Women's body image throughout the adult life span: Latent growth modeling and qualitative approaches

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Women’s body image throughout the adult life span: Latent growth modeling and qualitative approaches

by

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A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Apparel, Merchandising, and Design

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Iowa State University
Ames, Iowa
2013
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ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to my major professor, Dr. Damhorst, for her devotion of time and energy for my dissertation and her support throughout my graduate program.

I would also like to thank my committee members, Dr. Karpova, Dr. Lee, Dr. Shelley, and Dr. Martin, for their guidance and support throughout the course of this research.

In addition, I am grateful to my family, especially my husband and brother, Minjung Lee and Hyunho Lee, for their unending love and support.

Finally, and most importantly, I would like to thank my parents for their encouragement, hours of patience, respect, and love. I would not have been able to complete my degree without your support. I love you and thank you for everything you have done for me.
ABSTRACT

The objectives of this study were to understand how women view their body image throughout the adult life course and explore patterns in adult women’s body image development from the life course perspective using a relatively new approach. Older female participants aged 65 and over were asked to recall and discuss their memories of their bodies in earlier life stages—early and middle adulthood—as well as to rate and discuss their current body image perceptions in late adulthood. Using existing scales, a questionnaire assessed participants’ perceptions about actual body shape, ideal body shape, and body satisfaction in each of three life phases. Seven open-ended questions were also adopted in the questionnaire to arrive at a deeper understanding of changes in women’s body image perception throughout their adult life span as well as to improve the accuracy of retrospective data recalled by participants. Of the 203 older women asked to participate in the survey, 107 responses were returned, yielding a response rate of 52.7%. All participants were White/European Americans with mean age of 80.

Data analysis consisted of three phases of analysis—preliminary analysis for quantitative data, latent growth model (LGM) analysis for hypothesis testing, and qualitative data analysis for open-ended responses. Increasing trajectories were found in women’s perceptions about their actual body shape, ideal body shape, and actual/ideal body image discrepancy throughout the adult life span. Women became physically larger as they aged: their ideal body shape increased as well, making it more realistic and age-appropriate. In contrast to the previous findings, the LGM analysis showed decreasing trajectories in five body satisfaction items—satisfaction with physical appearance, body size and shape, body weight, physical attractiveness, and physical functioning—throughout women’s adult life span. Women felt that they placed more value on appearance when they were younger, while
their body image concerns shifted to body function and health status as they aged. A desire to lose body weight and/or reduce body size was a lifelong issue for the women. Their ideal body shape was always thinner than their perceived actual bodies.
CHAPTER 1. INTRODUCTION

Body image is a complex and multidimensional concept, defined as a person’s mental representation of his/her own body, encompassing perceptual, affective, cognitive, and behavioral body aspects (Cash & Pruzinsky, 2002; Fisher, 1986, 1990; Grogan, 2008). Especially for women, body image can be an important source of one’s emotional state, health state, behavior changes, and quality of life for individuals of all ages. Many previous research studies have confirmed that negative body image perceptions can result in higher risk for depression (Benas, Uhrlass, & Gibb, 2010), greater risk for the development of eating disorders (Keel, Baxter, Heatherton, & Joiner, 2007), lower levels of subjective well-being and happiness (Stokes & Frederick-Recascino, 2003), and risky appearance management behaviors (Rudd & Lennon, 2000).

Several studies concluded that women are more interested in, concerned about, and worried about their body image than are men (Striegel-Moore et al., 2009). Although both men and women experience significant body changes throughout their life span, body changes are more salient for women. While women consider aging to have negative impacts on appearance, age-related changes in appearance are less important for men (Halliwell & Dittmar, 2003). In many cultures, women have been judged by their physical appearance more harshly than are men (Buote, Wilson, Strahan, Gazzola, & Papps, 2011). Physical attractiveness has a powerful effect on women’s body image perceptions, such as body satisfaction.

Women’s attractiveness is judged according to culturally constructed standards of ideal beauty. In every culture, each period of history has its own standards of beauty, and these standards have significantly changed over time. Current western societies are inordinately emphasizing thinness as an ideal for female beauty, and women receive more social pressures to be beautiful than ever before (Basow, Foran, & Bookwala, 2007; Schwartz,
Phares, Tantleff-Dunn, & Thompson, 1999). Accordingly, dissatisfaction that women have with their bodies has increased, as evidenced by extensive findings that many women have been suffering negative consequences associated with poor body image (Cash, Morrow, Hrabosky, & Perry, 2004; Striegel-Moore et al., 2009).

Body image researchers have been interested in women’s body image development. Throughout the adult life span, women experience physical, social, psychological, and biological changes that may have significant impacts on how they perceive their body and appearance (Altabe & Thompson, 1993; Guo, Zeller, Chumlea, & Siervogel, 1999; Kamysheva, Skouteris, Wertheim, Paxton, & Milgrom, 2008; McKinley & Lyon, 2008; McLaren, Hardy, & Kuh, 2003; Moschis, 1996). For instance, changes in self-perceived body image resulting from various changes, such as weight gain, marriage, pregnancy, social role changes, retirement, and menopause, can influence one’s perceived level of body satisfaction.

A significant amount of research has focused on body image development during childhood and adolescence (e.g., Moriarty & Harrison, 2008; Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006; Paxton, Eisenberg, & Neumark-Sztainer, 2006; Stice & Whitenton, 2002), whereas there has been relatively less research that investigates the adult life span (Gupta & Schork, 1993; Tiggemann, 2004). In addition, most research on body image development during adulthood has compared body image perception between people in different age groups (Allaz, Bernstein, Rouget, Archinard, & Morabia, 1998; Bedford & Johnson, 2006; Grogan, 2008; Lamb, Jackson, Cassiday, & Priest, 1993; Pliner, Chaiken, & Flett, 1990; Rozin & Fallon, 1988; Rusticus & Hubley, 2006; Stevens & Tiggemann, 1998; Tiggemann & Lynch, 2001).

**Problem Statement**

The development of body image has been one of the major areas of interest among body image researchers. Few studies, however, have assessed women’s body image
throughout the adult life span using a longitudinal research design (Heatherton, Mahamedi, Striepe, Field, & Keel, 1997; Keel et al., 2007), whereas relatively large studies have examined body image of adolescents through longitudinal investigations (Neumark-Sztainer et al., 2006; Paxton et al., 2006; Stice & Whitenton, 2002).

Most studies related to change of body image during the life span have focused on the differences in body image perceptions between individuals in different age groups. Even though there have been a few attempts to examine women’s body image across the life span, no study has been conducted to explore women’s body image throughout the entire adult life course. To identify how women’s body image perceptions change as they age, some studies directly compared body image of different age groups, adopting a cross-sectional study technique (Lamb et al., 1993; Rozin & Fallon, 1988; Tiggemann & Lynch, 2001). However, the limitation of a cross-sectional study is that results cannot be interpreted as intra-individual aging effects. For example, most cross-sectional studies have found that middle-aged women in comparison to younger women have heavier ideal body shapes which are more realistic and age-appropriate (Lamb et al., 1993; Stevens & Tiggemann, 1998; Tiggemann & Lynch, 2001). However, it cannot be said that the differences between the different age groups are solely due to aging effects. The different age groups also differ in the experience of social/cultural pressures on body image. That is, older women in their sixties during the 2000s and 2010s were exposed to media when they were younger adults which showed a slightly fuller body size as an ideal body shape. Tiggemann and McGill (2004) also demonstrated that the chasm between the average woman’s self-perceived body shape and societal standards for the ideal body has become larger, especially in body weight and size. Thus, the results of a cross-sectional study may be due to “historical changes” in body ideal shape rather than effects of aging (Grogan, 2008, p. 154). In addition, several researchers have confirmed that negativity of body image among women has increased over the last four
decades (Berscheid, Walster, & Bohnstedt, 1973; Cash, 2002; Cash, Winstead, & Janda, 1986; Feingold & Mazzella, 1998; Garner, 1997). If body dissatisfaction results from the discrepancy between the ideal and perceived real body images, we can conclude that women’s ideal body shape has changed. The findings from cross-sectional studies are limited for generalization. For a better understanding of the development of women’s body image, an in-depth study using a research method other than a cross-sectional technique should be conducted.

**Purpose**

The objectives of this study are: (1) to understand how women view their body image throughout the adult life course and (2) to explore patterns in adult women’s body image development from the life course perspective. To achieve these objectives, three research questions guide this study: (1) how do women perceive their body image in each life stage—early, middle, and late adulthood, (2) how have women’s body image perceptions changed as they age, and (3) what are the relationships of previous body images to current body image perceptions.

This study will make a contribution to fill a gap in the existing literature about women’s body image development. To overcome the limitation of a cross-sectional study and the extreme time commitment to conduct a longitudinal study over the adult life span, this study used retrospective self-reported data. Older female participants aged 65 and over were asked to recall and discuss their memories of their bodies in earlier life stages—early adulthood and middle adulthood—as well as to rate and discuss their current body image perceptions in late adulthood. To enhance the accuracy and the quality of retrospective data, several strategies were be adopted, such as using a mixed method of qualitative and quantitative data and referring to each participant’s own pictures at each life stage when answering questions (Yoshikawa, Weisner, Kalil, & Way, 2008).
Several body image researchers have made some conclusions with respect to how women’s body image perceptions have changed as they age (Bedford & Johnson, 2006; Grogan, 2008; Rusticus & Hubley, 2006; Tiggemann & Lynch, 2001). Most of these conclusions, however, have been based on the comparisons of the body image perceptions among different individuals in different age groups. Due to the fact that changes in women’s body image perceptions throughout the whole adult life course have not yet been investigated, identifying the effects of aging on body image perceptions would add to the current literature on body image development.

In addition, this study explores patterns in adult women’s body image development from a life course perspective. One of the notions in life course perspective is that development over the life span can display distinct trajectories and transitions (Wethington, 2005). However, no previous study has examined whether there are distinct trajectories of women’s body image perceptions. Furthermore, according to the life course perspective one’s earlier conditions, experiences, and perceptions of a phenomenon can shape and influence later outcomes (Dannefer, 2003). Thus, identifying the trajectories of women’s body image perceptions during the life span and exploring the relationships of previous body images to current body image perceptions is of theoretical interest. Identifying major transitions that affect women’s body image perceptions at each stage of their adult life span also will broaden our understandings of aging.

To explore patterns in adult women’s body image development, this study examined the trajectories of four body image variables throughout the adult life course, including perceived actual body shape, perceived ideal body shape, perceived actual/ideal body image discrepancy, and perceived level of body satisfaction. Latent growth modeling (LGM), which has been widely used in the field of developmental psychology, estimated the trends in four body image variables over the adult life span. To arrive at a deeper understanding of
developmental changes in women’s body image perception, the survey questionnaire included both scale ratings and open-ended questions.

**Definitions**

The followings are definitions of the key concepts investigated in this study.

**Body Image:** A person’s perceptions, thoughts, and feelings about her body (Grogan, 2008, p. 3).

**Body Satisfaction:** The extent to which an individual is happy with her physical appearance (Martin, 2010).

**Life Course:** A sequence of socially defined events and roles that the individual enacts over time (Giele & Elder, 1998, p. 22).

**Life Course Perspective:** A multidisciplinary paradigm for the study of people’s lives within various social, structural, and cultural contexts (Elder, Johnson, & Crosnoe, 2003).

**Life Span:** Duration of life (George, 1993). The present study focuses on life span during adulthood.

**Perceived Actual Body Image:** An individual’s sense of her own body appearance, features, and functioning (Dittmar, Halliwell, & Ive, 2007).

**Perceived Actual/ideal Body Image Discrepancy:** The difference between one’s perceived actual and ideal body image (Cash & Szymanski, 1995).

**Perceived Ideal Body Image:** Desired body appearance, features, and functioning that an individual wants to have (Dittmar et al., 2007).
CHAPTER 2. REVIEW OF LITERATURE

This chapter contains a review of literature on consumer behavior of older people, life course perspective, theory of self-discrepancy, body image, women’s body image development, body image discrepancy, and body satisfaction. Based on the literature review, research questions that guide this study and five major hypotheses for the study are presented.

Older Population

Often referred to as an aging society, the U.S. has been experiencing dramatically increasing numbers in its older population. The proportion of people aged 65 or older accounted for about 4% of the total population in 1900 (Hobbs & Stoops, 2002; Rice & Estes, 1984). The population size of people over 65 has significantly increased to about 35 million in 2000, representing about 12.4% of the total population in the United States (U.S. Bureau of the Census, 2000). This proportion has continued to increase to 40 million older people by 2010, accounting for about 13.0% of the total population (U.S. Bureau of the Census, 2011). Census experts expect a significant increase in the older population after 2011, as the baby boom generation begins to reach age 65 (Gillon, 2004). By the year 2050, it is projected that more than 108 million Americans—about 24.6% of the population—will be 65 or older (U.S. Bureau of the Census, 2008).

In addition to the growth rate of the older population, gerontologists are interested in distinct characteristics of older age groups, such as educational and economic status, employment status, marital status, growth of ethnic minority groups, and geographic location (Hooyman & Kiyak, 2011). The educational level of older people has dramatically moved upward since 1950. In 2008, about 75% of those 65 and older had received a high school diploma or higher; in contrast, less than 20% in 1950 had reached that level of educational achievement. The proportion of those 65 and older with a Bachelor’s degree or higher also increased to 19.4% in 2008 (U.S. Bureau of the Census, 2008).
The median income of households for those 65 years and older in 2008 was $29,744. The number of people 65 and older in poverty was 9.7% or 3.7 million in 2008. Only 15% of people over 65 were in the labor force in 2008, representing 5 million people. This proportion can be compared to 65% of the population 16 years and older, who were in the labor force during 2008. More than 53% of those 65 and older were married, about 31% were widowed, 9.8% were divorced, and 4.6% had never married (U.S. Bureau of the Census, 2008).

Ethnic minority groups are of interest in the U.S. due to their distinct characteristics, as well as their higher population growth rate over the White population. In 2000, the proportion of ethnic minorities among the population 65 and older was 16.4%. This proportion increased to 18.8% by 2008. Those 65 and older were 80.7% White, 8.4% Black or African American, 6.6% Hispanic or Latino, 3.2% Asian, 2% other, and less than 1% Native American Indian and Pacific Islander in 2008 (U.S. Bureau of the Census, 2008).

Regarding geographic location of older people, Florida had the largest proportion of the population 65 and older (17.1%), followed by West Virginia (15.5%), and Pennsylvania (15.3%) in 2008 (U.S. Bureau of the Census, 2000, 2008). In addition, the growing size of the older population is occurring not only in the United States, but throughout the world. The population aged 65 and older is estimated to have increased by more than 67% from 1990 to 2010, rising from 375 million in 1990 to 629 million in 2010 (UN Population Division, 2008).

**Life Course Perspective**

The life course perspective, also known as life course theory, refers to a multidisciplinary paradigm for the study of people’s lives within various social, structural, and cultural contexts (Elder, 1994; Elder et al., 2003). This theoretical perspective has been applied to a variety of studies in social and behavioral sciences to understand the developmental trajectories of behavior, attitudes, experiences, and characteristics of individuals and how these trajectories are influenced by history, social structure, and cultural
environment (Kok, 2007; Mortimer & Shanahan, 2003). Elder et al. (2003) outlined five principles of the life course perspective as a theoretical guidance for research on human lives: development, agency, time and place, timing, and linked lives.

The principle of life-span development. This principle emphasizes that the life course is a cumulative and ongoing process. Patterns of aging and outcomes in later life stages are strongly associated with experiences in earlier stages of life (Dannefer, 2003). Thus, life course studies should be based on longitudinal perspective.

The principle of agency. Human agency has been considered as a key concept in life course studies (Elder, 1994). The principle of agency claims that people actively respond—making choices and decisions—to social influence and structural constraints. Each individual plans and determines his/her own life course within the given opportunities and constraints of the social environment. That is, to fully understand people’s behavior patterns, individual differences should be taken into account in life course research (Kok, 2007).

The principle of time and place. This principle emphasizes historical effects on the life course. Different age groups also differ in the experience of the social, cultural, and historical environment. Thus, each birth cohort may have its own set of opportunities and constraints that affect its members’ life course patterns (Elder, 1994).

The principle of timing. This principle focuses on the age-related social timing that influences behavior patterns in an individual’s life course. Each individual may respond to the same transition in different ways depending on when he/she experiences it during the life course. Based on this principle of timing, many life course researchers also have brought attention to the interaction of different forms of time, such as age, stage of the family cycle, and social and economic changes (Elder, 1994; Kok, 2007).

The principle of linked lives. The notion that people live interdependently with others through the socialization process is the principle of linked lives. Various aspects of
social networks (e.g., a parent, a spouse, work colleagues, and social groups) can influence a person’s development throughout the life course. For example, a transition experienced by one family member (e.g., a daughter’s transition to motherhood) can lead to transitions for other family members (e.g., a mother’s transition to grandparenthood) as well.

Life course perspective focuses on two key concepts—trajectories and transitions (George, 1993; Wethington, 2005). First, trajectories are long-term patterns of behaviors that a person engages in and develops throughout the life course. In body image research, trajectories may refer to the patterns of body image perception and its associated social/cultural factors that develop and persist over time (Liechty & Yarnal, 2010). The second concept, transitions, can be defined as changes in roles or statuses that a person holds, such as social roles or responsibilities. Trajectories and transitions are interrelated because trajectories always include a sequence of multiple transitions (Kok, 2007) and major transitions can affect a person’s life trajectories. For example, pregnancies and menopause can be major transitions affecting trajectories of women’s body image perceptions (Devine, Bove, & Olson, 2000; McLaren et al., 2003).

According to Erikson (1950) and Levinson (1996), an individual’s adult life course comprises a sequence of three eras, each lasting for approximately twenty-five years—early adulthood (from age seventeen to forty), middle adulthood (from age forty to sixty-five), and late adulthood (from age sixty-five). There are common developmental processes that people generally experience at each phase of the adult life course. Early adulthood is the time when individuals seek to form intimate relationships and enter the job market for the occupational career. Newman and Newman (2009) stated early adulthood can be characterized by work, intimacy, marriage, and parenting. As several social roles are newly emerged during early adulthood (i.e., worker, spouse, and parent), individuals are likely to encounter significant challenges in balancing work and family. Especially, women compared to men tend to
experience higher levels of work-family conflict in trying to meet the responsibilities in both roles (Cinamon & Rich, 2002). Making a decision about childbearing and being a parent may also be the central commitments of early adulthood. Women in pregnancy experience several biological milestones which can cause major physical, social, and psychological changes, such as weight gain, changes in roles, and frequent mood change (Newman & Newman, 2009).

