (d = .92), and obese III (d = .97). The other cohorts had at least one significant comparison that involved two categories above normal weight. Obese I, II, and III have almost the same effect size when compared to normal weight for the 60s cohort. This seems to indicate that the 60s have a lower tolerance for BMI, lumping together any BMI of 30 or higher.

The observed relationship between total BIQLI score, BMI, and age suggests that a more complex relationship may exist between the three components. The two-way ANOVA using BMI and age category yielded non-significant results. However, cell sizes ranged from 17 to 100, making the results uncertain. It is possible that different outcomes may be observed with larger, more stable samples.

Limitations

The limitations of this study are mostly related to demographics and sample size. Even though the population of women in the U.S. is primarily white and heterosexual, the sample still underrepresented the U.S. minority population. Therefore, the sample had an issue with

generalization and did not provide enough minority participants to perform adequate statistical tests. The individuals in the sample had to have regular access to a computer and the internet and had all chosen to join a SurveyMonkey® member group. This last concern may be mediated by the fact that the sample was fairly representative of the U.S. population for income and education. Another consideration is that the 2010 U.S. Census reported that 81.6% of people ages 45-64 years had a computer at home and 72.4% had internet access. The percentages drop for the 65 and older age group to 61.8% owning a computer and 45.5% having internet access (File, 2013). The lower rates for the oldest age group may not be indicative of the population between the ages of 65 and 79. In the 2000 U.S. Census, 68.2% of the 45-64 age group owned a computer and 61.6% had internet access. Only 34.7% of the oldest age group owned a computer at that time and only 29.4% had internet access (Day, Janus, & Davis, 2005). It is possible that the percentage in the 2010 oldest age group is weighted towards its younger members.

Although the sample size was large, it was not evenly spread across the variables of interest. This led to problems with conducting factorial ANOVAs. Two-way ANOVAS were attempted; however none of the tests had sufficient cell sizes to rely upon the findings. Another potential limitation is that the inventory was written for college students and did not include wording associated with body function or the aging process. Finally, all current large studies, including this one, were only able to compare cohorts. The difference between the age groups could be due to generational differences instead of the aging process.

Future Research

There are many future paths that research in this area can follow. The most important issue that needs to be addressed is the need for longitudinal studies. This will allow for a better understanding of the impact that the aging process has on body image. As mentioned above, the

relationship between menopause and body image needs further examination. Presumably, the physical and emotional changes that occur during menopause would change the way a woman feels about and experiences her body. The lack of findings in this area may also be related to study design, as they have been obtained through cohort comparisons. Further research into the use of the BIQLI in older adults is also needed to determine if older adults are interpreting the questions in the same way as the younger adults and whether questions aimed at the aging process should be included. The effect of body image on minorities needs to be examined further. Future body image research should examine races separately and increase focus on non-white races. However, the sampling for future studies will need to be more purposeful if the body image experiences of minorities are to be explored.

References

Algars, M., Santtila, P., Varjonen, M., Witting, K., Johansson, A., Jern, P., & Sandnabba, N. K. (2009). The adult body: How age, gender, and body mass index are related to body image. *Journal of Aging and Health, 21*(8), 1112-1132. doi: 10.1177/0898264309348023

Allaz, A.-F., Bernstein, M., Rouget, P., Archinard, M., & Morabia, A. (1998). Body weight preoccupation in middle-age and aging women: A general population survey. *Eating Disorders, 23*(3), 287-294. doi: 10.1002/(SICI)1098-108X(199804)23:3<287::AID-EAT6>3.0.CO;2-F

Anderson, L. A., Eyler, A. A., Galuska, D. A., Brown, D. R., & Brownson, R. C. (2002). Relationship of satisfaction with body size and trying to lose weight in a national survey of overweight and obese women aged 40 and older, United States. *Preventive Medicine, 35*(4), 390-396. doi: 10.1006/pmed.2002.1079

Avants, R. L. (2014). *Body Image Quality of Life Inventory validation in older adult women*. Manuscript submitted for publication.

Baker, L., & Gringart, E. (2009). Body image and self-esteem in older adulthood. *Aging & Society, 29*(6), 977-995. doi: 10.1017/S0144686X09008721

Bedford, J. L., & Johnson, C. S. (2006). Societal influences on body image dissatisfaction in younger and older women. *Journal of Women and Aging, 18*(1), 41-55. doi: 10.1300/J074v18n01_04

Cash T. F. (2002). *BIQLI: Body Image Quality of Life Inventory* [inventory and manual]. Released by Body Images Research Consulting, Naples, FL. Ordered from http://www.body-images.com/assessments/

Cash, T. F., & Fleming, E.C. (2002). The impact of body-image experiences: Development of the Body Image Quality of Life Inventory. *International Journal of Eating Disorders, 31*(4), 455-460. doi: 10.1002/eat.10033

Cash, T. F., & Henry, P. E. (1995). Women's body images: The results of a national survey in the U.S.A. *Sex Roles,* 33(1-2), 19-28. doi: 10.1007/BF01547933

Cash, T. F., Jakatdar, T. A., & Williams, E. F. (2004). The body image quality of life inventory: further validation with college men and women. *Body Image, 1*(3), 279-287. doi: 10.1016/S1740-1445(03)00023-8

Cash, T. F., & Smolak, L. (2011). Understanding body images: Historical and contemporary perspectives. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 3-10). New York, NY: Guilford Press.