According to Erikson (1997), middle adulthood encompasses the period of generativity versus stagnation. People are likely to start considering their contributions to family, community, work, and society. Generativity involves guiding and encouraging future generations, typically realized through child rearing and community service (Newman & Newman, 2009). At the same time, middle-aging people tend to place their own comfort above challenge and sacrifice—self-absorption or personal stagnation—resulting in lack of concern for the next generation. Middle adulthood is the time when most people are first aware of inevitable signs of aging (Hutchison, 2010). Functional declines in internal organs are likely to begin. As a normal part of the aging process, energy requirement begins a gradual decline (Roberts & Dallal, 2005). Additionally, most women enter a period of climacteric which lasts about 15 to 20 years. As the final phase of the climacteric, women undergo menopause which is considered the single most important transition of life, usually occurring during the late 40s or early 50s (Palacios, Henderson, Siseles, Tan, & Villaseca, 2010). Divorce, remarriage, and reconstitution of family are common in middle adulthood. Indeed, percentages of women who had ever-divorced were highest among those aged 50 to 59 from 1996 to 2009 (Kreider & Ellis, 2011). Becoming a grandparent and caring for aging parents also characterize the life phase of middle adulthood.

After age 65—during late adulthood—major physical changes due to the process of advanced aging are observed. Inevitable changes in the body with age may include wrinkles,
gray hair, fat decompositions, and visible blood vessels on the skin. Especially for women, hip enlargement, waist thickening, and drooping bustline are likely to occur (Chrisler & Ghiz, 1993). The reductions in weight and height are also common for both men and women. Women ultimately lose an average of 2 inches in their height and are more prone than men to losing height due to osteoporosis (Berecki-Gisolf, Spallek, Hockey, & Dobson, 2010). All the major organs slow down and vision and hearing decline in their function. Cognitive and emotional dysfunction, such as dementia and depression, are also central concerns among older people (Naleppa & Schnitzenbaumer, 2010). One of major life changes—retirement—usually occurs around age 65. Most men’s average number of years spent in retirement during late adulthood is about 13 years (Warner, Hayward, & Hardy, 2010). With these significant changes, Erikson (1997) proposed the central crisis of late adulthood—integrity versus despair. In the last stage of life people begin to reflect back on their lives and experience the conflict between these two extremes. While integrity implies acceptance of one’s past life that was well-lived as meaningful and productive, despair implies a lack of future hope resulting from the negative evaluations of one’s past life that was wasted and unproductive (Newman & Newman, 2009).

The life course perspective can provide a holistic framework for the study of body image development throughout a person’s life. Since the life course perspective focuses on displaying the stability and/or change in the patterns of attitudes over the life course and exploring how the individual’s characteristics or experiences at a younger age are related to the outcomes that can be observed in one’s later life (Dannefer, 2003; Hareven, 1994), the life course perspective can provide a theoretical framework for a more advanced understanding of body image development (Liechty & Yarnal, 2010; McLaren & Wardle, 2002). Thus, within the life course perspective, it is valuable to explore patterns in women’s body image development throughout their entire adult life course. It can be assumed that a woman’s
earlier experience with and perceptions of her body may shape and predict her body image perceptions in her later life.

The life course perspective has been increasingly applied to women’s body image development research (e.g., Devine et al., 2000; Liechty & Yarnal, 2010; Tiggemann, 2004; Tiggemann & Lynch, 2001). In these studies, the life course perspective has been used as a theoretical framework to explore age effects on several aspects of body image and its outcomes, such as body satisfaction, the importance of body shape and weight, dieting frequency, and eating disorder symptoms, as well as to identify major events and factors that can affect changes in body image perceptions.

**Theory of Self-Discrepancy**

The theory of self-discrepancy explains the unique relationships between specific types of self-discrepancy and negative psychological situations (Higgins, 1987). Various types of self-discrepancy can be represented by two cognitive dimensions—domains of the self and standpoints on the self. There are three domains of the self—the actual self, the ideal self, and the ought self. The actual self includes the attributes that oneself (or another person) believes he or she actually possesses; the ideal self refers to the attributes that oneself (or other person) wishes he or she ideally possesses; and the ought self is the attributes that oneself (or other person) believes he or she should or ought to possess. Standpoints on the self include two points of view from which an individual can be judged—an individual’s own personal standpoint and the significant other’s standpoint. With three domains of the self and two standpoints on the self, six combinations of self-state representations can be generated—actual/own, actual/other, ideal/own, ideal/other, ought/own, and ought/other. Self-discrepancy can occur between individual’s representation of actual self (self-concept), and his or her understanding of someone else’s ideal or ought self (self-guide). Researchers tend to focus on four of the possible discrepancies—actual/own versus ideal/own, actual/own versus
ideal/other, actual/own versus ought/own, and actual/own versus ought/other. The primary purpose of self-discrepancy theory is to predict which types of self-discrepancy relate to which types of specific emotional discomfort (Higgins, 1987; Higgins, Klein, & Strauman, 1985).

**Actual/own vs. ideal/own.** Discrepancy between actual/own and ideal/own self results in discrepancy of a person’s perception of self attributes from the attribute states that the individual ideally wants to possess. The person with this discrepancy is more likely to experience dejection-related emotions (Higgins, 1987). That is, when people cannot reach their personal goals or wishes, they may experience the emotional states of disappointment and dissatisfaction.

**Actual/own vs. ideal/other.** Actual/own versus ideal/other discrepancy can happen when a person’s self attributes from his or her own standpoint do not match the states of a significant other’s hopes or wishes. This type of self discrepancy can predict dejection-related emotions, such as shame, embarrassment, humiliation, misery, or feeling downcast (Higgins, 1987).

**Actual/own vs. ought/own.** Discrepancy between actual/own and ought/own self states can happen if a person’s current actual state does not match what he or she believes should or ought be attained. This type of discrepancy may lead to agitation-related emotions—guilt, self-contempt, uneasiness, or feelings of worthlessness—because a person with this discrepancy feels he or she cannot attain a personal moral standard (Higgins, 1987).

**Actual/own vs. ought/other.** When a person perceives his or her current actual attributes differ from the states a person should or ought attain from a significant other’s point of view, the actual/own versus ought/other discrepancy can occur. This discrepancy can result in agitation-related emotions—fear, apprehension, and feeling threatened (Higgins, 1987).

There have been several studies providing empirical evidence to support the
assumptions of self-discrepancy theory (Carver, Lawrence, & Scheier, 1999; Higgins, 1987; Higgins et al., 1985). Higgins et al. (1985) tested a hypothesis that different types of self discrepancies are associated with different kinds of emotional symptoms. Partial correlation results revealed that the actual/ideal self discrepancy was highly associated with dejection-related emotions (e.g., dissatisfied, shame, helpless, and feeling no interest in things), while the actual/ought self discrepancy was highly correlated with agitation-related emotions (e.g., guilt, irritated, suddenly scared for no reason). A more specific data analysis was conducted by Higgins (1987) to compare all four types of self discrepancy with its relationship to particular emotional discomfort. He found significant unique associations between each type of self discrepancy and emotional symptoms as hypothesized. Tangney, Niedenthal, Covert, and Barlow (1998) also examined the hypothesized relations of self-discrepancy theory. However, in contrast to Higgins (1987), they found no unique relationships between a particular type of self-discrepancy and specific emotional discomfort. They especially focused on relationships with feelings of shame and guilt. A significant positive relationship between all four types of self discrepancies and a person’s vulnerability to experience shame was determined; however, no relationship of self-discrepancy with feelings of guilt was observed.

As a conceptual framework, the theory of self-discrepancy has been adopted in several body image studies (Bessenoff, 2006; Halliwell & Dittmar, 2006; Kowner, 2004; Strauman, Vookles, Berenstein, Chaiken, & Higgins, 1991). When there is a large difference between one’s actual body image and culturally-defined ideal body image, an individual is likely to have high levels of body image discrepancy. Actual/ideal body image discrepancy, often promoted by the thin-ideal media image, can influence body image perceptions, emotional responses to appearance, and behavioral changes related to the body. Bessenoff (2006) examined the effects of thin-ideal images in advertisements on body image-related
variables among female college students. It was found that women with higher body image discrepancy were more vulnerable to more negative mood states, lower self-esteem, and increased levels of depressive symptoms when exposed to advertisements with a thin-ideal model. Strauman et al. (1991) explored the relevance of actual/ideal self-discrepancy for body dissatisfaction. They found that self-image discrepancy is closely correlated to body dissatisfaction. In addition, body image discrepancy is assumed to be an important factor to influence emotional and behavioral changes, such as depression, anxiety, and eating disorder symptoms. Forston and Stanton (1992) examined the effects of body image discrepancy on emotional discomforts and eating disorder symptoms among female college students. A significant positive effect of actual/ideal body image discrepancy on depression, anxiety, and symptoms of bulimia nervosa was found, in that students with higher body image discrepancies are at greater risk of experiencing negative emotions and having bulimic symptoms.

**Body Image**

Body image researchers have agreed that body image is a complex and multidimensional construct (Pruzinsky & Cash, 2002; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Cash and Pruzinsky (1990) noted that the concept of body image remains “elusive” (p. 346) and Thompson et al. (1999) indicated that defining body image is “tricky” (p. 9). Since Schilder (1950) defined body image as “the picture of our own body which we form in our mind, that is to say, the way in which the body appears to ourselves” (p. 11), researchers have defined body image in several ways. Thompson et al. (1999) listed 16 different definitions used by body image researchers, including “weight satisfaction, size perception accuracy, body satisfaction, appearance satisfaction, appearance evaluation, appearance orientation, body esteem, body concern, body dysphoria, body dysmorphia, body schema, body percept, body distortion, body image, body image disturbance, and body image
Thus, body image has become something beyond Schilder’s (1950) definition. More recently, Grogan (2008) defined body image as “a person’s perceptions, thoughts, and feelings about his or her body” (p. 3). Indeed, evaluation of the image of the body has been often a focus of body image research.

Body image consists of both a perceptual and an attitudinal dimension (Brown, Cash, & Mikulka, 1990; Cash, 2002a, 2002b; Gardner, 1996; Grogan, 2008; Slade, 1994). Perceptual aspects relate to how accurately people see and estimate their body size, shape, and form. Research often assesses perceptual dimensions of body image by measuring the discrepancy between the ideal body and the actual body size or shape. The attitudinal dimension is reflected in positive or negative evaluations or feelings that people have about their bodies. Generally, the attitudinal aspect of body image is considered to relate to attitudinal, affective, and cognitive variables, such as body image satisfaction, evaluation, and investment. Both perceptual and attitudinal dimensions relate to behavior that may result from body image disturbance. For example, people with eating disorders often overestimate their actual body size and have higher levels of body dissatisfaction (Cash & Deagle, 1997; Garner, Olmsted, & Polivy, 1983; Stice, Schupak-Neuberg, Shaw, & Stein, 1994).

A number of body image studies have assessed both a perceptual and an attitudinal dimension of body image influencing an individual’s body image, as well as its concomitant effects on behavior changes in a variety of age, gender, and ethnic groups within different environmental settings (Altabe, 1998; Bedford & Johnson, 2006; Benas et al., 2010; Feingold & Mazzella, 1998; Gardner, 2002; Keel et al., 2007; Lamb et al., 1993; Lokken, Ferraro, Kirchner, & Bowling, 2003; Monteath & McCabe, 1997; Pruzinsky, 2002; Sarwer, 2002; Thompson, 1996; Thompson et al., 1999; Thompson & van den Berg, 2002). Feingold and Mazzella (1998) employed a meta-analysis technique to review body image research for gender differences found through 1995. According to their analysis, body image studies
found that women were more dissatisfied with their bodies than were men, and body image
gender differences increased during adolescence and decreased in adulthood. More recent
studies on gender differences in body image also confirmed these findings. Lokken et al.
(2003) reported that women perceived their current body shape as significantly larger than
their ideal body shape. The results of their study also found that women had a significantly
greater body image discrepancy than did men. Those with higher levels of body
dissatisfaction may have a greater risk of depression than those satisfied with their bodies.
Benas et al. (2010) examined the effect of body dissatisfaction on depression symptoms and
found a significant positive relationship. In addition, body dissatisfaction or body image
disturbances can increase the risk for the development of eating disorders, such as anorexia
and bulimia nervosa. Keel et al. (2007) conducted a 20-year longitudinal study to trace the
changes in body image and eating disorders, and found a significant association between
weight dissatisfaction, dieting frequency, and eating disorder symptoms in women and men
from late adolescence to midlife. Frequent dieting and body image dissatisfaction are
prospective risk factors for the development of eating disorders.

Body image also may affect appearance management behaviors. Rudd and Lennon
(2000) indicated that body image dissatisfaction is highly correlated with risky behaviors,
such as cosmetic surgery, use of diet pills, laxatives, diuretics, tanning, and obsessive exercise
among college-age women. In addition, an individual’s body image and concomitant
emotional and behavioral changes can be affected by several social, societal, and
environmental factors. Many studies support that media portrayals of thin idealized bodies
lower an individual’s mood state and increase one’s perceived levels of body dissatisfaction
(Tiggemann & McGill, 2004; Tiggemann & Slater, 2004). Interpersonal relationships with
family, peers, romantic partners, and strangers also can affect one’s development of body
image. For example, negative verbal commentary from parents and peers can significantly
affect a child’s body image dissatisfaction (Phares, Steinberg, & Thompson, 2004).

Since body image plays a key role to predict an individual’s emotional state (e.g., distress and depression) and behavior changes (eating disorder, drug use, dieting, and cosmetic surgery), body image also could affect an individual’s health and quality of life. Stokes and Frederick-Recascino (2003) examined the relationship between women’s levels of satisfaction with their bodies and their level of subjective well-being. They found a significant positive effect of body image satisfaction on women’s happiness. Based on the assumption that body image dissatisfaction may have pervasive consequences for quality of life, Cash and Fleming (2002) developed the Body Image Quality of Life Inventory (BIQLI) scale to measure impacts of body image on an individual’s psychosocial functioning and well-being. Using the BIQLI scale, Lobera and Ríos (2011) found a significantly negative relationship between body dissatisfaction and quality of life among eating disordered patients.

**Women’s Body Image Throughout the Adult Life Course**

Throughout the adult life span, women experience marked physical changes in their bodies (e.g., changes in body weight, body size, height, and BMI) and appearance (e.g., changes in overall facial and body appearance), that may lead to changes in their body image perception and evaluation. Several studies on body image development have confirmed that women experience different physical changes and have different attitudes towards their body in each adult life stage (Heatherton et al., 1997; Keel et al., 2007; Martin, 2010).

For several decades, evidence has suggested that women in general experience significant changes in weight as they age (Ogden, Fryar, Carroll, & Flegal, 2004). Ogden et al. (2004) summarized these changes in body weight, height, and body mass index for the U.S. population from the National Health Examination Survey (NHES) and the National Health and Nutrition Examination Survey (NHANES) between 1960 and 2002. According to these national data, on average, women gained about 37 pounds during their early and middle
adulthood. The mean weight of women increased from approximately 128 pounds when they were 20-29 years old in 1960-62 to about 165 pounds when reaching their 60s in 1999-2002. Heatherton et al. (1997) conducted a 10-year longitudinal study of body attitude and eating behavior changes in women who were in their early adulthood during the early 1980s and 1990s. Women’s average weight gain over the 10 years during early adulthood was 4 pounds. Based on a 20-year longitudinal study, Keel et al. (2007) also reported that body weight of female participants increased 14 pounds from early to middle adulthood. Also, many older people experience unintentional weight loss during their late adulthood (Miller & Wolfe, 2008; Newman et al., 2001). Due to the aging process itself, women’s average body weight tends to gradually decrease by their 70s.

During the normal aging process, women tend to gain body weight from early to middle adulthood and lose weight during late adulthood. In tandem with weight change, women’s perceived actual body size also may change throughout the life span. As confirmed in previous studies, middle-aged women are likely to report a heavier ideal body size, probably because it is more realistic and age-appropriate. In addition, people reaching middle and old age tend to be less self-conscious about their bodies, resulting in a greater acceptance of their body shapes (Gray, 1977). Using a figure rating scale, Lamb et al. (1993), Stevens and Tiggemann (1998), and Tiggemann and Lynch (2001) found significant positive age effects on both women’s perceived actual and ideal body sizes. These studies also reported that actual/ideal body image discrepancy and body satisfaction appeared relatively constant across various women’s age groups. Among women ranging in age from 20 to 84 years, Tiggemann and Lynch (2001) found no significant correlations between age, body image discrepancy, and body satisfaction. Similarly, Rozin and Fallon (1988) did not find a significant difference in actual/ideal body image discrepancy between daughters and their mothers.
A number of women may continue to struggle with body image issues throughout the life course. Several studies found that regardless of age, most women are concerned about their appearance, wish to be thinner than their actual body size, and are dissatisfied with their appearance to some extent (Allaz et al., 1998; Deeks & McCabe, 2001; Lewis & Cachelin, 2001; Pliner et al., 1990; Webster & Tiggemann, 2003). Most women in middle and late adulthood still want to lose weight even when they are at a normal weight (Allaz et al., 1998). Deeks and McCabe (2001) examined the effects of age on body image perceptions among middle-aged women from 35 to 65 years and found similar levels of body dissatisfaction and preoccupation with being overweight. Along a similar vein, Webster and Tiggemann (2003) found no significant difference in reported body satisfaction levels in all women’s age groups from 20 to 65 years.

**Actual/Ideal Body Image Discrepancy**

Body image discrepancy refers to the difference between one’s perceived actual and ideal body image (Cash & Szymanski, 1995). When there is a difference between one's actual and ideal body image, women are likely to experience body image discrepancy. Most women perceive the cultural standards of beauty as the ideal body image at a given time period. Every culture and society has beauty standards for ideal body shape. In western culture, each period of history has always had distinctive concepts of what is and is not beautiful, strongly focusing on women’s body size and weight. Standards for beauty have gradually, but considerably, changed over time. During much of the 19th century, women with plump, fleshy, and full-figured body shapes were considered beautiful. During this time period, most women wore restrictive corsets to make a tiny waist and accentuate hips and breasts (Steele, 2001). In the early- to mid-1900s, there was a new standard for the ideal female body shape that was in general slimmer than were 19th-century ideals. The voluptuous body shape (i.e., ample breasts and shapely hips) was popular in the 1930s through 1950s (e.g., Marilyn
Monroe). However, during the last several decades, thinness has been the most important indicator of physical attractiveness. Garner, Garfinkel, Schwartz, and Thompson (1980) found a significant decrease in body weight among the *Playboy* centerfold models and *Miss America Pageant* contestants from 1959 to 1978. Especially for physical attractiveness, cultural standards of woman’s ideal body image have become more unrealistic. More recently, Spitzer, Henderson, and Zivian (1999) examined changes in body size among the *Playboy* centerfold models and *Miss America Pageant* winners and found that, since the 1970s, average BMI scores fell into the underweight category ranging from 17.91 to 18.40.

According to the British Medical Association, many female models and actresses have 10 to 15% body fat, which is much less than the estimated healthy range of 22 to 26% for women (as cited in Cussins, 2001, p. 105). The ideal body shape has become unrealistic and difficult to achieve for most women (Derenne & Beresin, 2006; Tiggemann & Pickering, 1996); many women have always experienced body image discrepancy.

Modern western cultures have inordinately emphasized the importance of women’s physical attractiveness, so that women have received intense societal pressures to be beautiful (see Basow, Foran, & Bookwala, 2007; Fallon & Rozin, 1985; Garner et al., 1980; Irving, 1990). Many women struggle to make their bodies conform to unrealistic ideals. According to Kilbourne and Jhally (2010), women typically learn from an early age that they must spend and sacrifice a lot of time, energy, and money to achieve the standard of beauty.

The societal pressures to be ultra-thin encourage women not only to become underweight, but also to become at risk for health. However, while the ideal body shape has become thinner, in reality the average woman’s body size has increased. Bryd-Bredbenner, Murray, and Schlussel (2005) examined changes across eight decades in the anthropometric measurements of idealized women and young women who are not celebrities or models. They found the body mass index (BMI) for the idealized beauty groups (i.e., *Playboy Magazine*...
Playmates of the Year, Miss America Pageant winners, and fashion models) declined significantly over time, whereas the BMI of young American women, in general, has continually increased.

Body image discrepancy has been commonly determined by subtracting the selected ideal body image score from the actual body image score, using several self-reported figural scales (e.g., Gardner, Jappe, and Gardner’s (2009) body image assessment scale-BD; Sherman, Iacono, and Donnelly’s (1995) body rating scale; Stunkard, Sorensen, and Schulsinger’s (1983) figure rating scale; Swami, Salem, Furnham, and Tovee’s (2008) photographic figure rating scale; Thompson and Gray’s (1995) contour drawing rating scale). These scales consist of a series of frontal images ranging from thin to fat. Individuals are asked to identify which figure most accurately represents their actual and ideal body shape. The difference between these two ratings typically represents a measure of body image discrepancy. Even though the figural scales have been most commonly adopted to measure body image discrepancy, at the same time body image researchers have identified several problems with their use, such as lack of realistic representations of human body proportion and response choices (Gardner & Brown, 2010; Gardner, Friedman, & Jackson, 1998; Thompson & Gray, 1995). Moreover, the figural scales can only assess body size discrepancy rather than overall body image discrepancy because they provide a series of body figures only differing in body sizes. Several researchers have developed and employed other forms of measurements to evaluate body image discrepancy (Cash & Szymanski, 1995; Williamson, Gleaves, Watkins, & Schlundt, 1993). For example, Cash and Szymanski (1995) developed a body-image ideals questionnaire to assess discrepancies between actual and ideal body image by measuring self-perceived discrepancies from and importance of internalized ideals for 10 physical attributes—height, skin complexion, hair texture and thickness, facial features, muscle tone and definition, body proportions, weight, chest size, physical strength, and
physical coordination.

**Body Satisfaction**

Body satisfaction can be defined as the extent to which an individual is happy or unhappy with his/her physical appearance (Martin, 2010). Many body image studies have focused on body satisfaction because lower levels of body satisfaction (i.e., dissatisfaction) can lead to several negative consequences, including body shame, depression, eating disorders, and low levels of self-esteem and quality of life (Benas, Uhrlass, & Gibb, 2010; Cash et al., 2004; Keel et al., 2007; Pruis & Janowsky, 2010; Stokes & Frederick-Recascino, 2003).

Body satisfaction has been assessed by measuring the discrepancy between perceived actual and ideal body size (Demarest & Allen, 2000; Lamb et al., 1993; Rozin & Fallon, 1988), the levels of satisfaction with appearance, specific body parts, or aspects of the body (Cash & Henry, 1995; Gupta & Schork, 1993; Reboisson et al., 2000), concerns with physical attributes (Pliner et al., 1990), or body esteem (Stokes & Frederick-Recascino, 2003; Tiggemann & Lynch, 2001). Since body satisfaction includes a broad range of an individual’s perceptions about one’s body, there have been conflicting findings regarding how women’s body satisfaction changes throughout the adult life span—1) women’s perceived level of body satisfaction may remain stable (Bessenoff & Del Priore, 2007; Grogan, 2008; Tiggemann & Lynch, 2001), 2) women may become more satisfied with their body as they age (Hetherington & Burnett, 1994), and 3) women may experience a more negative body satisfaction as they age (Franzoi & Koehler, 1998). Hetherington and Burnett (1994) compared the levels of body satisfaction between young and older women using the body shape questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) and found that older women were significantly more satisfied with their bodies than were younger subjects. On the other hand, Tiggemann and Lynch (2001) assessed women’s body satisfaction by measuring
both Fallon and Rozin’s (1985) figure rating scale and Franzoi and Shields’ (1984) body esteem scale, and confirmed no significant age effect for body satisfaction among women ranging 20 to 84 years.

**Research Questions and Hypothesis Development**

The purposes of this study are two-fold: (1) to understand women’s perceived body image changes throughout their adult life course as well as (2) to explore patterns in adult women’s body image development. Three research questions guide this study: (1) how do women perceive their body image in each life phase, (2) how do women’s body image perceptions change as they age, and (3) what are the relationships of previous body image to current body image perceptions and evaluations.

From previous research of adult women’s body image development, four major hypotheses were generated. Because of the inconsistent findings in previous studies on women’s body image perceptions across the adult life span, hypotheses of this study were formulated as null hypotheses, and multiple measures of body image were used. Women’s body image perceptions were assessed in terms of perceived actual body shape, perceived ideal body shape, discrepancy between actual and ideal body image, and levels of body satisfaction. In addition to these four hypotheses, another hypothesis was generated based on the self-discrepancy theory, regarding the associations between the actual/ideal body image discrepancy and body satisfaction. Using survey questionnaires, the five hypotheses were tested.

As body image has a complex and multidimensional meaning, it might not be sufficient to explore women’s body image using data obtained only from quantitative measures. Especially, the life events and circumstances that shaped women’s body image and the priority concerns related to their body in each stage of the adult life span should be further investigated to enhance the current literature on body image development. Thus, the
questionnaire of this study included both closed-ended scale ratings and open-ended questions. The qualitative data from open-ended questions were used to arrive at a deeper understanding of women’s body image ratings, as well as to improve the accuracy of retrospective data.

**Perceived actual body shape throughout the adult life course.** Throughout the adult life span, most women experience significant changes in their body size, weight, and shape. Accordingly, women’s perceptions of their body shapes may also change. Some evidence has supported this notion, including national data and research findings (Heatherton et al., 1997; Lamb et al., 1993; Ogden et al., 2004; Rozin & Fallon, 1988). Ogden et al. (2004) presented trends in national estimates of mean weight, height, and body mass index (BMI) of the population. According to national data between 1960 and 2002, both women’s body weight and BMI scores have increased from their early adulthood to middle adulthood. Lamb et al. (1993) examined differences in perceptions of the actual body figure between younger (college students) and older generations (between 40 to 65 years of age) and found that the older women’s group had significantly larger perceptions of their actual body shapes than did the younger group. Rozin and Fallon (1988) also compared body image perceptions between daughters and mothers, and found the older generation (mothers) perceived their actual body shapes as larger than the younger generation (daughters) perceived their own to be.

In contrast to these increasing trends in body weight and size from early to middle adulthood, many women begin to lose weight during late adulthood (Newman et al., 2001; Ogden et al., 2004). Newman et al. examined weight changes among older adults ages 65 and older during a three-year period, and reported a significant positive effect of age on weight loss. Nevertheless, Tiggemann and Lynch (2001) found significant positive age effects on women’s perceived actual body sizes among women ranging in age from 20 to 84 years. Based on these previous findings from the cross-sectional data, body image researchers have
assumed that women’s perceptions of their own body shapes become larger as they age, especially from early to middle adulthood (Grogan, 2008; Lamb et al., 1993). No study, however, has examined the trend of these changes within an individual throughout the entire adult life course. To examine the trajectory of women’s perceptions of their actual body shape throughout the adult life course, the following null hypothesis will be tested.

**H1**: The trajectory of women’s perceptions of their actual body shape throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.

**Ideal body shape throughout the adult life course.** An individual’s perceived ideal body shape tends to change as one’s perceived actual body shape becomes larger or smaller (Lamb et al., 1993). During early and middle adulthood, women may consider a heavier body shape as ideal as they age, because most women experience significant weight gain during these two stages of life span. A heavier ideal body shape might be a more realistic expectation for adult women before they reach the life stage of the late adulthood. Previous studies have empirically supported that middle-aged women have stouter ideal body shapes than do younger women (Lamb et al., 1993; Rozin & Fallon, 1988; Stevens & Tiggemann, 1998). In a 10-year longitudinal body image development study, Heatherton et al. (1997) reported that about 55% of female college students who considered themselves as overweight in 1982 categorized themselves as average weight in 1992, even though they gained in average 4 pounds during the 10 years following college. Even during early adulthood women’s perceived ideal body shapes tend to be larger as their actual body shapes become heavier. On the other hand, because women start experiencing significant weight and height loss during late adulthood (Newman et al., 2001; Ogden et al., 2004), a more realistic and age-appropriate body shape for women in their late adulthood would be shorter and lighter. Accordingly, older women’s perceived ideal body shape may be different from that of young
and middle-aged women.

Not only does a woman’s body show significant changes—becoming larger and heavier from early to middle adulthood and shorter and lighter during late adulthood—but, at the same time, the importance of physical appearance and attractiveness diminishes for women as they age (Cash et al., 1986; Pliner et al., 1990). That is, while younger women place a higher value on their physical appearance, concerns of middle-aged and older women are likely to shift to physical functioning (Reboussin et al., 2000). This might be one of the reasons why middle-aged women have heavier ideal body shape than younger women (Lamb et al., 1993; Stevens & Tiggemann, 1998). As women age and find that weight loss is less achievable and weight gain is common among women their age, their focus on the body may shift to more accessible and quality of life goals such as physical functioning.

However, no study has examined the trend of these changes within an individual throughout the entire adult life course. To examine the trajectory of women’s perceived ideal body shape throughout the adult life course, the following null hypothesis will be tested.

**H2:** The trajectory of women’s perception of ideal body shape throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.

**Actual/ideal body image discrepancy throughout the adult life course.** Most women at any age perceive their current body size to be larger than their ideal (Lewis & Cachelin, 2001; Öberg & Tornstam, 2001; Tiggemann & Lynch, 2001). Lewis and Cachelin (2001) examined differences between actual and ideal body shape among middle-aged and older women, using Stunkard et al.’s (1983) figure rating scale, and found that women in both groups perceived they had actual body figures that were significantly larger than ideal figures. Using the same measurement, Öberg and Tornstam (2001) examined differences in body image perceptions among women ranging in age from 20 to 85 years and reported a stable
actual/ideal body image discrepancy in every age category. More specifically, they reported that the actual figure chosen by women in every age category was almost exactly one size bigger than the ideal figure. In addition, there have been sufficient empirical findings supporting similar levels of women’s perceived actual/ideal body image discrepancy across various age groups (e.g., Altabe & Thompson, 1993; Lamb et al., 1993; Stevens & Tiggemann, 1998). These findings, however, were based on cross-sectional data. No study has examined the trend of these changes within an individual throughout the entire adult life course. To examine the trajectory of women’s perception of their actual/ideal body image discrepancy throughout the adult life course, the following null hypothesis will be tested.

**H3:** The trajectory of women’s perceived actual/ideal body image discrepancy throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.

**Body satisfaction throughout the adult life span.** As most women age, they advance further from their youthful and slender body ideals. The prevalence of body dissatisfaction is common in middle-aged and older women perhaps because of changes of the body due to aging (Allaz et al., 1998; Bedford & Johnson, 2006; McLaren & Kuh, 2004). Studies on body image perceptions to date have identified that women tend to show similar levels of body satisfaction from early to middle adulthood (Bessenoff & Del Priore, 2007; Grogan, 2008; Gupta & Schork, 1993; Stevens & Tiggemann, 1998; Tiggemann & Lynch, 2001). For example, Grogan (2008) found no difference in the levels of body dissatisfaction among women aged from 16 years old to 63 years old. Similarly, Pliner et al. (1990) compared body image concerns between different age groups and found that women aged 10 to 60 years showed similar levels of concerns with physical appearance. On the other hand, there is conflicting evidence that women may have more positive body image or more negative body image as they age (Cash & Henry, 1995; Franzoi & Koehler, 1998). Franzoi
and Koehler (1998) compared attitudes toward body aspects related to body function and facial attractiveness between young (mean age = 19 years) and older groups (mean age = 74 years) and found that the older adult group had less positive attitudes about both aspects of body image. However, they also reported reverse findings in women’s perceived level of body satisfaction in terms of their appetite, thighs, and weight. Since body satisfaction includes an individual’s perception of a variety of components of one’s body, the developmental changes in body satisfaction throughout women’s adult life span may depend on the specific aspects of focus. For example, older women may be less satisfied with their body function and physical attractiveness compared to the younger age group, while they may be more satisfied with their body weight (Franzoi & Koehler, 1998). Despite these inconsistent findings in body satisfaction, no study has examined the trend of these changes within an individual throughout the entire adult life course. To examine the trajectory of women’s perceived level of body satisfaction throughout the adult life course, the following null hypotheses will be tested.

**H4:** The trajectory of women’s perceived level of body satisfaction throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.

**Actual/ideal body image discrepancy and body satisfaction.** According to self-discrepancy theory, actual/ideal self discrepancy is associated with dejection-related emotions (e.g., dissatisfaction or disappointment), whereas actual/ought self discrepancy is associated with agitation-related emotions (e.g., fear or guilt). Especially, actual/own versus ideal/own self discrepancy has been confirmed to produce dissatisfaction with self (Higgins, 1987; Higgins et al., 1985). Because body image is an important element of self-concept, it has been assumed that actual/ideal body image discrepancy from one’s own standpoint may predict a person’s perceived level of body satisfaction. When one’s perceived physical
attributes do not meet the ideal self-standard, an individual is likely to experience body dissatisfaction. Several studies have confirmed a strong link between actual/ideal body image discrepancy and the level of body satisfaction (Anton, Perri, & Riley, 2000; Halliwell & Dittmar, 2006; Kowner, 2004; Kozar & Damhorst, 2009). Kowner (2004) examined actual/ideal body image discrepancy as a determinant of body satisfaction among the Japanese and found significant negative correlation between actual/ideal body image discrepancies and levels of body satisfaction for both men and women. Kozar and Damhorst (2009) also found a significant negative effect of actual/ideal body image discrepancy on perceived levels of satisfaction with appearance among women aged from 30 to 80. Moreover, the results of Keeton, Cash, and Brown (1990) and Williamson et al. (1993) showed actual/ideal discrepancies in body size estimates to be negatively correlated with body satisfaction. Within the self-discrepancy theory framework, it can be assumed a conceptual link exists between the perceived actual/ideal body image discrepancy and body satisfaction. The following hypotheses are proposed.

**H5a:** Actual/ideal body image discrepancy will negatively relate to body satisfaction in women’s early adulthood.

**H5b:** Actual/ideal body image discrepancy will negatively relate to body satisfaction in women’s middle adulthood.

**H5c:** Actual/ideal body image discrepancy will negatively relate to body satisfaction in women’s late adulthood.
CHAPTER 3. METHODS

As mentioned in several body image development studies, current literature adopting a cross-sectional method has a methodological limitation (Tiggemann, 2004). It is sometimes assumed that a cross-sectional design is the simplest method to study the effects of aging. However, a cross-sectional design can provide only a “snapshot” of outcomes at a specific point in time for a specific generation (Churchill & Iacobucci, 2005). If another timeframe is examined, different results may be determined. A longitudinal study would be the best research design to trace the developmental changes of body image perceptions in the same individuals throughout the adult life course. Yet, it is difficult to conduct a longitudinal study over a considerable period of time.

Retrospective data have been used frequently in epidemiology studies, especially when taking a life course perspective (Friedenreich, 1994). To overcome the limitations of retrospective data, such as recall bias, researchers have suggested what information can be recalled with a relatively high accuracy and what methods can be used to improve accuracy (Berney & Blane, 1997; Friedenreich, 1994). Retrospective self-reported data for anthropometric information, especially for body weight, have been shown to have useful accuracy (Casey et al., 1991; Tamakoshi et al., 2003). In general, people tend to remember their past experiences accurately when those experiences are more salient for them. Moreover, to improve the accuracy of retrospective data, it is recommended to adopt a mixed method approach using both quantitative and qualitative data (Yoshikawa et al., 2008).

This study used retrospective self-reported data by asking older participants to recall their past body image perceptions with the assistance of photographs of themselves. Given that body image has been considered an important issue and concern among women throughout their life course, women may provide accurate information through past recall. There also have been few attempts to adopt the retrospective approach in body image
research (e.g., Bedford & Johnson, 2006; Schwartz et al., 1999). In this study, to help participants remember their past experiences, ultimately improving the quality and accuracy of recalled data, participants were asked to refer to their own pictures at each life stage of early and middle adulthood when answering the study’s questions. In addition, through various open-ended questions, participants were encouraged to provide details about their body image perception during different life stages.

To accomplish the purpose of this study, a mixed-method design, employing both qualitative and quantitative methods, was used. For the triangulation of data, two methods were used to assess women’s body image throughout the life span (Greene & McClintock, 1985). A pilot test with four women aged 65 and older was conducted to identify any wording, procedural, or format problems. After conducting a pilot test, a survey questionnaire, including both closed-ended scale ratings and open-ended qualitative questions, was used to measure participants’ body image in each of three life phases—early, middle, and late adulthood. Following Erikson (1950) and Levinson’s (1996) definition of the eras of adult life stages and transitions, this study focused on the chronological ages between 25 and 35 years for early adulthood, 45 and 55 years for middle adulthood, and 65 years and older for late adulthood. In the questionnaire, however, to simplify the questions, participants were asked to think about their body image perceptions when they were about 30 years old, 50 years old, and now.

**Sample**

A convenience sampling method was used for both the pilot test and initial data collection procedures. A pilot test was conducted with a convenience sample of four women aged 65 and older, recruited from a senior living community in Ames, Iowa.

For the survey questionnaire, to obtain at least 100 female participants aged 65 and older, the principal researcher contacted 22 activity directors from senior communities,
centers, and agencies in central Iowa, and requested permission to obtain data from their members. All participants in this study were recruited on a voluntary basis.

**Questionnaire Development**

The questionnaire consisted of four parts to measure the older women’s body image perception for each of the three life stages. The first part of the questionnaire contained items to assess demographic information, including age, height, weight, ethnicity, education level, and marital status. The second, third, and fourth parts of the questionnaire contained measures of body image in early adulthood, middle adulthood, and late adulthood, respectively. The same body image measures were repeatedly used to assess participants’ body image perceptions throughout their adult life course. Measures of body image included perceived actual body shape, perceived ideal body shape, actual/ideal body image discrepancy, and levels of body satisfaction.

**Perceived actual body shape.** To assess women’s perceived actual body shape, the Figure Rating Scale developed by Stunkard, Sorensen, and Shulsinger (1983) was adopted. The scale presents a series of nine figure drawings of a female body ranging from 1 for the thinnest figure to 9 for the largest figure. Participants were asked to choose a figure they thought/think best represents their own body during their early, middle, and late adulthood.