Chrisler, J. C., & Ghiz, L. (1993). Body image issues of older women. *Women & Therapy*, *14*(1-2), 67-75. doi: 10.1300/J015v14n01_07

Clark, L. H., & Griffin, M. (2008). Visible and invisible aging: beauty work as a response to ageism. *Aging & Society, 28*(5), 653-674. doi: 10.1017/S0144686X07007003

Clark, L. H., Repta, R., & Griffin, M. (2007). Non-surgical cosmetic procedures: Older women's perceptions and experiences. *Journal of Women & Aging, 19*(3/4), 69-87. doi: 10.1300/J074v19n03_06

Davison, T. E., & McCabe, M. P. (2005). Relationships between men's and women's body image and their psychological, social and sexual functioning. *Sex Roles*, *52*(7/8), 463-475. doi 10.1007/s11199-005-3712-z

Day, J. C., Janus, A., & Davis, J. (2005). *Computer and internet use in the United States: 2003* (Document No. P23-208). Retrieved from U.S. Census Bureau website: http://www.census.gov/prod/2005pubs/p23-208.pdf

Deeks, A. A., & McCabe, M. P. (2001). Menopausal stage and age and perceptions of body image. *Psychology & Health, 16*(3), 367-379. doi: 10.1080/08870440108405513

Duncan, C., & Loretto W. (2004). Never the right age? Gender and age-based discrimination in employment. *Gender, Work, and Organization, 11*(1), 95-115. doi: 10.1111/j.1468-0432.2004.00222.x

Ferraro, F. R., Muehlenkamp, J. J., Paintner, A., Wasson, K., Hager, T., & Hoverson, F. (2008). Aging, body image, and body shape. *The Journal of General Psychology, 135*(4), 379-392. doi: 10.3200/GENP.135.4.379-392

File, T. (2013). *Computer and internet use in the United States* (Document No. P20-569). Retrieved from U.S. Census Bureau website: http://www.census.gov/hhes/computer/publications/

Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *Journal of the American Medical Association,* 307(5), 491-497. doi: 10.1001/jama.2012.39

Gavin, A. R., Simon, G. E., & Ludman, E. J. (2010). The association between obesity, depression, and educational attainment in women: The mediating role of body image dissatisfaction. *Journal of Psychosomatic Research, 69*(6), 573-581. doi: 10.1016/j.jpsychores.2010.05.001

Grippo, K. P., & Hill, M. S. (2008). Self-objectification, habitual body monitoring, and body dissatisfaction in older European American women: Exploring age and feminism as moderators. *Body Image, 5*(2), 173-182. doi: 10.1016/j.bodyim.2007.11.003

Grogan, S. (2011). Body image development in adulthood. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 93-96). New York, NY: Guilford Press.

Henderson-King, D., & Henderson-King E. (2005). Acceptance of cosmetic surgery: Scale development and validation. *Body Image, 2*(2), 137-149. doi: 10.1016/j.bodyim.2005.03.003

Howden, L. M., & Meyer, H. A. (2011). Age and sex composition: 2010 (Publication No.C2010BR-03). Retrieved from U.S. Census Bureau website: http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf

Janssen, I., Powell, L., Kazlauskaite, R., & Dugan, S. A. (2009). Testosterone and visceral fat in midlife women: The Study of Women's Health Across the Nation (SWAN) fat patterning study. *Obesity, 18*(3), 604-610. doi: 10.1038/oby.2009.251

Koch, P. B., Mansfield, P. K., Thurau, D., & Carey, M. (2005). "Feeling frumpy": The relationships between body image and sexual response changes in midlife women. *Journal of Sex Research, 42*(3), 215-223. doi: 10.1080/00224490509552276

Kulinskaya, E., & Staudte, R. G. (2006). Interval estimates of weighted effect sizes in the one-way heteroscedastic ANOVA. *British Journal of Mathematical and Statistical Psychology, 59*(1), 97-111. doi: 10.1348/000711005X68174

Lewis, D. M., & Cachelin, F. M. (2001). Body image, body dissatisfaction, and eating attitudes in midlife and elderly women. *Eating Disorders, 9*(1), 29-39. doi: 10.1080/106402601300187713

Livshits, G., Malkin, I., Williams, F. M. K., Hart, D. J., Hakim, A., & Spector, T. D. (2012). Longitudinal study of variation in body mass index in middle-aged UK females. *Age, 34*(5), 1285-1294. doi 10.1007/s11357-011-9299-0

Maxwell, S. E., & Delaney, H. D. (2004). *Designing experiments and analyzing data: A model comparison perspective* (2nd ed.). New York, New York: Psychology Press, Taylor & Francis Group.