**Perceived ideal body shape.** The Figure Rating Scale was used to capture women’s perceived ideal body shape. To assess the perceived ideal body shape for these women, the respondents were asked to choose a figure they thought/think best represented their ideal body during their early, middle, and late adulthood.

**Actual/ideal body image discrepancy.** An actual/ideal body image discrepancy score was computed, based on the ratings of perceived actual and ideal body shape. This was calculated by subtracting the participant’s perceived ideal body shape score from her perceived actual body shape score for each of the three life stages. Positive scores on the
actual/ideal body image discrepancy variable indicate that a woman is larger than desired, whereas negative scores mean a woman is thinner than desired.

**Body satisfaction.** To assess the perceived levels of body satisfaction in each adult life stage, the Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) was modified to fit the retrospective questionnaire. For older women, it might be difficult to recall how they felt about specific body parts several decades ago. The BISS measures individuals’ satisfaction levels with general body aspects (i.e., physical appearance, body size and shape, body weight, physical attractiveness), not distinct body features. One item asking how an individual feels about her look compared to how she usually feels was excluded because it was not relevant for this study. One item—physical functioning—was added to this scale because physical functioning is one of the most important measures of body aspects in body image development research. Five items were adopted, each using a 9-point Likert-type scale, ranging from *extremely dissatisfied* (1) to *extremely satisfied* (9). Cronbach’s *alpha* coefficients of the BISS for women reported previously ranged from .77 to .90 (Cash et al., 2002). Before data collection began, permission to use the BISS was obtained.

**Demographic information.** Participants were asked to provide their background information, including date of birth, ethnicity, marital status, education level, height, and weight. Date of birth, height, and weight were open-ended questions, and ethnicity, marital status, and education level were closed-ended questions. Participants’ height and weight were used to calculate Body Mass Index (BMI = weight [in lbs] × 703 ÷ height² [in inches]).

**Open-ended questions.** Seven open-ended questions were adopted in the survey questionnaire to arrive at a deeper understanding of changes in women’s body image perception throughout their adult life span as well as to improve the accuracy of retrospective data recalled by participants. Participants were asked to describe how they thought/think
about their bodies in detail when they were about 30 years old, 50 years old, and nowadays, before completing the Figure Rating Scale used to assess women’s perceived actual body shape. Another open-ended question asked participants to describe the ideal body they want(ed) to have each of three adult life stages before completing the question assessing women’s perceived ideal body shape. At the end of the questionnaire, one additional question was added to detect major body changes women experience throughout their life course. The question, “What body changes did you experience throughout your life from when you were about 30 years old to now?” was used.

**Pilot Test**

Prior to collecting data, a pilot test was conducted with four women aged 65 and older to identify and address potential problems with the survey questionnaire, data collection procedures, and/or data analysis. Pilot testing is a valuable procedure to determine issues with wording, formats, and the approximate time to complete the survey (Churchill & Iacobucci, 2005). Before each participant began the questionnaire, the researcher briefly explained the purpose of this study as well as provided Human Subjects in Research information. Following administration of the survey, the researcher discussed with each participant how easy/difficult it was to recall past memories and answer the questions. All of the closed-ended and open-ended questions were validated through the pilot test. Before the initial data collection commenced, the survey questionnaire was corrected based on feedback from the pilot test to enhance the overall comprehension of the survey.

**Data Collection Procedure**

The Iowa State University Institutional Review Board reviewed the study, evaluated the data collection procedures, and approved the use of human subjects (see Appendix A). To increase the participation rate, the principal researcher conducted a seminar on the topic of Women and Body Ideals Throughout History and Across Cultures. The researcher first
contacted senior communities, centers, and agencies to explain the project and obtain permission to visit via phone and/or email (see Appendix B). Then, the researcher visited each location to personally request permission to conduct a seminar and to obtain data from their members/clients. From the 22 locations contacted, 15 activity directors were interested in participating in the project. After obtaining permission to conduct a seminar and to collect data from the members of each location, the researcher provided an invitation poster/announcement (see Appendix C) to be shared with members/clients. The researcher also asked the administrators of each location to set up a schedule for a seminar and to assist in identifying an approximate number of members/clients interested in participating in this seminar. On the scheduled date, an approximately one-hour seminar was conducted. After the seminar, the researcher made an announcement to the seminar attendees, indicating there would be an opportunity to participate in a body image research survey. Human Subjects in Research information was provided as well. The researcher left a packet of surveys, including a cover letter and a self-administered questionnaire. Women who were willing to participate in this study were asked to pick up a survey packet from the administrators of each location, individually complete a survey questionnaire, and return the survey to the administrators. Two weeks after the seminar and survey distribution, the researcher visited each location to pick up the returned questionnaires.

Data Analysis

Data analysis consisted of three phases of analysis: (1) preliminary analysis for quantitative data, (2) latent growth model analysis for hypothesis testing, and (3) qualitative data analysis for open-ended responses. First, preliminary analyses, such as frequencies, missing data analysis, correlations, reliability, and exploratory factor analysis, were conducted using the Statistical Package for the Social Sciences (SPSS) 19.0. Second, nine latent growth curve models were developed to test the hypotheses. Third, qualitative data
obtained from seven open-ended questions were analyzed and final themes were established.

**Preliminary analysis.** Before analyzing the data, the central tendency and the dispersion of major items were examined to determine the distributional shape of the data. Any outliers and influential data points were also detected. Frequencies for all variables were examined to clean the data. Cases that included more than 15% missing items on all research variables were eliminated from further data analysis (Hair, Celsi, Money, Samouel, & Page, 2011). The cases with minimal missing data were managed by using maximum likelihood estimation (MLE) imputation with an expectation-maximization (EM) algorithm.

For the quantitative data, SPSS 19.0 was utilized to calculate descriptive statistics describing the sample, as well as correlations, reliabilities, and factor analysis. For the multi-item variable, a value of Cronbach’s *alpha* coefficient above .70 was used as an acceptable level of internal consistency (Peterson, 1994).

**Latent growth model analysis.** Latent growth model (LGM) analysis has gained increasing attention as a powerful approach to longitudinal data analysis. As a special application of structural equation modeling (SEM), LGM can be the most appropriate model to examine trajectories of quantitative change in outcome variables. Traditional methods that have been widely used for studying longitudinal changes until now include techniques, such as repeated measure analysis of variance (ANOVA), analysis of covariance (ANCOVA), multivariate analysis of variance (MANOVA), and multivariate analysis of covariance (MANCOVA). But, these approaches are limited to describe changes at the group level rather than changes at the individual level. The advantages to using LGM over other traditional approaches include that it allows researchers to (1) study developmental trajectory at both the individual and group level, (2) capture individual differences in the trajectories over time, and (3) examine the relationship between an individual’s initial mean level and rate of change on the variable of interest.
For hypothesis testing, latent growth modeling (LGM) was adopted using AMOS 18.0. The growth models capturing the development of body image throughout women’s adult life span were tested. Four major variables of interest—the perceived actual body shape, perceived ideal body shape, actual/ideal body image discrepancy, and body satisfaction throughout the adult life span—were examined. For hypothesis testing, a linear latent growth model for each body image variable was estimated. Overall fit measures, including chi-squared statistics, normed fit index (NFI), incremental fit index (IFI), Tucker-Lewis index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean residual (SRMR), were adopted to assess how well the model corresponds to the data as a whole. Table 3.1 summarizes the cutoff levels for overall model fit indices. Models with the fit statistics greater than .95 for NFI, IFI, TLI, and CFI, and below .05 for RMSEA and SRMR were considered a good fit. Values ranging from .90 to .94 for NFI, IFI, TLI, and CFI and values ranging from .06 to .08 for RMSEA and SRMR indicated an acceptable fit (Byrne, 2010; Hu & Bentler, 1999).

Table 3.1. Summary of the cutoff levels for overall model fit indices

<table>
<thead>
<tr>
<th>Name</th>
<th>Abb.</th>
<th>Ideal fit</th>
<th>Good fit</th>
<th>Acceptable fit</th>
<th>Poor fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-squared statistic</td>
<td>$\chi^2$</td>
<td>Non-sig. $p$-value</td>
<td>$\geq .95$</td>
<td>$.90 \leq NFI &lt; .95$</td>
<td>$&lt; .90$</td>
</tr>
<tr>
<td>Normed fit index</td>
<td>NFI</td>
<td>1</td>
<td>$\geq .95$</td>
<td>$.90 \leq NFI &lt; .95$</td>
<td>$&lt; .90$</td>
</tr>
<tr>
<td>Incremental fit index</td>
<td>IFI</td>
<td>1</td>
<td>$\geq .95$</td>
<td>$.90 \leq IFI &lt; .95$</td>
<td>$&lt; .90$</td>
</tr>
<tr>
<td>Tucker-Lewis index</td>
<td>TLI</td>
<td>1</td>
<td>$\geq .95$</td>
<td>$.90 \leq TLI &lt; .95$</td>
<td>$&lt; .90$</td>
</tr>
<tr>
<td>Comparative fit index</td>
<td>CFI</td>
<td>1</td>
<td>$\geq .95$</td>
<td>$.90 \leq CFI &lt; .95$</td>
<td>$&lt; .90$</td>
</tr>
<tr>
<td>Root mean squared error of approximation</td>
<td>RMSEA</td>
<td>0</td>
<td>$\leq .05$</td>
<td>$.05 &lt; RMSEA $\leq .08$</td>
<td>$&gt; .08$</td>
</tr>
<tr>
<td>Standardized root-mean square residual</td>
<td>SRMR</td>
<td>0</td>
<td>$\leq .05$</td>
<td>$.05 &lt; SRMR $\leq .08$</td>
<td>$&gt; .08$</td>
</tr>
</tbody>
</table>

**Latent growth model specification.** A graphical representation of a linear latent growth model is presented in Figure 3.1. The loadings from the latent intercept variable to the
observed variables were set to 1, indicating the starting point for growth. The loadings from the latent slope variable to the observed variables were set in a linear sequence from 0 to 2, beginning with the variable at Time 1. The loading from each residual to its observed variable was set to one. The means of residual factors and the intercepts of the observed variables from Time 1 through Time 3 were set to zero. The means and variances for the latent intercept and slope variables were set for estimation by the model—IMean and IVariance for intercept and SMean and SVariance for slope. The covariances between the latent intercept and slope variables were set for estimation.

**Qualitative data analysis.** After completion of all data collection, answers from seven open-ended questions were listed in four separate files. Each of the first three files included the answers from two questions for each of the three stages of adult life span. The answers from all open-ended questions, including an additional question regarding what body changes they have experienced throughout their adult life span, were listed in another file to evaluate women’s perceptions about major body changes. These qualitative data were reviewed several times and analyzed line-by-line, using the constant comparison analysis method (Strauss & Corbin, 1998). Key phrases that share some commonality were grouped together to identify major themes across responses from all open-ended questions. Identified themes were revised and new themes were created until sufficient themes were developed to include all data. Each of the final themes are listed and described in Chapter 6.

**Coding guides.** The principal researcher reviewed all data several times and highlighted quotes and phrases significant to the study. The researcher went back and forth through all responses until consistent, yet distinct, themes emerged. A table, including a list of emerged themes and the descriptions for each theme, was developed to use as a coding guide. A professor in the Department of Apparel, Events, and Hospitality Management revised and confirmed the developed themes. Once the final coding guides were established, a second
coder, a graduate student majoring in Apparel, Merchandising, and Design, independently categorized all data into one of the final 14 themes. The differences in coding between the principal researcher and the second coder were negotiated. Inter-coder reliability of 96% was achieved, using Scott’s formula for $pi$. 
Figure 3.1: Linear latent growth model specification with three time waves in the adult life span
CHAPTER 4. PRELIMINARY RESULTS

This chapter contains demographic descriptions of the sample, the results of descriptive statistics of the research variables, and preliminary analyses of the research data. The descriptive statistics of the sample and research variables are addressed with frequency, mean, and standard deviation. Both exploratory and longitudinal confirmatory factor analysis were conducted for a multi-item research variable—body satisfaction. Internal consistency was assessed using Cronbach’s alpha coefficient. Correlations among the repeated measures and research variables were examined.

Demographic Description of the Sample

A total of 203 women aged 65 and older attended the seminars and were asked to participate in a body image research survey. Among these women, 177 women voluntarily took the survey questionnaire after the seminar and 107 responses were returned, yielding a response rate of 52.7%. Of these responses, two questionnaires contained a large amount of missing data and one questionnaire had outlier data for the weight item. Hoaglin and Iglewicz’s (1987) outlier labeling rule was applied to detect outliers (see Appendix F). This rule declares observations as outliers if they lie outside the Interquartile Range multiplied by a factor of 2.2 \( [(Q_3 - 2.2(Q_3 - Q_1)), (Q_3 + 2.2(Q_3 - Q_1))] \). In addition, two respondents who represented ethnic minority groups—one Asian and one Hispanic—completed questionnaires. Questionnaires from these five respondents were not retained for further analysis.

Participant profile. Table 4.1 presents the demographic characteristics for the sample. All participants were White/European American females aged 65 and older with a mean age of 80. The largest percentage of participants was aged 75 to 84 (48%), followed by individuals aged 85 to 94 (26.5%) and 65 to 74 (25.5%). The greatest number of participants were widowed \( (n = 58, 56.9\%) \), followed by married \( (n = 30, 29.4\%) \), divorced \( (n = 10, 9.8\%) \), and never married \( (n = 4, 3.9\%) \). The education level for the participants was high,
due to the geographic areas where data were collected, near a state university and several private universities. Thirty participants (29.4%) had graduated from high school for their highest level of educational achievement, 27 (26.5%) had completed at least some college, and 25 (24.5%) had a graduate or professional degree.

Body Mass Index (BMI) was calculated by dividing weight in pounds by height in inches squared, then multiplied by a conversion factor of 703. The range for BMIs can be classified as underweight for a BMI under 18.5, normal for a BMI between 18.5 and 24.9, overweight for a BMI between 25 and 29.9, and obese for a BMI over 30. The mean of the BMI scores for the older female participants was 26.8 (SD = 5.7), in the “overweight” range. According to the BMI classification, four participants (3.9%) were classified as underweight; 40 participants (39.2%) were normal weight; 35 participants (34.3%) were overweight; and 23 participants (22.5%) were obese.

Table 4.1. Demographic characteristics for the sample (n = 102)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>102</td>
<td>100</td>
</tr>
<tr>
<td>Age</td>
<td>65-74</td>
<td>26</td>
<td>25.5</td>
</tr>
<tr>
<td></td>
<td>75-84</td>
<td>49</td>
<td>48.0</td>
</tr>
<tr>
<td></td>
<td>85-94</td>
<td>27</td>
<td>26.5</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White/European American</td>
<td>102</td>
<td>100</td>
</tr>
<tr>
<td>Marital</td>
<td>Never married</td>
<td>4</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>30</td>
<td>29.4</td>
</tr>
<tr>
<td></td>
<td>Widowed</td>
<td>58</td>
<td>56.9</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>10</td>
<td>9.8</td>
</tr>
<tr>
<td>Education</td>
<td>Less than 9th grade</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>9th to 12th grade, no diploma</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>High school graduate</td>
<td>30</td>
<td>29.4</td>
</tr>
<tr>
<td></td>
<td>Some college, no degree</td>
<td>27</td>
<td>26.5</td>
</tr>
<tr>
<td></td>
<td>Associate’s degree</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s degree</td>
<td>15</td>
<td>14.7</td>
</tr>
<tr>
<td></td>
<td>Graduate or professional degree</td>
<td>25</td>
<td>24.5</td>
</tr>
</tbody>
</table>
Table 4.1 Continued.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>Underweight</td>
<td>4</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>40</td>
<td>39.2</td>
</tr>
<tr>
<td></td>
<td>Overweight</td>
<td>35</td>
<td>34.3</td>
</tr>
<tr>
<td></td>
<td>Obesity</td>
<td>23</td>
<td>22.5</td>
</tr>
</tbody>
</table>

**Perceived ease in recall of past body image.** Participants’ perceived ease and difficulty in recall of their past body image perceptions were examined (see Table 4.2). The majority of the participants \((n = 73, 71.6\%)\) indicated they were able to find and refer to pictures of themselves when they were about 30 and 50 years old. The majority of the participants reported it was easy to recall their past feelings and ideas about their body, when they were about 30 and 50 years old—\(n = 93 (91.2\%)\) and \(n = 84 (82.4\%)\), respectively.

Table 4.2. Perceived ease in recall of past body image

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture 30</td>
<td>Referred to pictures of self at early adulthood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>29</td>
<td>28.4</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>73</td>
<td>71.6</td>
</tr>
<tr>
<td>Picture 50</td>
<td>Referred to pictures of self at middle adulthood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>29</td>
<td>28.4</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>73</td>
<td>71.6</td>
</tr>
<tr>
<td>Ease in recall 30</td>
<td>Very easy</td>
<td>38</td>
<td>37.3</td>
</tr>
<tr>
<td></td>
<td>Somewhat easy</td>
<td>55</td>
<td>53.9</td>
</tr>
<tr>
<td></td>
<td>Somewhat difficult</td>
<td>8</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>Very difficult</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Ease in recall 50</td>
<td>Very easy</td>
<td>31</td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td>Somewhat easy</td>
<td>53</td>
<td>52.0</td>
</tr>
<tr>
<td></td>
<td>Somewhat difficult</td>
<td>15</td>
<td>14.7</td>
</tr>
<tr>
<td></td>
<td>Very difficult</td>
<td>3</td>
<td>2.9</td>
</tr>
</tbody>
</table>
Factor Analysis

In this study, one variable—body satisfaction—was measured using a multi-item measurement scale. To determine the underlying dimensions of the body satisfaction measure, exploratory factor analyses were conducted by using principal components extraction followed by varimax rotation. An “eigenvalue greater than 1” criterion was used to determine the number of factors (Hair, Anderson, Tatham, & Black, 1998). Cronbach’s alpha coefficients above .70 were used as a measure of internal consistency (Nunnally, 1978). To examine the stability of this measure over time, longitudinal confirmatory factor analysis was performed.

Exploratory factor analysis. Factor analysis was performed on the 5 body satisfaction items for each adult life span stage (Time 1: early adulthood, Time 2: middle adulthood; Time 3: late adulthood). All three, factor analysis results revealed one factor. At Time 1, one factor represented 83.33% of the variance. The eigenvalue for this factor was 4.17 and factor loadings ranged from .78 to .96. Cronbach’s alpha was .95. At Time 2, with the eigenvalue of 4.18, one factor explained 83.64% of the variance. Factor loadings ranged from .79 to .97 and Cronbach’s alpha was .95. At Time 3, one factor explained 78.74% of the variance with the eigenvalue of 3.94. Factor loadings ranged from .78 to .94 with a Cronbach’s alpha of .93. The items and their factor loadings for each time period are presented in Table 4.3.

Longitudinal confirmatory factor analysis. The priority goal for the longitudinal confirmatory factor analysis in this study was to examine whether there is evidence of stability for the body satisfaction measure across the three stages of adult life span. Measurement invariance of the multi-item variable should be established prior to the initial latent growth modeling analysis to ensure that the same constructs are measured, as well as that they are measured with equivalent precision across time (Chan, 1998). The framework to
Table 4.3. Results of exploratory factor analysis on the five items measuring body satisfaction

<table>
<thead>
<tr>
<th>Factor title, items, and time periods</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body satisfaction</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Early adulthood</strong></td>
<td></td>
</tr>
<tr>
<td>BS: physical appearance</td>
<td>.96</td>
</tr>
<tr>
<td>BS: body size and shape</td>
<td>.95</td>
</tr>
<tr>
<td>BS: body weight</td>
<td>.94</td>
</tr>
<tr>
<td>BS: physical attractiveness</td>
<td>.93</td>
</tr>
<tr>
<td>BS: physical functioning</td>
<td>.78</td>
</tr>
<tr>
<td>Eigenvalue = 4.17</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s alpha = .95</td>
<td></td>
</tr>
<tr>
<td>Total variance explained = 83.33%</td>
<td></td>
</tr>
<tr>
<td><strong>Middle adulthood</strong></td>
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<td>BS: physical appearance</td>
<td>.97</td>
</tr>
<tr>
<td>BS: body size and shape</td>
<td>.96</td>
</tr>
<tr>
<td>BS: body weight</td>
<td>.93</td>
</tr>
<tr>
<td>BS: physical attractiveness</td>
<td>.91</td>
</tr>
<tr>
<td>BS: physical functioning</td>
<td>.79</td>
</tr>
<tr>
<td>Eigenvalue = 4.18</td>
<td></td>
</tr>
<tr>
<td>Cronbach’s alpha = .95</td>
<td></td>
</tr>
<tr>
<td>Total variance explained = 83.64%</td>
<td></td>
</tr>
<tr>
<td><strong>Late adulthood</strong></td>
<td></td>
</tr>
<tr>
<td>BS: physical appearance</td>
<td>.94</td>
</tr>
<tr>
<td>BS: body size and shape</td>
<td>.92</td>
</tr>
<tr>
<td>BS: body weight</td>
<td>.89</td>
</tr>
<tr>
<td>BS: physical attractiveness</td>
<td>.90</td>
</tr>
<tr>
<td>BS: physical functioning</td>
<td>.78</td>
</tr>
<tr>
<td>Eigenvalue = 3.94</td>
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<tr>
<td>Cronbach’s alpha = .93</td>
<td></td>
</tr>
<tr>
<td>Total variance explained = 78.74%</td>
<td></td>
</tr>
</tbody>
</table>

evaluate longitudinal factor invariance followed Meredith’s (1993) recommendations.

Meredith (1993) described a sequence of steps, starting with an unconstrained model and
fitting a sequence of models from weak to strong to strict factorial invariance. The
unconstrained model was established by freely estimating all of the model parameters, such
as factor loadings, item intercepts, and error variances. The weak, strong, and strict factorial
invariance models were established by imposing a series of additional constraints on the
model parameters. As a more strict level of equality constraints is imposed on the model parameters, changes in model fit may occur. To assess whether adding the constraints is tenable, sequential chi-squared difference tests were conducted (Little, Preacher, Selig, & Card, 2007).

The basic structure derived from the confirmatory factor analysis of the body satisfaction measure for each life stage (three times) was applied to longitudinal confirmatory factor analysis. The results from the confirmatory factor analysis for the three life stages showed that the measurement models, including two covariances of errors (e.g., covariance of errors between items of physical appearance and body weight satisfaction and between items of physical attractiveness and physical functioning satisfaction) revealed the best fit. Overall statistics of the basic measurement model for each of the three adult life stages are shown in Appendix G.

For longitudinal CFA, the unconstrained model was first established by adding additional covariances for errors of like variables across time (e.g., covariances between errors of the body weight satisfaction item at early adulthood and at middle adulthood; covariances between errors of the body weight satisfaction item at early adulthood and at late adulthood; and covariances between errors of the body weight satisfaction item at middle adulthood and late adulthood) to the basic measurement model. The unconstrained model produced a good fit to the data $[\chi^2 (66) = 88.81, p = .03, \text{NFI} = .95, \text{IFI} = .99, \text{TLI} = .98, \text{CFI} = .99, \text{RMSEA} = .06, \text{SRMR} = .04; \text{see M1 in Table 4.4}$. This result indicates that the factor structure for the body satisfaction measure was the same across time. The unconstrained model was depicted in Appendix H.

For the next level of measurement invariance test—weak factorial invariance—the second model (M2) extended the unconstrained model by equating the factor loadings of the same item across time. The fit indices indicated a good fit of the weak factorial invariance
model to the data \( \chi^2 (74) = 102.07, p = .02, \text{NFI} = .95, \text{IFI} = .99, \text{TLI} = .98, \text{CFI} = .98, \text{RMSEA} = .06, \text{SRMR} = .04; \) see M2 in Table 4.4]. A chi-squared difference test between the unconstrained and weak factorial invariance models was not statistically significant \( \Delta \chi^2 (8) = 13.26, p = .10; \) see M2 vs. M1 in Table 4.4], indicating that the equality constraints of factor loadings across time were valid. The weak factorial invariance model was depicted in Appendix I.

The third level of measurement invariance test—strong factorial invariance—was established by constraining, in addition to the factor loadings, the intercept at each time of measurement to be equal. The results revealed an acceptable fit of the data with a chi-squared value of 127.39 \( (df = 82; p = .00), \text{NFI} of .93, \text{IFI} of .98, \text{TLI of .97, CFI of .98, RMSEA of .07, and SRMR of .04. The intercept invariance test was conducted by comparing the fit of this model with the less restrictive model. The chi-squared difference between the strong (M3) and weak factorial invariance model (M2), 25.32 with 8 degrees of freedom, was statistically significant at \( \alpha = .01 \). That is, the intercept invariance across time was not supported. The strong factorial invariance model was depicted in Appendix J.

For the fourth level of measurement invariance, the equality constraints were retained on error variances. The chi-squared value was 152.07 \( (df = 92, p = .00), \) and the NFI, IFI, TLI, CFI, RMSEA, and SRMR values were acceptable (.92, .97, .96, .97, .08, and .04, respectively). However, the chi-squared difference test revealed a statistically significant loss of fit between the strict (M4) and strong factorial invariance model \( [M3; \Delta \chi^2 (10) = 24.68, p = .01]. \) Thus, the equality of error variances across time was not supported. The strict factorial invariance model was depicted in Appendix K.

In sum, the results of the longitudinal CFA in this study showed evidence for stability in both the factor structure and the factor loadings for the body satisfaction measure across three stages of the adult life span. Based on the chi-squared difference tests, it was concluded
that the weak factorial invariance model (M2) was the best fitting among the alternative models. Overall, measurement invariance of the body satisfaction measure across the three stages of adult life span was established.

Table 4.4. Longitudinal CFA results for body satisfaction measure (n = 102)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>NFI</th>
<th>IFI</th>
<th>TLI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>88.81</td>
<td>66</td>
<td>.03</td>
<td>.95</td>
<td>.99</td>
<td>.98</td>
<td>.99</td>
<td>.06</td>
<td>.04</td>
</tr>
<tr>
<td>M2</td>
<td>102.07</td>
<td>74</td>
<td>.02</td>
<td>.95</td>
<td>.99</td>
<td>.98</td>
<td>.98</td>
<td>.06</td>
<td>.04</td>
</tr>
<tr>
<td>M3</td>
<td>127.39</td>
<td>82</td>
<td>.00</td>
<td>.93</td>
<td>.98</td>
<td>.97</td>
<td>.98</td>
<td>.07</td>
<td>.04</td>
</tr>
<tr>
<td>M4</td>
<td>152.07</td>
<td>92</td>
<td>.00</td>
<td>.92</td>
<td>.97</td>
<td>.96</td>
<td>.97</td>
<td>.08</td>
<td>.04</td>
</tr>
</tbody>
</table>

Chi-square difference tests

<table>
<thead>
<tr>
<th></th>
<th>$\Delta \chi^2$</th>
<th>$\Delta df$</th>
<th>$p$</th>
<th>$\Delta$NFI</th>
<th>$\Delta$IFI</th>
<th>$\Delta$TLI</th>
<th>$\Delta$CFI</th>
<th>$\Delta$RMSEA</th>
<th>$\Delta$SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2 vs. M1</td>
<td>13.26</td>
<td>8</td>
<td>.10</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.01</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>M3 vs. M2</td>
<td>25.32</td>
<td>8</td>
<td>.00</td>
<td>.02</td>
<td>.01</td>
<td>.01</td>
<td>.00</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>M4 vs. M3</td>
<td>24.68</td>
<td>10</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. M1 = unconstrained model; M2 = factor loading (FL) constraints or weak factorial invariance model; M3 = intercept (INT) constraints or strong factorial invariance model; M4 = error variance (EV) constraints or strict factorial invariance model

M2 vs. M1 = test of equality of FLs, M3 vs. M2 = test of equality of INTs, M4 vs. M3 = test of equality of EVs

**Summary of Research Variables**

This section summarizes the means, standard deviations, and correlations for the three repeated measurements of the research variables. Correlations among research variables for each of three measurement times (Time 1 = early adulthood, Time 2 = middle adulthood, Time 3 = late adulthood) are also discussed.

**Descriptive statistics and correlations among repeated measures.** Table 4.5 presents the means, standard deviations, and correlations for the three repeated measures of perceived actual body shape, perceived ideal body shape, actual/ideal body image discrepancy, and the five body satisfaction items. Several characteristics were observed. First, throughout the adult life span, women always perceived their actual body shape as larger than their ideal body shape, and the means of the repeated measures for perceived actual body shape and perceived ideal body shape increased over time. It is important to note—with the
increasing trend of the means of the repeated measures for both perceived actual body shape and perceived ideal body shape, the means of actual/ideal body image discrepancy also increased from early to late adulthood. Overall, women were moderately satisfied with their bodies in terms of physical appearance, body size and shape, body weight, physical attractiveness, and physical functioning, but the means of the repeated measures for the five body satisfaction items decreased over time. Interestingly, across all age stages, the women reported the highest satisfaction scores for physical functioning (Time 1: $M = 6.77$, Time 2: $M = 6.15$, Time 3: $M = 5.34$) and the lowest scores for body weight satisfaction (Time 1: $M = 5.87$, Time 2: $M = 5.23$, Time 3: $M = 4.64$).

Second, the standard deviations of the repeated measures for perceived actual body shape, perceived ideal body shape, and actual/ideal body image discrepancy increased from early to late adulthood, reflecting an increasing trend in variability of the variables. When women remembered when they were about 30 years old—during early adulthood—their scores were clustered closely around the mean. Yet, as women aged, the scores became more dispersed in terms of their perceptions of their actual and ideal body shape. The standard deviations of the repeated measures for the five body satisfaction items did not have such a consistent increasing or decreasing trend.

Third, correlations among the repeated measures for all variables were statistically significant, at the $p < .05$ level or better. Repeated measurements for women’s body image perceptions were clearly associated.

**Correlations among research variables.** Pearson’s correlations were used to examine associations among the variables in the model. Table 4.6 summarizes correlations among research variables for each of the three measurement times. For all three adult life stages, similar trends in correlations among variables were discovered. Women who had larger body shape perceptions about their actual body always had larger ideal body shape
perceptions throughout their adult life span. Significant positive correlations at the \( p < .001 \) level were found between perceived actual body shape and perceived ideal body shape for all three measurement times (\( r = .59^{***} \) at Time 1; \( r = .67^{***} \) at Time 2; \( r = .73^{***} \) at Time 3). It should be noted that the five body satisfaction items were highly correlated with each other at the \( p < .001 \) level for all three stages of adult life span, ranging from .58 to .95. More specifically, three items—satisfaction with physical appearance, body size and shape, and body weight—were highly correlated with each other. The correlations showed that physical functioning becomes a more important variable determining women’s body image perceptions as they age. The level of satisfaction with physical functioning was not significantly correlated with participants’ actual and ideal body shape perceptions during early adulthood, while significant negative correlations were determined during middle and late adulthood.
Table 4.5. Means, standard deviations, and correlations for three repeated measures of perceived actual body shape, perceived ideal body shape, actual/ideal body image discrepancy, and body satisfaction (n = 102)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived actual body shape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>3.53</td>
<td>.86</td>
<td>1</td>
<td>6</td>
<td>.48**</td>
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<td></td>
</tr>
<tr>
<td>Time 2</td>
<td>4.37</td>
<td>1.09</td>
<td>2</td>
<td>7</td>
<td>.32***</td>
<td>.57***</td>
<td>1</td>
</tr>
<tr>
<td>Time 3</td>
<td>4.87</td>
<td>1.41</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perceived ideal body shape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>3.36</td>
<td>.63</td>
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<td>5</td>
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<td></td>
</tr>
<tr>
<td>Time 2</td>
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<td>.90</td>
<td>2</td>
<td>6</td>
<td>.35***</td>
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<tr>
<td>Time 3</td>
<td>4.24</td>
<td>1.06</td>
<td>2</td>
<td>7</td>
<td>.42***</td>
<td>.55***</td>
<td>1</td>
</tr>
<tr>
<td><strong>Actual/ideal body image discrepancy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td>.17</td>
<td>.71</td>
<td>-3</td>
<td>2</td>
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<td></td>
</tr>
<tr>
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<td>.45</td>
<td>.83</td>
<td>-1</td>
<td>3</td>
<td>.46***</td>
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<tr>
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<td>.96</td>
<td>-2</td>
<td>3</td>
<td>.21*</td>
<td>.34***</td>
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<tr>
<td><strong>BS: physical appearance</strong></td>
<td></td>
<td></td>
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<tr>
<td>Time 1</td>
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<td>9</td>
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<tr>
<td>Time 2</td>
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<td>1</td>
<td>9</td>
<td>.42***</td>
<td>.51***</td>
<td>1</td>
</tr>
<tr>
<td>Time 3</td>
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<td>1</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BS: body size and shape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
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<td>1.68</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 2</td>
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<td>1.77</td>
<td>1</td>
<td>9</td>
<td>.48***</td>
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<tr>
<td>Time 3</td>
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<td>1</td>
<td>8</td>
<td>.40***</td>
<td>.44***</td>
<td>1</td>
</tr>
<tr>
<td><strong>BS: body weight</strong></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>1</td>
<td>9</td>
<td>.31**</td>
<td>.46***</td>
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<tr>
<td><strong>BS: physical attractiveness</strong></td>
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<td></td>
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</tr>
<tr>
<td>Time 1</td>
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<tr>
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<td>1</td>
<td>8</td>
<td>.36***</td>
<td>.50***</td>
<td>1</td>
</tr>
<tr>
<td><strong>BS: physical functioning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Time 1</td>
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<td>1.71</td>
<td>1</td>
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<td>1</td>
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</tr>
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<td>Time 2</td>
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<td>1.94</td>
<td>1</td>
<td>9</td>
<td>.24*</td>
<td>.51***</td>
<td>1</td>
</tr>
<tr>
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<td>1</td>
<td>8</td>
<td>.39***</td>
<td>.53***</td>
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</tr>
</tbody>
</table>

Note. Time 1 = early adulthood; Time 2 = middle adulthood; Time 3 = late adulthood. *p  < .05. **p  < .01. ***p  < .001.
Table 4.6. Correlations among research variables for three life stages (n = 102)

<table>
<thead>
<tr>
<th>Time 1: Early adulthood</th>
<th></th>
<th></th>
<th></th>
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<th></th>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
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<td>1. Perceived actual body shape</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Perceived ideal body shape</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>3. Actual/ideal body image discrepancy</td>
<td>.70***</td>
<td>-.16</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. BS: physical appearance</td>
<td>-.24*</td>
<td>-.18</td>
<td>-.13</td>
<td>1.00</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. BS: body size and shape</td>
<td>-.30**</td>
<td>-.21*</td>
<td>-.18</td>
<td>.90***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. BS: body weight</td>
<td>-.38***</td>
<td>-.21*</td>
<td>-.27**</td>
<td>.85***</td>
<td>.89***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. BS: physical attractiveness</td>
<td>-.22*</td>
<td>-.30**</td>
<td>-.18</td>
<td>.90***</td>
<td>.85***</td>
<td>.85***</td>
<td>1.00</td>
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<td>8. BS: physical functioning</td>
<td>.09</td>
<td>-.08</td>
<td>-.04</td>
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<td>9. BS: total</td>
<td>-.27**</td>
<td>-.20*</td>
<td>-.16</td>
<td>.95***</td>
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<td>1. Perceived actual body shape</td>
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<td>.59***</td>
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<td>4. BS: physical appearance</td>
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<td>-.40***</td>
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<td>5. BS: body size and shape</td>
<td>-.65***</td>
<td>-.46***</td>
<td>-.35***</td>
<td>.95***</td>
<td>1.00</td>
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<td>6. BS: body weight</td>
<td>-.70***</td>
<td>-.47***</td>
<td>-.42***</td>
<td>.88***</td>
<td>.91***</td>
<td>1.00</td>
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<td>-.53***</td>
<td>-.34**</td>
<td>-.33**</td>
<td>.85***</td>
<td>.83***</td>
<td>.81***</td>
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<td>8. BS: physical functioning</td>
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<td>-.35***</td>
<td>-.23*</td>
<td>.71***</td>
<td>.67***</td>
<td>.62***</td>
<td>.67***</td>
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<td>9. BS: total</td>
<td>-.65***</td>
<td>-.44***</td>
<td>-.37***</td>
<td>.96***</td>
<td>.96***</td>
<td>.93***</td>
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<td>3. Actual/ideal body image discrepancy</td>
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<td>4. BS: physical appearance</td>
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<td>-.41***</td>
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<tr>
<td>5. BS: body size and shape</td>
<td>-.53***</td>
<td>-.43***</td>
<td>-.30**</td>
<td>.88***</td>
<td>1.00</td>
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<tr>
<td>6. BS: body weight</td>
<td>-.57***</td>
<td>-.42***</td>
<td>-.37***</td>
<td>.83***</td>
<td>.82***</td>
<td>1.00</td>
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<td>7. BS: physical attractiveness</td>
<td>-.36***</td>
<td>-.36***</td>
<td>-.13</td>
<td>.81***</td>
<td>.76***</td>
<td>.71***</td>
<td>1.00</td>
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<td>8. BS: physical functioning</td>
<td>-.31**</td>
<td>-.28**</td>
<td>-.17</td>
<td>.61***</td>
<td>.61***</td>
<td>.58***</td>
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<td>9. BS: total</td>
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<td>-.43***</td>
<td>-.27***</td>
<td>.93***</td>
<td>.91***</td>
<td>.89***</td>
<td>.89***</td>
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Note. *p < .05. **p < .01. ***p < .001.
CHAPTER 5. ANALYSIS OF LATENT GROWTH MODELS AND HYPOTHESIS TESTING

This chapter presents the results of the quantitative data analyses performed to evaluate each of the hypotheses. To test hypothesis 1 through 3, unconditional first-order latent growth models (LGM) for each of the body image variables—perceived actual body shape, perceived ideal body shape, and perceived actual/ideal body image discrepancy—were specified to describe the change in women’s body image perceptions throughout the adult life span. For the multi-item body satisfaction scale, unconditional first-order LGMs for each of five items were first examined. To allow a better understanding of trajectory in body satisfaction change, an additional analysis using a second-order LGM was conducted. Hypothesis 4 was tested with the results from both first- and second-order LGMs. As this study has three time waves of data (Time 1: early adulthood, Time 2: middle adulthood, and Time 3: late adulthood), the linear functions were examined. To test hypotheses 5a, 5b, and 5c, correlations between the actual/ideal body image discrepancy and five body satisfaction items were examined for each of three adult life stages.