McLaren, L., Hardy, R., & Kuh, D. (2003). Women's body satisfaction at midlife and lifetime body size: A prospective study. *Health Psychology, 22*(4), 370-377. doi: 10.1037/0278-6133.22.4.370

McLean, S. A., Paxton, S. J., & Wertheim, E. H. (2010). Factors associated with body dissatisfaction and disordered eating in women in midlife. *International Journal of Eating Disorders, 43*(6), 527-536. doi: 10.1002/eat.20737

Midlarsky, E., & Nitzburg, G. (2008). Eating disorders in middle-aged women. *The Journal of General Psychology, 135*(4), 393-407. doi: 10.3200/GENP.135.4.393-408

Patrick, J. H., Stahl, S. T., & Sundaram, M. (2011). Disordered eating and psychological distress among adults. *International Journal of Aging and Human Development, 73*(3), 209-226. doi: 10.2190/AG.73.3b

Peat, C. M., Peyerl, N. L., & Muehlenkamp, J. J. (2008). Body image and eating disorders in older adults: A review. *The Journal of General Psychology, 135*(4), 343-358. doi: 10.3200/GENP.135.4.343-358

Pruis, T. A., & Janowsky, J. S. (2010). Assessment of body image in younger and older women. *Journal of General Psychology, 137*(3), 225-238. doi: 10.1080/00221309.2010.484446

Puhl, R. M., Andreyeva, T. & Brownell, K. D. (2008). Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *International Journal of Obesity, 32*(6), 992-1000. doi: 10.1038/ijo.2008.22

Reboussin, B. A., Rejeski, W. J., Martin, K. A., Callahan, K., Dunn, A. L., King, A. C., & Sallis, J. F. (2000). Correlates of satisfaction with body function and body appearance in middle- and older aged adults: The Activity Counseling Trial (ACT). *Psychology and Health, 15*(2), 239-254. doi: 10.1080/08870440008400304

Roy, M., & Payette, H. (2012). The body image construct among Western seniors: A systematic review of the literature. *Archives of Gerontology and Geriatrics, 55*(3), 505-521. doi: 10.1016/j.archger.2012.04.007

Rusticus, S. A., Hubley, A. M., Zumbo, B. D. (2008). Measurement invariance of the Appearance Schemas Inventory-Revised and the Body Image Quality of Life Inventory across age and gender. *Assessment, 15*(1), 60-71. doi: 10.1177/1073191107306805

Schieman, S., Pudrovska, T., & Eccles R. (2007). Perceptions of body weight among older adults: Analysis of the intersection of gender, race, and socioeconomic status. *Journal of Gerontology: Series B, 62*(6), 415-453. doi: 10.1093/geronb/62.6.S415

Schiller, J. S., Ward, B. W., & Freeman, G. (2013). *Early release of selected estimates based on data from the January-June 2013 National Health Interview Survey*. Retrieved from National Center for Health Statistics website: http://www.cdc.gov/nchs/nhis/released201312.htm

Schuler, P. B., Vinci, D., Isosaari, R. M., Philipp, S. F., Todorovich, J., Roy, J. L. P., & Evans, R. R. (2008). Body-shape perceptions and body mass index of older African American and European American women. *Journal of Cross Cultural Gerontology, 23*(3), 255-264. doi 10.1007/s10823-008-9061-y

Slevec, J., & Tiggemann, M. (2011). Media exposure, body dissatisfaction, and disordered eating in middle-aged women: A test of the sociocultural model of disordered eating. *Psychology of Women Quarterly, 35*(4), 617-627. doi: 10.1177/0361684311420249

Thompson, W. R., Gordon, N. F., & Pescatello, L. S. (Eds.). (2010). *ACSM's guidelines for exercise testing and prescription* (8th ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.

U.S. Census Bureau. (2012a). *Educational attainment by selected characteristics: 2010* (Table 231). Retrieved from U.S. Census Bureau website: https://www.census.gov/compendia/statab/cats/education.html

U.S. Census Bureau. (2012b). *Selected characteristics of households, by total money income in 2011* (Table HINC-01). Retrieved from U.S. Census Bureau website: http://www.census.gov/hhes/www/cpstables/032012/hhinc/hinc01_000.htm

U.S. Census Bureau. (2012c). *Statistical abstract of the United States. Section 3, Health & Nutrition*. Retrieved from U.S. Census Bureau website: https://www.census.gov/compendia/statab/2012edition.html

U.S. Census Bureau. (2013). *Annual estimates of the resident population by sex, age, race and Hispanic origin for the United States and States: April 1, 2010 to July 1, 2012*. Retrieved from U.S. Census Bureau website: http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Voda, A. M., Christy, N. S., & Morgan J. M. (1991). Body composition changes in menopausal women. *Women & Therapy, 11*(2), 71-96. doi: 10.1300/J015V11N02_07

Wertheim, E. H., & Paxton, S. J. (2011). Body image development in adolescent girls. In T. F. Cash & L. Smolak (eds.), *Body image: A handbook of science, practice and prevention* (2nd ed.). [Kindle version] (pp. 75-83). New York, NY: Guilford Press.