The key variables in this model are the two latent growth factors—the intercept growth factor and the slope growth factor. The mean of the intercept represents the average value of the variables at which the time variable equals zero—at Time 1 in this study. The mean of the slope represents the linear rate at which the variables change from Time 1 through Time 3. Repeated measurements for each research variable are used as indicators of intercept and slope factors in the model. A significant variance in the intercept suggests individuals vary considerably with regards to their initial level of performance. Similarly, a significant variance in the slope indicates individuals in the group vary with respect to their rate of change. In terms of the covariance between the intercept and slope, a significant positive covariance means that high initial performance is associated with higher rates of
growth. In contrast, a statistically significant negative covariance suggests the existence of groups that have low and high intercepts coupled with high and low growth rates, respectively.

The $R^2$, or squared multiple correlation (SMC), values for each of the repeated measures indicate how much variance in the measure can be explained by the latent growth parameters. A high value for $R^2$ means the latent growth trajectory explains a considerable amount of the variation in a measure. If a low value of $R^2$ is found in a particular time period, it requires further investigation to identify what occurred during that period to explain the departure from the trajectory pattern.

**Perceived Actual Body Shape**

Hypothesis 1 predicted that the trajectory of women’s perceptions of their actual body shape throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood. To test H1, an unconditional first-order LGM was developed to identify the functional form of changes in perceived actual body shape. The results revealed a poor fit of the model to the data ($\chi^2 = 8.62, df = 3, p = .04$, NFI = .87, IFI = .91, TLI = .91, CFI = .91, RMSEA = .14, SRMR = .05). The modification indices showed the fit could be improved by adding the direct path from the variable measured at Time 1 to Time 2. The final model with this additional path was examined and revealed a $\chi^2$ of 3.19 with 2 degrees-of-freedom ($p = .20$). The NFI was .95; IFI was .98; TLI was .97; CFI was .98; RMSEA was .08; and SRMR was .04. The fit indices showed the data fit the final model very well. Figure 5.1 depicts the model tested and reports the fit indices of the model.

The mean for the intercept ($M_I$) was 3.52 ($p < .001$), indicating the average level of actual body shape perception at early adulthood. The mean for the slope ($M_S$) was .67 ($p < .001$), indicating that the women’s perceived actual body shape was increasing linearly throughout their adult life span. Figure 5.2 depicts the mean trajectory estimated by the linear
LGM. The variance in the intercept was significant \((V_I = .3, p < .05)\), meaning each woman’s perception varies considerably around the mean with regard to her actual body image during early adulthood. Similarly, a significant variance in the slope was found \((V_S = .23, p < .01)\). This represents significant individual variability in the rate of change in perceived actual body shape over time. The covariance of .05 between the intercept and slope was found to be non-significant. According to the squared multiple correlations (SMC), the linear latent growth model explained 37\%, 57\%, and 74\% of variance in actual body shape at each stage of the adult life span—Time 1, Time 2, and Time 3, respectively. As a significant linear upward trend was found, Hypothesis 1 was not supported.
Figure 5.1. Linear latent growth model of women’s perceived actual body shape from early adulthood through late adulthood

Intercept
- $M_I = 3.52^{***}$
- $V_I = .30^*$

Slope
- $M_S = .67^{***}$
- $V_S = .23^{**}$

Cov = .05

T1: perceived actual body shape

T2: perceived actual body shape

T3: perceived actual body shape

$\chi^2 (2) = 3.19 (p = .20)$
NFI = .95
IFI = .98
TLI = .97
CFI = .98
RMSEA = .08
SRMR = .04

SMC = .37
SMC = .57
SMC = .74

.06*

E
Hypothesis 2 proposed that the trajectory of women’s perceptions of ideal body shape throughout the adult life course would show no change, remaining stable from early adulthood to late adulthood. Figure 5.3 shows the graphic representation of unconditional first-order LGM estimated to test H2. The fit indices for this model yielded a good fit to the data. The $\chi^2$ statistics was 4.30 with 3 degrees-of-freedom ($p = .23$). The NFI was .93, IFI was .98, TLI was .98, CFI was .98, RMSEA was .07, and SRMR was .03.

The intercept showed that the average for participants’ perceived ideal body shape at early adulthood was 3.40 ($p < .001$). The slope was significant in the positive direction, indicating an increase in perceived ideal body shape over time ($M_S = .44$, $p < .001$), via a linear functional form. Figure 5.4 depicts the mean trajectory of the variable. The results
revealed non-significant individual differences in both intercept and the slope of the perceived ideal body shape trajectory ($V_I = .02, p = .74$ and $V_S = .03, p = .49$). A significant positive covariance between the intercept and slope ($Cov = .14, p < .001$) was determined, indicating that larger ideal body shape in early adulthood is associated with higher rates of increase in women’s perceptions about ideal body shape throughout the adult life span. The squared multiple correlations (SMC) for each repeated measure of perceived ideal body shape were .05 at early adulthood, .45 at middle adulthood, and .64 at late adulthood. Hypothesis 2 was not supported, as a significant increasing linear trend was determined.
Figure 5.3. Linear latent growth model of women’s perceived ideal body shape from early adulthood through late adulthood.
Figure 5.4. Mean trajectory of perceived ideal body shape throughout the adult life span

**Perceived Actual/ideal Body Image Discrepancy**

Hypothesis 3 proposed that the trajectory of women’s perceived actual/ideal body image discrepancy throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood. An unconditional first-order LGM was estimated to test Hypothesis 3. The overall fit indices for this model revealed a $\chi^2$ of 9.68 ($df = 3; p < .05$), NFI of .74, IFI of .81, TLI of .81, CFI of .81, RMSEA of .15, and SRMR of .08, indicating a poor fit to the data. The modification indices suggested adding a direct path from the variable measured at Time 1 to Time 2 for a better-fitting model. With this additional path, the modified model revealed a good fit to the data ($\chi^2 = 1.50$, $df = 2$, $p = .47$, NFI = .96, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = .00, SRMR = .03). The modified model was utilized to identify the functional form of changes in perceived actual/ideal body image discrepancy.
Figure 5.5 depicts the model tested and reports the fit indices of the model.

The intercept mean ($M_I$) was .16 ($p < .05$) and the slope mean ($M_S$) was .24 ($p < .001$). The average level of perceived actual/ideal body image discrepancy at early adulthood was .16 and linearly increased by .24 for each of the adult life span stages. The mean trajectory for the variable throughout the adult life span is depicted in Figure 5.6. The variances for both the intercept and slope were non-significant ($V_I = .05, p = .67; V_S = .06, p = .26$), indicating no significant individual variability in the initial level and rate of change in perceived actual/ideal body image discrepancy over time. There was no significant correlation between the intercept and slope (Cov = .03, $p = .60$). The direct path from the variable measured at Time 1 to Time 2 revealed a significant positive association between variables ($\beta = .37, \text{C.R.} = 2.52, p < .05$). The squared multiple correlations (SMC) revealed the linear latent growth model to explain 10%, 40%, and 49% of the variance in the actual/ideal body image discrepancy at each stage of the adult life span—Time 1, Time 2, and Time 3, respectively. Hypothesis 3 was not supported, as a significant linear upward trend was found.
Figure 5.5. Linear latent growth model of women’s actual/ideal body image discrepancy from early adulthood through late adulthood.
Hypothesis 4 predicted that the trajectory of women’s perceived level of body satisfaction throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood. Body satisfaction was measured with five items, including satisfaction with physical appearance, body size and shape, body weight, physical attractiveness, and physical functioning. The analysis of this measure was conducted in two steps: (1) examining an unconditional first-order LGM for each of five items and (2) examining an additional analysis using a second-order LGM. Even though the exploratory factor analysis revealed one underlying dimension for five body satisfaction items, the trajectories for each of five items were independently examined using first-order LGMs to provide more information about the changes in women’s body image perceptions in detail.
**Satisfaction with physical appearance.** The functional form of growth for women’s perceived level of satisfaction with physical appearance was examined using unconditional first-order LGM. The analysis for this initial model revealed an acceptable fit to the data. However, the results revealed that the covariance matrix was not definitely positive—i.e., there was a non-significant negative variance of the slope ($\sigma_S = -0.04, p = .82$) and a non-significant negative covariance between the intercept and slope ($\sigma_{COV} = -0.02, p = .93$). After these two values were set to zero (Gerbing & Anderson, 1987), the final model was examined to identify the linear trend of change in the variable. As shown in Figure 5.7, the final model demonstrated a good fit to the data ($\chi^2 = 5.65, df = 5, p = .34$, NFI = .90, IFI = .99, TLI = .99, CFI = .99, RMSEA = .04, SRMR = .03). The average level of women’s perceived satisfaction with their physical appearance at early adulthood ($M_I$) was 5.98 ($p < .001$) and significantly decreased across women’s adult life span ($M_S = -0.44, p < .001$). Figure 5.8 exhibits the mean trajectory of the variable. Examination of the intercept variance ($V_I = 1.21, p < .001$) indicated significant individual heterogeneity around the mean level of satisfaction with physical appearance at early adulthood. Two growth factors—intercept and slope—explained about 44% of the variances in the satisfaction with physical appearance variable at each stage of the adult life span.
Figure 5.7. Linear latent growth model of women’s satisfaction with physical appearance from early adulthood through late adulthood

\[ \chi^2 (5) = 5.65 \ (p = .34) \]
NFI = .90
IFI = .99
TLI = .99
CFI = .99
RMSEA = .04
SRMR = .03

\[ \text{Intercept } M_I = 5.98^{***} \]
\[ V_I = 1.21^{***} \]

\[ \text{Slope } M_S = -.44^{***} \]
\[ V_S = .00 \]

T1: satisfaction with physical appearance
T2: satisfaction with physical appearance
T3: satisfaction with physical appearance

SMC = .44

\[ \text{Cov} = .00 \]
Figure 5.8. Mean trajectory of satisfaction with physical appearance throughout the adult life span

**Satisfaction with body size and shape.** The fit indices of the linear first-order LGM applied to women’s perceived level of satisfaction with body size and shape revealed a good fit to the data ($\chi^2 = 2.71$, $df = 3$, $p = .44$, NFI = .95, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = .00, SRMR = .02). Figure 5.9 depicts the model tested and reports on the fit indices of the model. Each growth estimate for the model returned a statistically significant value at $p < .001$. As depicted in Figure 5.10, the intercept mean ($M_1$) indicated an average initial satisfaction level at early adulthood of 5.89, and a linear decline ($M_3$) of .44. However, the estimated model exhibited statistically significant variance for the intercept ($V_1 = 1.45$, $p < .001$), demonstrating the possibility of model improvement. The slope variance was non-significant ($V_3 = .02$, $p = .91$). A negative non-significant covariance of -.12 between the intercept and slope was determined ($p = .54$). According to the squared multiple correlations (SMC), the linear LGM explained 49% (Time 1), 44% (Time 2), and 40% (Time 3) of
variance in the satisfaction with body size and shape variable at each stage of the adult life span.
Figure 5.9. Linear latent growth model of women’s satisfaction with body size and shape from early adulthood through late adulthood

Intercept
\[ M_I = 5.89^{***} \]
\[ V_I = 1.45^{***} \]

Slope
\[ M_S = -0.47^{***} \]
\[ V_S = 0.02 \]

Cov = -.12

\[ \chi^2 (3) = 2.71 (p = .44) \]
NFI = .95
IFI = 1.00
TLI = 1.00
CFI = 1.00
RMSEA = .00
SRMR = .02

T1: satisfaction with body size and shape
SMC = .49
E

T2: satisfaction with body size and shape
SMC = .44
E

T3: satisfaction with body size and shape
SMC = .40
E
Satisfaction with body weight. The linear first-order LGM applied to women’s perceived level of satisfaction with body weight revealed a good fit to the data ($\chi^2 = 2.06, df = 3, p = .56, NFI = .96, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = .00, SRMR = .03$).

Figure 5.11 shows the graphical representation of the model tested and reports on the fit indices. The results revealed a significant, positive intercept mean ($M_I = 5.86, p < .001$) and a significant, negative slope mean ($M_S = -.62, p < .001$). That is, women’s perceived level of satisfaction with body weight decreased linearly with age, starting with the average level of 5.86 at early adulthood. The linear trajectory of the variable is represented in Figure 5.12. The intercept variance was statistically significant, revealing that individuals differed in their initial level of body weight satisfaction ($V_I = 1.89, p < .001$). However, the non-significant slope variance indicates no individual difference in their rates of decrease in body weight satisfaction ($V_S = .26, p = .19$). The covariance between the initial satisfaction level and the
rate of change was statistically non-significant (Cov = -.40, \( p = .12 \)). The growth factors—intercept and slope—explained about 53\%, 45\%, and 44\% of the variances in the satisfaction with body weight variable at early, middle, and late adulthood, respectively.
Figure 5.11. Linear latent growth model of women’s satisfaction with body weight from early adulthood through late adulthood
Figure 5.12. Mean trajectory of satisfaction with body weight throughout the adult life span

**Satisfaction with physical attractiveness.** A linear first-order LGM was developed to identify the functional form of changes in women’s satisfaction with perceived physical attractiveness (see Figure 5.13). This model yielded a good fit to the data ($\chi^2 = 3.10, df = 3, p = .38$, NFI = .94, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = .02, SRMR = .03). The mean estimates for both intercept and slope growth factors returned statistically significant values at $p < .001$. The intercept mean ($M_I$) indicated an average level of satisfaction with physical attractiveness of 5.98 at early adulthood, and the slope mean ($M_S$) indicated a linear decline of -0.44. The linear trajectory of the variable is represented in Figure 5.14. Significant variation existed only in the intercept ($V_I = 1.52, p < .001; V_S = .15, p = .29$). Intercept and slope growth factors exhibited non-significant covariance (Cov = -.27, $p = .15$). According to the squared multiple correlations (SMC), the linear LGM explained 55% (Time 1), 47%...
(Time 2), and 45% (Time 3) of variance in the satisfaction with physical attractiveness at each stage of the adult life span.
Figure 5.13. Linear latent growth model of women’s satisfaction with physical attractiveness from early adulthood through late adulthood.
Satisfaction with physical functioning. The linear LGM for women’s satisfaction with perceived physical functioning fit the data well ($\chi^2 = 1.25, df = 3, p = .73$, NFI = .98, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = .00, SRMR = .02). Figure 5.15 shows the graphic representation of the model and reports on the fit indices. The intercept mean revealed significant levels of satisfaction with physical functioning in early adulthood ($M_I = 6.80, p < .001$). A negative significant slope mean ($M_S = -.72, p < .001$) indicated a decreasing trajectory of satisfaction with physical functioning over the course of the women’s adult lives. The linear trajectory of the variable is represented in Figure 5.16. The significant variation in both the intercept ($V_I = 1.81, p < .001$) and the slope ($V_S = .65, p < .01$) indicated significant individual differences in growth trajectories over time. A negative significant covariance of -.47 between the intercept and slope was found ($p < .05$). The squared multiple correlations...
(SMC) indicated the linear LGM explained 60% (Time 1), 55% (Time 2), and 67% (Time 3) of variance in the satisfaction with physical functioning at each stage of the adult life span.
Figure 5.15. Linear latent growth model of women’s satisfaction with physical functioning from early adulthood through late adulthood
Body satisfaction using a second-order LGM (2LGM). The 2LGM incorporates multiple indicators of a measurement directly into the model, rather than using an averaged or summed composite score. As a relatively new approach, the 2LGM has key advantages over the first-order LGM (Sayer & Cumsille, 2001). Using the 2LGM, researchers can explore the measurement characteristics for each indicator. This is possible because the 2LGM allows the factor loadings for each indicator to have unequal values within the same measurement time. The 2LGM also allows separate estimates of measurement errors for each indicator. Another major advantage of the 2LGM exists in its ability to investigate the factorial invariance of the latent variables of interest measured by multiple items across times of measurement. As one of the assumptions for the 2LGM, the measurement invariance should be established to further examine the data using 2LGM. In the previous data analysis section, the results of the
longitudinal CFA confirmed the weak factorial invariance of the body satisfaction scale across three times of measurement. A 2LGM was further developed, constraining the factor loadings of the same item across time, to identify the overall trajectory of change in body satisfaction.

The initial 2LGM, with both the intercept and slope growth factors, was examined and revealed a good fit to the data ($\chi^2 = 106.18$, $df = 76$, $p < .05$, NFI = .94, IFI = .98 TLI = .98, CFI = .98, RMSEA = .06, SRMR = .05). Figure 5.17 shows the graphic representation of the intercept-slope 2LGM. The intercept mean ($M_I$) of 6.04 was statistically significant at $p < .001$. However, the slope mean revealed a negative non-significant value ($M_S = -.27$, $p = .12$). This means that the rate of change across the three time waves was not significantly different from zero. Thus, another model—intercept-only 2LGM—was identified to examine whether the no growth model fits the data better than the linear growth model. The intercept only 2LGM also revealed a good fit to the data ($\chi^2 = 109.32$, $df = 79$, $p < .05$, NFI = .94, IFI = .98 TLI = .98, CFI = .98, RMSEA = .06, SRMR = .05; see Figure 5.18). The difference for chi-squared and degrees-of-freedom between the intercept-only and the intercept-slope 2LGMs were not significant ($\Delta\chi^2 = 3.14$, $\Delta df = 3$, $p = .37$), indicating that adding the slope growth factor to the model did not improve the model fit. In the intercept-only 2LGM, the intercept mean of 6.04 and its variance of 1.21 were statistically significant at $p < .001$. All factor loadings, capturing the relation of each indicator to its composite latent factor, ranged from .63 to .98 and are statistically significant at $p < .001$. The squared multiple correlations (SMC) indicated the intercept-only 2LGM explained 46% of variance in overall body satisfaction at each stage of the adult life span.

The findings from the five first-order LGMs for each body satisfaction item and the 2LGM for overall body satisfaction revealed inconsistent results. According to the 1LGM analysis, the women’s perceived levels of satisfaction with physical appearance, body size
and shape, body weight, physical attractiveness, and physical functioning decreased linearly and significantly with aging. In contrast, the 2LGM analysis revealed overall levels of body satisfaction did not significantly decreased throughout the women’s adult life span.

When interpreting these results, the possibility of a multicollinearity problem should be considered. When data are collected over time using the same measurement, it is common to obtain high correlations among the repeated measures, possibly resulting in multicollinearity (Slinker & Glantz, 1985). As reported in the preliminary results section, all correlations among five body satisfaction items within the same measurement period were statistically significant at $p < .001$, ranging from .58 to .95. Especially, three items—the satisfaction with physical appearance, body size and shape, and body weight—were highly correlated with each other ($r = .90$, $p < .001$ at Time 1 and .95 at Time 2 between physical appearance and body size and shape satisfaction; $r = .91$, $p < .001$ at Time 2 between body size and shape and body weight satisfaction). Because multicollinearity causes serious problems in structural equation modeling analysis (Grewal, Cote, & Baumgartner, 2004), it can be concluded the results from the 1LGM analysis were more tenable than the results from the 2LGM in this study. Thus, Hypothesis 4 was not supported because the 1LGM analysis resulted in significant decreasing linear trends in all body satisfaction items.
Figure 5.17. The second-order linear latent growth model of body satisfaction from early adulthood through late adulthood
Figure 5.18. The second-order intercept-only latent growth model of body satisfaction from early adulthood through late adulthood.

\[ \chi^2 (79) = 109.32 \ (p < .05) \]
NFI = .94
IFI = .98
TLI = .98
CFI = .98
RMSEA = .06
SRMR = .05

Intercept

\[ M_i = 6.04^{***} \]
\[ V_i = 1.21^{***} \]

SMC = .46

\[ \begin{array}{cccc}
V_{1T1} & V_{2T1} & V_{3T1} & V_{5T1} \\
S & S & S & S \\
.96 & .94 & .90 & .70 \\
\end{array} \]

\[ \begin{array}{cccc}
V_{1T2} & V_{2T2} & V_{3T2} & V_{5T2} \\
S & S & S & S \\
.98 & .96 & .94 & .86 \\
\end{array} \]

\[ \begin{array}{cccc}
V_{1T3} & V_{2T3} & V_{3T3} & V_{5T3} \\
S & S & S & S \\
.97 & .93 & .90 & .86 \\
\end{array} \]
**Actual/ideal Body Image Discrepancy and Body Satisfaction**

Hypotheses 5a, 5b, and 5c predicted that body image discrepancy will negatively relate to body satisfaction in women’s early, middle, and late adulthood, respectively. To test these hypotheses, correlations between the actual/ideal body image discrepancy and five body satisfaction items were examined for each of three adult life stages (see Table 4.6). All correlations between variables throughout adult life span were negative. During early adulthood, only the satisfaction with body weight was significantly and negatively associated with actual/ideal body image discrepancy at the $p < .01$ level ($r = -.27**$), partially supporting Hypothesis 5a. All of five body satisfaction items revealed significant negative correlations with actual/ideal body image discrepancy at the $p < .05$ level or better during middle adulthood ($r = -.36***$ for physical appearance satisfaction, $r = -.35***$ for body size and shape satisfaction, $r = -.42***$ for body weight satisfaction, $r = -.33**$ for physical attractiveness satisfaction, and $r = -.23*$ for physical functioning satisfaction). Thus, Hypothesis 5b was supported. During late adulthood, significant and negative correlations between actual/ideal body image discrepancy and three body satisfaction items—satisfaction with physical appearance ($r = -.27**$), body size and shape ($r = -.30**$), and body weight ($r = -.37***$)—were found. Hypothesis 5c was partially supported.

**Summary of Hypothesis Testing**

Results and its significance for each hypothesis testing were summarized in Table 5.1.

For Hypotheses 1 through 4, the results from the latent growth modeling analysis were reported. For Hypotheses 5a, 5b, and 5c, the results from the correlation analysis were reported.
### Table 5.1. Summary of hypothesis testing results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1</strong>: The trajectory of women’s perception of their actual body shape throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.</td>
<td>Not supported - Increasing trajectory</td>
</tr>
<tr>
<td><strong>H2</strong>: The trajectory of women’s perceptions of their ideal body shape throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.</td>
<td>Not supported - Increasing trajectory</td>
</tr>
<tr>
<td><strong>H3</strong>: The trajectory of women’s perceived actual/ideal body image discrepancy throughout the adult life course will show no change, remaining from stable from early adulthood to late adulthood.</td>
<td>Not supported - Increasing trajectory</td>
</tr>
<tr>
<td><strong>H4</strong>: The trajectory of women’s perceived level of body satisfaction throughout the adult life course will show no change, remaining stable from early adulthood to late adulthood.</td>
<td>Not supported - Decreasing trajectories</td>
</tr>
<tr>
<td><strong>H5a</strong>: Actual/ideal body image discrepancy will negatively relate to body satisfaction in women’s early adulthood.</td>
<td>Partially supported - Negative correlation for body weight satisfaction</td>
</tr>
<tr>
<td><strong>H5b</strong>: Actual/ideal body image discrepancy will negatively relate to body satisfaction in women’s middle adulthood.</td>
<td>Supported</td>
</tr>
<tr>
<td><strong>H5c</strong>: Actual/ideal body image discrepancy will negatively relate to body satisfaction in women’s late adulthood.</td>
<td>Partially supported - Negative correlations for physical appearance, body size and shape, and body weight satisfaction</td>
</tr>
</tbody>
</table>
CHAPTER 6. QUALITATIVE DATA ANALYSIS

The qualitative data in this study purported (1) to arrive at a deeper understanding of women’s body image throughout their adult life span and (2) to verify retrospective data. The written data obtained from seven open-ended questions were analyzed using the constant comparative method for qualitative research presented by Strauss and Corbin (1998). All participants \( n = 102 \) who returned the survey questionnaire provided written responses to at least three open-ended questions. Of 102 participants, 73 older women provided responses to all seven open-ended questions.

Fourteen themes emerged and were organized into the following two categories—(1) women’s body image perceptions and evaluations in each of the three adult life stages and (2) major changes in women’s body image perceptions and evaluations across the adult life span. Themes for the first category were further arranged into three adult life stages. Descriptions of major themes are presented in Table 6.1.

Table 6.1. Descriptions of major themes in the qualitative data

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women’s body image perceptions and evaluations in each of the three adult life stages</strong></td>
<td></td>
</tr>
<tr>
<td>An important transition—Pregnancy</td>
<td>During and/or after pregnancy, women experienced substantial body changes that alter their body image.</td>
</tr>
<tr>
<td>Focusing on appearance-related body aspects</td>
<td>Appearance-related body aspects, such as body weight, height, shape, size, tone, and proportions were important components to determine women’s body image.</td>
</tr>
<tr>
<td>Focusing on health-related body aspects</td>
<td>Health-related body aspects were important factors determining women’s body image perceptions as women experienced health problems while aging.</td>
</tr>
<tr>
<td>Not a priority</td>
<td>Body image was not their priority.</td>
</tr>
<tr>
<td>Satisfied with appearance</td>
<td>Women had positive body image with their appearance.</td>
</tr>
</tbody>
</table>
Table 6.1 Continued.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women’s body image perceptions and evaluations in each of the three adult life stages</strong></td>
<td></td>
</tr>
<tr>
<td>Satisfied with physical functioning</td>
<td>Women were satisfied as long as their body functioned well. They were <em>thankful</em> for their body functioning.</td>
</tr>
<tr>
<td>Comparison with others</td>
<td>Women were satisfied with their body compared to others at their age.</td>
</tr>
<tr>
<td>Experiencing weight gains due to aging</td>
<td>Women gained body weight, due to the aging process.</td>
</tr>
<tr>
<td>Raising health issues</td>
<td>Women started experiencing health problems.</td>
</tr>
<tr>
<td>Desire to have a thinner body</td>
<td>Women wanted to lose weight to have an ideal body, since they gained weight due to the aging process, to get rid of the “spare tire” around waist, and other reasons.</td>
</tr>
<tr>
<td>Desire to be a younger me</td>
<td>Women wanted to return to their younger years.</td>
</tr>
<tr>
<td>Desire to have healthier body</td>
<td>Women wanted to have a better physical and health status.</td>
</tr>
<tr>
<td><strong>Major changes in women’s body image perceptions and evaluations across the adult life span</strong></td>
<td></td>
</tr>
<tr>
<td>Changes in the standards for ideal body image</td>
<td>Throughout their adult life span, the standards for the ideal body image have changed.</td>
</tr>
<tr>
<td>Height loss</td>
<td>Throughout their adult life span, women noted that they lost height.</td>
</tr>
</tbody>
</table>

**Women’s Body Image Perceptions in Each of the Three Adult Life Stages**

Participants described past and current feelings about their own body and the ideal body they want(ed) to have over their adult life span. Along with their body image descriptions, participants also expressed the life events and circumstances that shaped their body image and the priority concern related to their body in each stage of the adult life span.

**Early adulthood.** Pregnancy was an important life transition that caused significant
changes in women’s appearance and their body images. Appearance-related body aspects, such as weight, height, and thinness, were the most significant factors influencing women’s body image when they were about 30 years old. These aspects were primary concerns when the women were younger and seemed to greatly determine their body satisfaction. Five themes emerged, including “An important transition—pregnancy,” “Focusing on appearance-related body aspects,” “Not priority,” “Satisfied with appearance,” and “Desire to have a thinner body.”

**An important transition—pregnancy.** Twenty-two participants mentioned body changes when they were pregnant that influenced their body image during early adulthood. Body changes due to pregnancy, such as weight gain, body size increase, and body shape changes were reported.

*When I got married I weighed 129. I got pregnant and after every child I gained more weight. I had 4 children. [77 years old]*

*Hips and stomach were heavier because of birthing through children. [82 years old]*

*I remember my body then after the kids was getting fuller and a little tummy. Size 12 not bad but not the 5 ~ 8 it was! [70 years old]*

*I was very slim. I had an adopted son so was never pregnant. I became pregnant with my daughter when age 32. I lost all of the weight gained, but still had some belly. [79 years old]*

Most women reported body change experiences due to the pregnancy and wanted to return to their previous body. Their priority concern was to lose the baby weight and get back in shape after giving birth.

*By the time I was 30 I was married and had given birth to 5 children. I felt very good about my body. I nursed all 5 of my children which help me get my shape back and keep it. [79 years old]*

*I had had four children and was able to get rid of all the extra pounds. [82 years old]*

*Had baby at 25 and 28 and had a few extra pounds from pregnancies. Needed to lose those pregnancy pounds and get back to 145 or so. [77 years old]*

Body changes—especially weight gain—negatively affected the women’s body
images. Participants spoke of whether they were able to lose pregnancy weight after giving birth and how that affected their body satisfaction. Many women expressed their dissatisfaction with their post-pregnancy bodies, since they could not return to their previous body weight.

*I had just given birth to our second baby. He weighed 9 lbs. 8 oz. So, I was very glad to be rid of around 25 ~ 30 lbs. I did keep 5 to 10 lbs. with each baby though. [82 years old]*

*In the last week (of pregnancy), I gained 10 lbs. to 180 lbs. Unfortunately, after giving birth I still weighed 170 lbs.—still about 30 lbs. more than 140. [93 years old]*

*I had just given birth to my first child and lost very little of my pregnancy weight so was pretty discouraged. [72 years old]*

*Still had weight from having two children. Not good. [73 years old]*

**Focusing on appearance-related body aspects.** From the responses to both questions about participants’ actual and ideal body image during early adulthood, a majority of the participants (*n* = 78) expressed their concerns related to physical appearance. Many of them mentioned their past body weight, body shape, body measurements, clothing size, and height they had, as well as the ideal appearance they wanted to have when they were younger. Physical appearance was salient to younger women, so participants were able to remember their past body images in details.

*In 1971, I weighed about 110 pounds and had a full bust and slim hips. My height was about 5’2 3/4”. I had shapely legs, and enjoyed wearing short skirts and shorts. I liked my body though I retained an unrealistic anxiety that my upper arms were plump. My hair was very dark and relatively thick. [71 years old]*

*I always thought my hips were too wide. But I had a slim waist and found it easy to buy clothes that fit well. [84 years old]*

**Not a priority.** A substantial portion of the participants (*n* = 23) stated that body image was not their priority concern during early adulthood. Taking care of their family was more important to these women in the past. As a mother and working woman, many women might not have time to think about their body image.
As a young mother of 3, working part-time, I had little time to dwell on body image. [71 years old]

I didn’t give much thought to my body image. I had 5 children in my 20’s. [73 years old]

I had 2 children and a husband to take care of and I worked 40+ hours a week, so I accepted the body I had which wasn’t bad. [84 years old]

Participants’ responses reflected their lifestyles of the time when they were about 30 years old. At that time in history, housekeeping required more work compared to today. Furthermore, one woman explained there was less societal pressure to be thin in the past.

It was not an important subject to me at that time. Homemaking at that time required more activity. We did not have clothes dryers and most fabrics had to be ironed. [88 years old]

When I was 30 years old there was not the stigma to be thin like there is today. Would have been nice to be thinner but, it never really bothered me that I wasn’t the perfect image. [84 years old]

**Satisfied with appearance.** A majority of the participants (n = 69) had positive evaluations of their bodies during early adulthood. Consistent with the theme—Focusing on appearance-related body aspects—physical appearance, such as weight, height, proportion, and shape were the important determinants for participants’ body satisfaction.

Many women expressed positive body image. Especially, participants were satisfied with their bodies if they had a slim, well-proportioned body.

(I was) 120 lbs. 5 ft. tall. I liked my size, shape, and weight. [88 years old]

Felt happy—was slim, above average height, considered attractive, clothes fit well, nice hair. I was happy as I was. [80 years old]

I was slim, agile, and well-toned. I liked and was proud of my body. [72 years old]

(I) was happy about my weight and body at age 30. Weight 130 lbs. Size 10. Felt good about my shape. [65 years old]

Wore size 10, weight 130 lbs. Perfect for height and well-proportioned. [72 years old]

**Desire to have a thinner body.** The women remembered that they considered a thin and slender body shape as ideal when they were about 30 years old. For many of them (n =
the ideal body shape they wanted to have was always thinner than their current body shape, so they desired to lose body weight at that time. Their concerns were focused on some specific body parts. Participants described that they wanted to have a slim waist, flat stomach, and small hips. In contrast to the desire to be thinner in the mid-body areas, women wanted to have a fuller bust line at the same time.

*I thought I had a larger than desired in most times, hips OK, small bust. I wore an elastic girdle when I wore dress up clothes. I would like to have had a 36-inch bust, a 28-inch waist, 36-inch hips, and weigh about 128 lbs. and be about 5 feet 5 inches tall. [83 years old]*

*I was busy, but I thought of myself as a bit overweight and would have liked to be skinnier. I would have liked to be more in style of the day—thin. I was about 125 pounds and admired my sister who never had any trouble staying thin. I would have liked to be 115 lbs. [82 years old]*

*I always thought my hips were too wide. I would like to lose a few pounds, but not really dissatisfied. [84 years old]*

*I had been very active and was about 130 pounds. I regularly tried to lose weight—wanted to weigh 120—but, never did very well. I wanted a slim waist and flat stomach. [82 years old]*

*I weighed about 145 lbs. I’ve always struggled with weight, particularly in my younger years. [72 years old]*

Participants’ perceptions of thinness were different from the current societal standard for thinness. Some participants listed celebrities, who had the body shape they wanted, including Marilyn Monroe, Ann Miller, Debbie Reynolds, Rita Hayworth, Sandra Dee, and Natalie Wood.

**Middle adulthood.** For participants’ responses related to their body image during middle adulthood, six themes emerged to illustrate major body changes they experienced, body image of their own body and ideal body they wanted to have when they were about 50 years old. These were “Experiencing weight gains due to aging,” “Raising health issues,” “Not a priority,” “Satisfied,” “Desire to have a thinner body,” and “Desire to be a younger me.”
Experiencing weight gains due to aging. One of the most frequently mentioned physical changes \((n = 33)\) the women experienced during their middle adulthood was weight gain. Most women gain weight until about age 60 due to the aging process, such as changes in body composition and menopause effects (Hughes, Frontera, Roubenoff, Evans, & Fiatarone Singh, 2002; Sowers et al., 2007). A reduction in energy expenditure and energy requirements that occurs as people age also can be attributed to age-related weight gain (Roberts & Dallal, 2005). Many participants described their weight gains as significant. One older woman remembered she carried the most weight in her life when she was about 50 years old. The women were especially concerned about increased fat in the midsection. However, most participants accepted those body changes as a normal aging process. A few women mentioned that they actually tried to fight the weight gain through diet or exercise.

I was aware of putting on weight, but I did not look at myself as being overweight just middle-aged. Again, I was satisfied with my weight and shape I have. I was getting heavier, but I did not look too heavy. [Age not reported]

This is the time in my life when I carried the most weight probably 130. Never worried as I have accepted my body as God made me. [83 years old]

Too heavy. Weight 180 lbs. Gravity taking its toll on breasts. Hips too full—2 sizes bigger than they should be. [65 years old]

Had started to become “roly-poly.” [77 years old]

Some weight gain, but expected with age. [74 years old]

Raising health issues. Another significant issue related to physical changes due to the aging process during middle adulthood was that the women began experiencing health problems. Women became more concerned about health issues during middle adulthood compared to their early adulthood. Ten women reported their health issues, which included osteoarthritis, diabetes, and menopause effects. These health situations made participants have less energy, difficulty exercising, and weight gain.

Beginning of osteoarthritis in knees, ... feel my body beginning to “slow down” with somewhat less energy. [77 years old]
After many years of walking and exercising, suddenly with a medication that my diabetes' adviser gave me I started gaining weight rapidly. My body gained many pounds without any change in my eating habits. I kept complaining about medicine and weight gain, but adviser felt it kept my blood sugars really low. I knew body looked more bumpy than ever in my life. Also began to get more body pains, especially when exercising. [72 years old]

Problems with pre-menopause, breast fibrosis and irregular periods [77 years old]

I had a spinal fusion and osteoarthritis taking its toll. I was pretty devastated about the physical things I could no longer participate in. [83 years old]

Not a priority. Some women (n = 9) expressed that body image was not their priority during their middle adulthood. Among these women, seven were not primarily concerned about their physical appearance during early adulthood. Additionally, how the body looked was not important more than how they felt about the body. They were likely to accept their body size and shape, since they could find clothes that fit well on their bodies. Being physically active and healthy were the more important factors to determine their body image perceptions than did appearance.