Who is the SurveyMonkey® Audience? (n.d.). *SurveyMonkey®*. Retrieved from http://help.SurveyMonkey®.com/app/answers/detail/a_id/5654

Tables

Table 1. Percentages for Full* Sample by Demographic Variable

	Total (n=947)		40s (n=195)		50s (n=219)		60s (n=271)		70s (n=262)	
Body Mass Index (n)										
Normal Weight (18.00-24.99)	29.1	(276)	35.9	(70)	29.2	(64)	23.2	(63)	30.2	(79)
Overweight (25.00-29.99)	28.8	(273)	22.6	(44)	27.4	(60)	27.7	(75)	35.9	(94)
Obese I (30.00-34.99)	20.6	(195)	19.0	(37)	23.3	(51)	25.1	(68)	14.9	(39)
Obese II (35.00-39.99)	10.7	(102)	10.8	(21)	8.2	(18)	11.8	(32)	11.8	(31)
Obese III (40.00+)	8.8	(83)	9.7	(19)	8.7	(19)	10.3	(28)	6.5	(17)
missing	1.9	(18)	2.0	(4)	3.2	(7)	1.8	(5)	0.8	(2)
Relationship Status (n)										
Monogamous Relationship	63.7	(603)	80.5	(157)	64.8	(142)	64.9	(176)	48.9	(128)
Looking for a Partner	15.6	(148)	12.3	(24)	19.2	(42)	17.0	(46)	13.7	(36)
Not Looking for a Partner	20.2	(191)	6.2	(12)	15.5	(34)	17.7	(48)	37.0	(97)
missing	.5	(5)	1.0	(2)	.50	(1)	.4	(1)	.4	(1)
Menstrual Status (n)										
Pre/Peri-Menopausal	21.2	(201)	79.5	(155)	19.6	(43)	1.1	(3)	0	(0)
Postmenopausal	75.0	(710)	15.9	(31)	75.8	(166)	95.2	(258)	97.3	(255)
missing	3.8	(36)	4.6	(9)	4.6	(10)	3.7	(10)	2.7	(7)

* Reduced sample (n=846) was within 1% on all items listed above.

Table 2. Sample Characteristics

	Study Sample	U.S. Population	Difference
Educational Attainment*			
No high school degree	2%	12%	-10%
High school degree	25%	31%	-6%
Some college, no degree	30%	17%	13%
Associate's degree	11%	10%	1%
Bachelor's degree	20%	19%	1%
Advanced degree	12%	10%	2%
Household Income**			
$0 to $24,999	21%	22%	-1%
$25,000 to $49,999	32%	23%	9%
$50,000 to $74,999	22%	18%	4%
$75,000 to $99,999	12%	12%	0%
$100,000 to $149,999	9%	13%	-4%
$150,000 to $199,999	2%	6%	-4%
$200,000 and higher	2%	5%	-3%

*U.S. population data is for females age 25 and older

**U.S. population data is for both genders with a householder age of 45 to 74

Table 3. Full Sample Tamhane's Post Hoc Results and Effect Size of BIQLI Total Score and Decade

			Mean Differences (Effect Size)			
Age	Mean (SD)	n	40s	50s	60s	70s
40s	0.53 (1.31)	195	--			
50s	0.67 (1.38)	219	0.14 (0.11)	--		
60s	0.84 (1.34)	271	0.31 (0.24)	.17 (0.13)	--	
70s	1.20 (1.15)	262	0.68** (0.52)	0.54** (0.42)	0.36** (0.28)	--

**p< .01

†The younger decade had the lower mean in all cases.

Table 4. Reduced Sample Tamhane's Post Hoc Results and Effect Size of BIQLI Total Score and Decade

			Mean Differences (Effect Size)			
Age	Mean (SD)	n	40s	50s	60s	70s
40s	0.42 (1.33)	154	--			
50s	0.52 (1.37)	180	0.10 (0.08)	--		
60s	0.80 (1.40)	239	0.38* (0.29)	.28 (0.22)	--	
70s	1.17 (1.15)	243	0.75** (0.58)	0.65** (0.50)	0.38** (0.29)	--

*p< .05, **p< .01

†The younger decade had the lower mean in all cases.

Table 5. Means, Standard Deviations, and BIQLI Total Score Correlations to Body Mass Index

	M	*SD*	*N*	*r*
Full Sample	0.837	1.317	929	-.320**
Adjusted Sample	0.776	1.326	800	-.345**
40s Cohort Full	0.528	1.306	191	-.385**
40s Cohort Adjusted	0.419	1.330	151	-.424**
50s Cohort Full	0.668	1.384	212	-.377**
50s Cohort Adjusted	0.520	1.371	173	-.387**
60s Cohort Full	0.841	1.341	266	-.272**
60s Cohort Adjusted	0.796	1.350	234	-.320**
70s Cohort Full	1.204	1.152	260	-.278**
70s Cohort Adjusted	1.174	1.155	242	-.293**

**$p < .001$

Table 6. Adjusted Analysis of Variance for BIQLI Total Score and Body Mass Index

Source	*df*	*MS*	*Welch's F*	*p*	*Weighted* R^2
Full Sample					
Between	4	26.615	26.446	.000	.11
Within	313.070	1.006			
Adjusted Sample					
Between	4	27.261	27.062	.000	.12
Within	271.308	1.007			
Full 60s Cohort					
Between	4	6.009	5.889	.000	.09
Within	97.901	1.020			
Adjusted 60s Cohort					
Between	4	8.233	8.042	.000	.13
Within	83.942	1.024			

Table 7. Analysis of Variance for BIQLI Total Score and Body Mass Index

Source	*SS*	*df*	*MS*	*F*	*p*	R^2
Full 40s Cohort						
Between	54.355	4	13.589	9.317	.000	.17
Within	271.290	186	1.459			
Total	325.645	190				
Adjusted 40s Cohort						
Between	58.181	4	14.545	10.163	.000	.22
Within	208.943	146	1.431			
Total	267.124	150				
Full 50s Cohort						
Between	61.753	4	15.438	9.236	.000	.15
Within	346.025	207	1.672			
Total	407.778	211				
Adjusted 50s Cohort						
Between	50.068	4	12.517	7.634	.000	.15
Within	275.470	168	16.40			
Total	325.538	172				
Full 70s Cohort						
Between	37.059	4	9.265	7.674	.000	.11
Within	307.871	255	1.207			
Total	344.930	259				
Adjusted 70s Cohort						
Between	35.695	4	8.924	7.372	.000	.11
Within	286.872	237	1.210			
Total	322.567	241				

Table 8. Means and Standard Deviations for BIQLI Total Score by Body Mass Index

	Full Sample			Adjusted Sample		
	n	*M*	*SD*	*n*	*M*	*SD*
All Ages						
Normal	276	1.287	1.154	234	1.267	1.158
Overweight	273	1.043	1.129	239	1.009	1.133
Obese I	195	0.483	1.407	167	0.385	1.403
Obese II	102	0.448	1.414	87	0.321	1.385
Obese III	83	-0.058	1.324	73	-0.159	1.313
40s Cohort						
Normal	70	1.080	1.252	55	0.967	1.252
Overweight	44	0.717	1.146	35	0.859	1.190
Obese I	37	-0.005	1.198	28	-0.281	1.106
Obese II	21	-0.255	1.297	17	-0.396	1.351
Obese III	19	-0.124	1.090	16	-0.368	0.964
50s Cohort						
Normal	64	1.143	1.195	52	1.041	1.188
Overweight	60	1.011	1.266	45	0.799	1.282
Obese I	51	0.256	1.321	45	0.162	1.272
Obese II	18	0.006	1.434	15	-0.102	1.329
Obese III	19	-0.449	1.475	16	-0.626	1.533
60s Cohort						
Normal	63	1.377	1.076	56	1.485	1.072
Overweight	75	1.002	1.088	68	0.936	1.103
Obese I	68	0.557	1.567	59	0.422	1.549
Obese II	32	0.504	1.142	27	0.311	1.362
Obese III	28	0.274	1.400	24	0.245	1.361
70s Cohort						
Normal	79	1.517	1.059	71	1.493	1.062
Overweight	94	1.250	1.035	91	1.224	1.034
Obese I	39	1.115	1.182	35	1.143	1.197
Obese II	31	1.122	1.205	28	0.994	1.199
Obese III	17	-0.093	1.229	17	-.093	1.229

Table 9. Post Hoc Results and Effect Size of BIQLI Total Score and Body Mass Index

	Mean Differences (Effect Size)									
	Full Sample					Reduced Sample				
	All	40s	50s	60s	70s	All	40s	50s	60s	70s
Normal to Over	0.24	0.36	0.13	0.38	0.27	0.26	0.11	0.24	0.55	0.27
	(0.20)	(0.30)	(0.10)	(0.29)	(0.25)	(0.21)	(0.09)	(0.19)	(0.24)	(0.25)
Normal to Obese I	0.80**	1.09**	0.89**	0.82**	0.40	0.88**	1.25**	0.87**	1.06**	0.35
	(0.64)	(0.90)	(0.69)	(0.63)	(0.36)	(0.71)	(1.04)	(0.69)	(0.83)	(0.32)
Normal to Obese II	0.84**	1.34**	1.14**	0.87*	0.40	0.95**	1.09**	1.14*	1.17**	0.50
	(0.67)	(1.11)	(.88)	(0.67)	(0.36)	(0.76)	(0.91)	(.89)	(0.92)	(0.45)
Normal to Obese III	1.35**	1.20**	1.59**	1.10**	1.61**	1.43**	1.33**	1.67**	1.24**	1.59**
	(1.08)	(0.99)	(1.23)	(0.85)	(1.47)	(1.14)	(1.11)	(1.30)	(0.97)	(1.45)
Over to Obese I	0.56**	0.72	0.76*	0.44	0.13	0.62**	1.14**	0.64	0.51	0.08
	(0.45)	(0.60)	(0.29)	(0.34)	(0.12)	(0.50)	(0.95)	(0.50)	(0.40)	(0.07)
Over to Obese II	0.60**	0.97*	1.01*	0.50	0.13	0.69**	1.26**	0.90	0.63	0.23
	(0.48)	(0.80)	(0.78)	(0.39)	(0.12)	(0.55)	(1.05)	(0.70)	(0.49)	(0.21)
Over to Obese III	1.10**	0.84	1.46**	0.73	1.34**	1.17**	1.23**	1.43**	0.69	1.32**
	(0.89)	(0.70)	(1.13)	(0.56)	(1.22)	(1.04)	(1.03)	(1.11)	(0.54)	(1.20)
Obese I to Obese II	0.04	0.25	0.25	0.05	-0.01	0.06	0.12	0.26	0.11	0.15
	(0.03)	(0.21)	(0.19)	(0.04)	(0.01)	(0.05)	(0.10)	(0.20)	(0.09)	(0.14)
Obese I to Obese III	0.54*	.012	0.71	0.28	1.21**	0.54*	0.09	0.79	0.18	1.24**
	(0.43)	(0.10)	(0.55)	(0.22)	(1.10)	(0.44)	(0.08)	(0.62)	(0.14)	(1.13)
Obese II to Obese III	0.51	-0.13	0.46	0.23	1.22**	0.48	-0.03	0.52	0.07	1.07*
	0.40)	(0.11)	(0.36)	(0.18)	(1.11)	(0.39)	(0.03)	(0.41)	(0.05)	(0.97)

*p< .05, **p< .01

†The lower BMI had the higher mean in all cases.

Figure 1. Decade Cohort Mean Plots for Full Sample

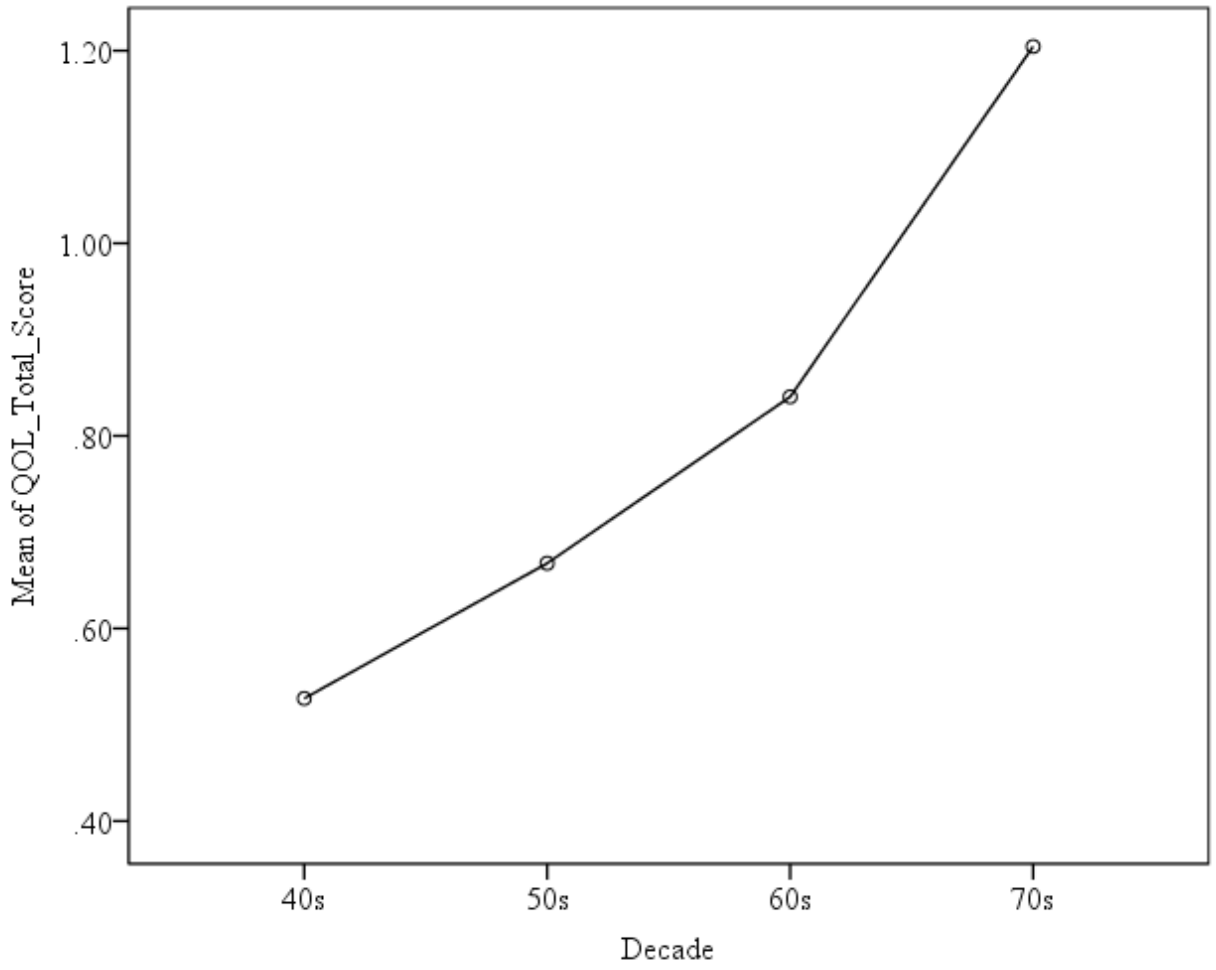
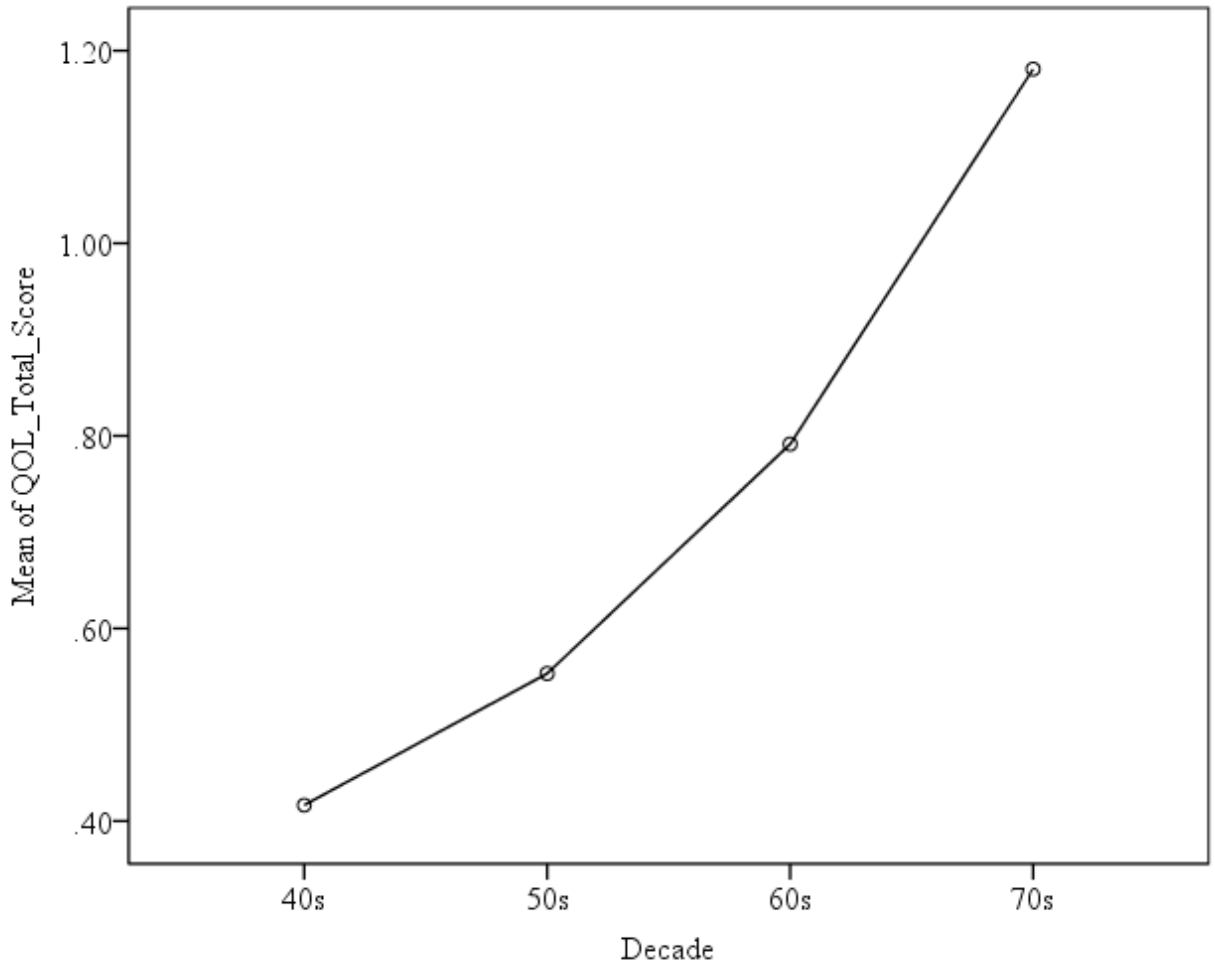


Figure 2. Decade Cohort Mean Plots for Reduced Sample



Appendix A

January 4, 2013

MEMORANDUM

TO:	Rachel Avants Jean Henry
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	12-12-359
Protocol Title:	*The Impact of Body Image on Women in Later Life: Effects on Quality of Life and Body Perception*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 01/04/2013 Expiration Date: 01/03/2014

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 800 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu

Chapter 6: Conclusion

The purpose of this dissertation was two-fold: to validate a body image instrument and, pending positive validation results, to gain a better understanding of the status of body image quality of life and its correlates for women between the ages of 40 and 79. Validation for the Body Image Quality of Life Inventory (BIQLI) was examined with convergent validity and principal component analysis (PCA). Body mass index (BMI) and total score on the Body Image Ideals Questionnaire (BIQ) were compared to total BIQLI score to determine convergent validity. Convergent validity was supported, given that the direction and general strength of the correlations were comparable to previous studies (Cash & Flemming, 2002; Cash, Jakatdar, & Williams, 2004). Results from the PCA and Cronbach's alpha also supported the use of the BIQLI with older adult women. The one-factor model is strongly suggested when comparing across age groups, but multiple-factor models may provide more detail when examining a sample that has a small age range. Even when using the one-factor model, practitioners should be aware of the potential answer patterns. Removal of questions may not impact the overall strength of the inventory; however, each question addresses a unique area that may assist the health practitioner in determining areas that should be targeted.

The results from this study supported and clarified previous findings in relation to body image in older adult women. The strongest correlate to BIQLI total score was BMI, which coincides with findings in previous body image studies (Algars et al., 2009; Anderson et al., 2002; Bedford & Johnson, 2006; Lewis & Cachelin, 2001; Reboussin et al., 2000). However, the current study identified a new trend where the strength of the correlation between BMI and BIQLI total score was weaker for each subsequent decade. Age by decade yielded small ANOVA effect sizes and correlations, supporting previous findings that age has only a small

effect on body image levels (Bedford & Johnson, 2006; Grippo & Hill, 2008; Lewis & Cachelin, 2001; Pruis & Janowsky, 2010). The observed relationship between total BIQLI score, BMI and age suggests that a more complex relationship may exist. However, the two-way ANOVA did not return statistically significant results, possibly due to extreme variances in cell sizes. Race also had an effect on the study results, but the small percentage of non-Caucasian participants made it difficult to determine the exact impact. Results for only Caucasians indicated slightly more negative BIQLI scores and higher effect sizes than when all ethnicities were combined. This supports previous research findings that Caucasians experience more negative body image than other ethnicities (Anderson et al., 2002; Cash & Henry, 1995; Livshits et al., 2012; Schieman, Pudrovska, & Eccles, 2007). The 60s decade was the only group to return statistically significant results for BIQLI total score compared to relationship status and income level. These findings suggest that this age group may have a unique body image experience when compared to the other age groups.

Many physical, emotional, and mental changes can occur throughout the aging process. Even the possibility of these changes makes it important to treat different age groups as separate populations when researching body image. A wide variety of instruments have been used to examine the status of body image in adult women. However, all of the instruments were created and validated for young adults and very few have had any attempt made to show that they are valid and reliable for older adults. Given the lack of validation, all previous findings in older adults are suspect and should be interpreted with extreme caution. The validation performed as a part of this study will allow researchers to use the BIQLI for women ages 40 to 79 with confidence.

The current study is one of only seven studies conducted in the United States, since the year 2000, which used a sample of at least 200 women over the age of 40, and the only study out of the seven that used an instrument that was validated for the targeted age group. The data obtained from the study sample after successful validation of the BIQLI, holds a unique place in the adult body image research literature. The large sample size, coupled with the use of a validated instrument, provides the most generalizable findings available today for older adult women, ages 40 to 79 living in the United States. The findings will help health practitioners develop more accurate body image interventions and will help shape the future direction of older adult body image research.

References

Algars, M., Santtila, P., Varjonen, M., Witting, K., Johansson, A., Jern, P., & Sandnabba, N. K. (2009). The adult body: How age, gender, and body mass index are related to body image. *Journal of Aging and Health, 21*(8), 1112-1132. doi: 10.1177/0898264309348023

Anderson, L. A., Eyler, A. A., Galuska, D. A., Brown, D. R., & Brownson, R. C. (2002). Relationship of satisfaction with body size and trying to lose weight in a national survey of overweight and obese women aged 40 and older, United States. *Preventive Medicine, 35*(4), 390-396. doi: 10.1006/pmed.2002.1079

Bedford, J. L., & Johnson, C. S. (2006). Societal influences on body image dissatisfaction in younger and older women. *Journal of Women and Aging*, *18*(1), 41-55. doi: 10.1300/J074v18n01_04

Cash, T. F., & Fleming, E.C. (2002). The impact of body-image experiences: Development of the Body Image Quality of Life Inventory. *International Journal of Eating Disorders, 31*(4), 455-460. doi: 10.1002/eat.10033

Cash, T. F., & Henry, P. E. (1995). Women's body images: The results of a national survey in the U.S.A. *Sex Roles*, 33(1-2), 19-28. doi: 10.1007/BF01547933

Cash, T. F., Jakatdar, T. A., & Williams, E. F. (2004). The body image quality of life inventory: further validation with college men and women. *Body Image, 1*(3), 279-287. doi: 10.1016/S1740-1445(03)00023-8

Grippo, K. P., & Hill, M. S. (2008). Self-objectification, habitual body monitoring, and body dissatisfaction in older European American women: Exploring age and feminism as moderators. *Body Image, 5*(2), 173-182. doi: 10.1016/j.bodyim.2007.11.003

Lewis, D. M., & Cachelin, F. M. (2001). Body image, body dissatisfaction, and eating attitudes in midlife and elderly women. *Eating Disorders, 9*(1), 29-39. doi: 10.1080/106402601300187713

Livshits, G., Malkin, I., Williams, F. M. K., Hart, D. J., Hakim, A., & Spector, T. D. (2012). Longitudinal study of variation in body mass index in middle-aged UK females. *Age, 34*(5), 1285-1294. doi 10.1007/s11357-011-9299-0

Pruis, T. A., & Janowsky, J. S. (2010). Assessment of body image in younger and older women. *Journal of General Psychology, 137*(3), 225-238. doi: 10.1080/00221309.2010.484446

Reboussin, B. A., Rejeski, W. J., Martin, K. A., Callahan, K., Dunn, A. L., King, A. C., & Sallis, J. F. (2000). Correlates of satisfaction with body function and body appearance in middle- and older aged adults: The Activity Counseling Trial (ACT). *Psychology and Health, 15*(2), 239-254. doi: 10.1080/08870440008400304

Schieman, S., Pudrovska, T., & Eccles R. (2007). Perceptions of body weight among older adults: Analysis of the intersection of gender, race, and socioeconomic status. *Journal of Gerontology: Series B, 62*(6), 415-453. doi: 10.1093/geronb/62.6.S415