My body was still too heavy in the mid-section; but, not as heavy as before. I did not have a perfect body shape after birthing a total of five children; but, I was active and healthy. For me, I like being healthy and active, was more important than having what was considered the “perfect body.” [82 years old]

I was very busy with a profession and family, so I didn’t obsess about myself. Generally, I could find clothes that fit well and was satisfied. [84 years old]

I believe I didn’t think so much about how my body looked as how it felt! I had a spinal fusion and osteoarthritis taking its toll and I was pretty devastated about the physical things. I could no longer participate in how I looked! [83 years old]

Satisfied. Compared to early adulthood, fewer participants (n = 57) reported positive perceptions of their bodies. Most of the participants who were satisfied with their bodies during middle adulthood (n = 45) also mentioned they were satisfied with their bodies when they were about 30 years old. Even though many participants experienced weight gain and health problems during middle adulthood, they were comfortable in and fairly satisfied with their bodies, as they were aware of these changes as a normal aging process and accepted the
Beginning of osteoarthritis in knees, I was somewhat overweight but considered myself reasonably attractive and led a busy professional and social life. I’ve always felt fairly positive about my body. Had started to become “roly-poly.” But, I was satisfied with myself. [77 years old]

I did have surgeries that made exercises difficult. But, I think I was pretty average for my age. Most of us wanted to be slimmer, to have flatter abdomens, but never became exercise fanatics. I was content to have an “average” figure. [82 years old]

I was fine with my body and very thankful I was extremely healthy. Satisfied with my body image even though I weighed more. [73 years old]

Thought it was alright. Thought I was ok for my age. Weight 120 lbs. No trouble getting nice clothes. [87 years old]

Desire to have a thinner body. A lot of women still wanted to lose their weight and reduce body size during middle adulthood. Compared to early adulthood, almost twice as many participants ($n = 42$) desired to have a thinner body than their current body. However, what they meant by thinner was quite different. While women during early adulthood wanted to have a slim body perceived as a socially ideal body shape, women at midlife wanted to lose what they gained due to the aging process. Especially, many participants wanted to reduce their waist size and have a flat belly, as they had a larger midsection due to midlife weight gain. According to Sowers et al.’s (2007) study, using longitudinal data with seven annual serial measures, women experienced an average 6% increase in waist circumference during midlife.

The only thing I would have changed was to have a flat belly. [83 years old]

Needed to lose weight. Waist line too thick. Too heavy for my small bone structure. Thin arms and legs, large waist. [89 years old]

Joined Take Off Pounds Sensibly to lose 20 pounds. Thought I was too heavy and couldn’t lose weight. Wanted to have less of a spare tire around my waist and protruding stomach. I also wore out pants on the inside of my thighs and numerous pairs of panty hose. [74 years old]

Desire to be a younger me. One of the interesting themes that emerged for the life stage of middle adulthood was Desire to be a younger me. Some participants ($n = 11$) wanted
to return to how they looked in their younger years. Women perceived *myself in younger years* as an ideal body rather than a *perfect* body. Furthermore, participants expressed they perceived their own bodies as attractive in middle age, as they did in their younger years, when they experienced only little changes in their appearance due to aging.

*In 1991, my weight fluctuated between 104 & 108 lbs. I remained satisfied. In particular, it was gratifying that I didn’t “look 50.” In that year, I mentioned to a friend that my 50th birthday was the next day and she could hardly believe me! Finding clothes was not too difficult, I could wear size 6s or even a few size 4s. I considered myself to be close to my desired appearance, including healthy weight. [71 years old]*

*I wanted the body and weight I had at age 30. [82 years old]*

*My body shape and weight didn’t change much, between 30 and 50 years. I was satisfied with my body, then. I had a good shape and I was satisfied with it. [94 years old]*

*Put on a lot of weight and wasn’t very active. Still wanted to have the body shape of when I was younger. [71 years old]*

**Late adulthood.** With aging, women’s priority body concerns shifted from appearance-related aspects to health-related aspects of the body. A majority of the participants described their current body status regarding health issues and physical functions. Interestingly, many older women still perceived a thinner body than their current one as an ideal body shape. Five themes emerged, including “Focusing on health-related body aspects,” “Satisfied with physical function,” “Comparison with others,” “Desire to have a thinner body,” and “Desire to have a healthier body.”

**Focusing on health-related body aspects.** In contrast to their responses to questions regarding their body image perceptions during early adulthood, many participants (*n* = 47) expressed their concerns about health-related issues. Health concerns generally become increasingly important to people during late adulthood. As participants experienced various health problems that affected their lives, in general, and limited what they were able to do, health status was an important component determining older women’s body image. The
priority concerns among older women were staying healthy and being more active.

My physical conditions have taken over my full life. [Age not reported]

I am now 78 years old and have had several serious health issues. I find that my posture is no longer excellent and because of knee problems, my joint is affected. [78 years old]

I’m more concerned with being able to be active to do what need to be done in the house. I gave up being an “ideal me” a long time ago and am content to be me. I do try to eat lots of colorful fruits and vegetables, avoid fats and sugars, follow the doctor’s orders and suggestions, and be happy. [82 years old]

I have a lot more respect for my body and its functions. [65 years old]

**Satisfied with physical functioning.** Even though many older women perceived negative changes in their appearance and a significant decrease in their health status with aging, a substantial portion of participants \((n = 36)\) still had positive perceptions of their bodies. Many older women were satisfied as long as their bodies were healthy and active, and functioned well. Participants often explained they were thankful for the body they currently had.

I’m somewhat satisfied with my body as I am healthy and still agile and active. [72 years old]

I feel thankful for my body. It has been a good one. It has served me well for many goals. I feel satisfied with my body. [Age not reported]

**Comparison with others.** This theme explained how older women coped with perceived negative changes, both in their appearance and health status, that they experienced due to aging. Older women seemed to accept their aging appearance and health issues as the normal aging process. Some participants \((n = 8)\) reported they were reasonably satisfied with their looks compared with others at their age.

At age 70, I look in the mirror, weight and height remain approximately the same, a weight increase of 5 lbs. or so, and see aging skin and muscles flabbier, heavier thighs, larger waist, but o.k. I will never look younger, as our society finds ideal. But as I compare myself to others my age, and size, I am doing good. My physician tells me that I am well, my proportions and weight good. Is there such a thing as an ideal? [70 years old]
I have lots of arthritis, so my body complains some about what I do; but, I see many who are my age who are crippled, grossly overweight, and so on, so I’m reasonably content with my looks. [82 years old]

I’m 91 now and can feel the effects of old age. I see lots of wrinkles on my face when I look in the mirror; but, they don’t hurt! And I notice most other women my age have them also. So I’m thankful and try to have a good attitude. [91 years old]

**Desire to have a thinner body.** Desire to be thinner was still dominant for women during late adulthood (n = 53); but, older women no longer wanted to have the thin ideal body constructed by our society. As health-related body issues were their priority concerns, a majority of participants wanted to reduce their body weight and size for health reasons. In addition, continuing from middle adulthood, ideal body shape for women during late adulthood was still perceived as having a slim mid-section of the body—flat abdomen and slim waistline. However, participants realized some changes, such as increased body fat toward the center of the body, inevitably occur with aging. Several health issues also limited their ability to participate in physical activities and made it more difficult to lose weight.

Still, I try to lose weight. It is an effort not to gain. It would be nice to be back to 115 lbs., but I have little hope of that even happening. [84 years old]

Still overweight, but legs look good and weight is mainly in abdominal area and waist. Same old problem—losing 20 ~ 25 lbs. would help my health. But, it is so difficult, especially with hip and knee problems. [72 years old]

I’d like to have a firmer derriere, slightly smaller breasts, a flatter abdomen, and lean waistline. It would be both more attractive and better for my health. [71 years old]

I would like to get the last 10 pounds off for a healthy goal weight to be 132 or 135. [77 years old]

**Desire to have a healthier body.** Consistent with other themes emerged during late adulthood—Focusing on health-related body aspects and Satisfied with physical functions—participants expressed their desires to have a healthy body. Especially for those older women who have experienced health problems, being healthy was a more important issue than having a perfect body shape. Additionally, this theme somewhat overlaps with the previous
theme—*Desire to have a thinner body*. Some participants explained they wanted to control their body weight because a thinner body, rather than their current body, would help their health status.

*At age 89 years, I am wishing for less aches and pains.* [89 years old]

*Have health issues—severe arthritis, heart, neuropathy. These are certainly negatives on body image and functioning. It would be desirable to weigh no more than 160 (doctor recommended—or less) and not have the health problems that I have.* [77 years old]

*I feel pretty good, although that euphoria from age 50 did not last. Life intervened. In addition, gravity and aging have altered my body shape. However, I have a much healthier attitude toward eating—no more weird diets, just moderation in eating. My body will never be thin, but perhaps a thinner body would be easier on arthritic joints, so there’s a goal. I just want to look like a healthy me.* [72 years old]

**Major Changes in Women’s Body Image Perceptions Throughout the Adult Life Course**

All open-ended data with an additional question regarding what body changes women have experienced throughout their adult life span were examined to identify major changes in women’s body images. Responses from each participant were listed in chronological order from early through late adulthood. The analysis focused on whether there were any significant changes in participants’ body images. Two new themes emerged, including “Changes in the standards for ideal body image” and “Height loss.”

**Changes in the standards for ideal body image.** An interesting change in women’s body perceptions throughout the adult life span was determined from the responses to the questions—please describe the ideal body you had when you were about 30 years old, 50 years old, and nowadays. While women had specific ideal body standards in terms of body size, weight, and shape when they were about 30 years old, their ideal body standards became less strict with aging. The following quotes show responses from the same women in chronological order. Answers from these women revealed dramatic changes in their ideal body images.

*Early adulthood:* I would like to have had a 36-inch bust, a 28-inch waist, 36-inch
hips, and weigh about 128 lbs. and be about 5 feet 5 inches tall.

*Middle adulthood:* I would like to have had a flat abdomen and prominent bust. I would like to have weighed about 130 lbs. I would like to have looks like anyone with a flat tummy and nice features.

*Late adulthood:* I still would like a flat abdomen and a more prominent bust. A little less weight would be OK, too. I weigh about 145 and consider 130 to 135 my ideal weight. I want to look like myself with a few enhancements mentioned above. [83 years old]

Some women wanted to look like famous actresses who had tall and slender bodies when they were younger. As women experienced significant changes in their appearance and health status due to aging, their ideal body standards changed to be more age-appropriate. A woman mentioned that she is satisfied with her body weight compared to others at her age and just wants to have a better posture nowadays.

*Early adulthood:* I felt the desired body shape was to be tall, slender, medium-sized breasts, and attractive legs. In a sense, it was to have a healthy body, and perhaps somewhat athletic body. There were tall actresses then, such as Ann Miller, and I felt they epitomized the ideal figure.

*Middle adulthood:* Like all women, I noticed some looseness of skin (face and figure) by the time I reached age 50. But, I felt this was natural when a woman reached age 50. In other words, the ideal body for a 50-year old, was older, less firm, and softer than for a 30-year old woman. The women I would like to resemble were thin, healthy, athletic-looking women.

*Late adulthood:* I would like to have better posture, but feel at this age women will be slightly stooped or just slightly “leaning forward” in posture. At the same time, I feel my weight is excellent for my age. [79 years old]

Most women had the specific standards for the ideal body when they were about 30 years old. These standards included appearance-related body aspects, such as having a thinner mid-section or having larger breasts. With age, however, women may realize difficulties to achieve the societal standards for the ideal beauty. A participant even expressed that she gave up having an ideal body during late adulthood.

*Early adulthood:* I wanted a slim waist and flat stomach.

*Middle adulthood:* I think I was pretty average for my age.
Late adulthood: I gave up being an “ideal me” a long time ago and am content to be me.
[82 years old]

Height loss. As one of the most common changes due to aging, height loss occurs among both men and women. Sorkin, Muller, and Andres (1999) summarized 16 longitudinal studies examining the age effect on changes in height. All longitudinal studies reported height loss in both men and women. Fifteen of 16 studies found the rate of height loss increased with aging. Additionally, it was determined women lost height more rapidly than men did. With negative changes in appearance and a decrease in health status, many participants in this study also considered height loss as a significant change they experienced due to aging. The reported height losses ranged from 1 to $2^{1/2}$. 
CHAPTER 7. SUMMARY AND CONCLUSIONS

Chapter 7 summarizes and discusses the findings reported in Chapters 4, 5, and 6. The limitations and conclusions are discussed and recommendations for future research are given.

Summary and Discussion

Body image development is one of the interesting areas of study among body image researchers. Although there has been a significant amount of research focusing on the development of body image among children and adolescents, relatively little research has investigated the adulthood. Only few studies have examined women’s body image development during the adult life stage using a longitudinal approach (Keel et al., 2007). Moreover, no study has explored the developmental trajectories of perceived body image within the same individuals throughout the entire adult life course.

In this study, women’s body image at each phase of three adult life stages and its developmental trajectories throughout the adult life span were explored. As theoretical frameworks, the life course perspective and self-discrepancy theory advanced understandings of women’s body image development in this study. To detect age effects on several aspects of body image and trace the developmental changes of body image in the same individuals throughout the adult life course, this study adopted a retrospective approach. Retrospective self-reported data obtained by asking older women to recall their past body image were used to overcome the limitations of both a cross-sectional study and longitudinal study over the adult life span. A survey questionnaire including both scale ratings and open-ended questions assessed women’s body image perceptions in early, middle, and late adulthood. Participants were asked to recall their past body image when they were about 30 and 50 years old. Participants also discussed how they evaluate and feel about their current bodies in late adulthood.
Older women aged 65 and over were recruited from 15 senior communities, centers, and agencies in central Iowa. A total of 203 older women who attended a seminar presented by the researcher on the topic of Women and Body Ideas Throughout History and Across Cultures were asked to participate in this study. One hundred and seven responses were returned for an overall response rate of 52.7%. After dropping responses with outlier and a significant amount of missing, 102 surveys completed by White, older women were used for the statistical analysis.

Three phases of data analysis were conducted. First, preliminary analyses including descriptive analysis, internal reliability assessment of variables using Cronbach’s alpha, factor analysis, and correlation analysis were conducted. Exploratory factor analysis on five body satisfaction items revealed one underlying dimension of the measure. Measurement invariance of the body satisfaction scale was also established through the longitudinal confirmatory factor analysis. Second, the latent growth modeling (LGM) analysis was conducted to test hypotheses regarding the developmental trajectories in body image variables. In the third phase, qualitative data from open-ended questions were analyzed and fourteen themes emerged.

The results of both the quantitative and qualitative data of this study suggest that women’s body image perceptions have significantly changed across the adult life span. Older female participants had different body concerns and evaluations of their bodies at each stage of adult life span. Analysis of all nine LGMs on body image variables revealed good fit to the data. The increasing trajectories in perceived actual body shape, ideal body shape, and actual/ideal body image discrepancy were found, while the decreasing trajectories in five body satisfaction items were found. These developmental trajectories in women’s body image were confirmed through the results from qualitative data analysis. Major life transitions that
affected women’s body image at each of early, middle, and late adulthood were also identified.

The means of the repeated measures for perceived actual and ideal body shapes showed increasing trends through the adult life span. Women’s perceptions of both actual and ideal body size increased from early through late adulthood. The latent growth model (LGM) analysis on both variables also revealed good fit to the data. Consistent with the quantitative results from the actual and ideal body shape questions, the qualitative data also revealed similar trends. The most significant and apparent body change through the entire adult life span reported by participants was weight gain. Women typically become heavier as they age, due to weight gain and changes in body fat composition. Participants also reported higher body weight and larger body size for their ideal body image during middle and late adulthood, compared to early adulthood. In general, women’s ideal body shape becomes larger possibly because that is more realistic and age-appropriate (Grogan, 2008). Several studies have suggested older women’s actual and ideal body sizes have been found to be larger than younger women’s actual and ideal body sizes (e.g., Lamb et al., 1993; Stevens & Tiggemann, 1998; Tiggemann & Lynch, 2001).

With the increasing trajectories in both perceived actual and ideal body shape, a similar trend in the actual/ideal body image discrepancy was discovered. The descriptive data analysis showed an increasing trend for the means in the repeated measures of the actual/ideal body image discrepancy variables from early adulthood through late adulthood. The LGM analysis also revealed a significant positive slope mean. The increasing trajectory in the actual/ideal body image discrepancy indicates women’s ideal body images have less likely changed compared to their actual body images. In the LGM analysis, the slope for the perceived actual body shape trajectory was steeper than the slope for the perceived ideal body shape trajectory. The slope means for the perceived actual and ideal body shape trajectories
indicated that the women’s actual body shape was likely to be further from their ideal body shape as they aged, even though women have a larger ideal body shape as they age. In congruence with the actual/ideal body image discrepancy trajectories, lower levels of body satisfaction were found at the later stages of adult life span.

The findings of this study advanced understanding of women’s body satisfaction throughout the adult life span. Regarding age effects on women’s body satisfaction, there have been conflicting findings in previous research—women’s body satisfaction has been found to remain stable, increase, or decrease over time. Furthermore, among the numerous studies in the current body image literature, relatively few studies have investigated women across the entire adult life span (e.g., Allaz et al., 1998; Cash & Henry, 1995; Garner, 1997). All of these studies found that women across all age groups did not differ in terms of their body satisfaction. Additionally, to date few studies have investigated how women’s body satisfaction changed during adulthood using a longitudinal approach. Keel et al. (2007) conducted a 20-year longitudinal study examining the developmental changes in body satisfaction both in women and men. In contrast to the previous findings of consistency in body satisfaction across the adult life span, they found significant decline in weight satisfaction in women from college to 10- and 20-year follow-ups. Consistent with Keel et al.’s (2007) findings, the results of this study revealed the decreasing trajectories in body satisfaction. Descriptive statistics showed the means of the repeated measures of all five body satisfaction items—body satisfaction with physical appearance, body size and shape, body weight, physical attractiveness, and physical functioning—decreased over time. Moreover, findings from the first-order latent growth model (1LGM) analysis confirmed these decreasing trends. The 1LGM analysis revealed women’s perceived body satisfaction with all five body aspects have significantly decreased with aging. The contrast results to the previous
cross-sectional studies might be found since this study traced changes in several aspects of body satisfaction within the same individuals throughout the entire adult life span.

Over the women’s adult life span, the average levels of body satisfaction with physical function showed the sharpest linear decreasing trend, followed by body weight, body size and shape, physical appearance, and physical attractiveness. Overall, many participants expressed some degree of positive body image through their life span in their responses to the open-ended questions. Nevertheless, few women were satisfied with their bodies as they aged. Totals of 69, 57, and 36 participants reported positive perceptions of their bodies during early, middle, and late adulthood, respectively. Additionally, the increasing trajectory in the actual/ideal body image discrepancy supports the decreasing trends in women’s body satisfaction.

Women became less satisfied with their bodies in all aspects as they aged. There are several good reasons to expect women’s body image to become less positive throughout the adult life span (Tiggemann & Lynch, 2001). As women age, appearance and body are likely to change (Chrisler & Ghiz, 1993). According to national data, women typically increase their weight about 10 pounds per decade over the adult life span until their 70s (Ogden et al., 2004). The biological changes of pregnancy and menopause also have been found to increase body weight and fat deposition, producing negative body image (Chrisler, 2007; Dillaway, 2005; McKinley & Lyon, 2008). Many participants in this study reported negative body change perceptions, including aging appearances, decline in physical function, and several health problems that they experienced with aging. Significant appearance changes reported in the responses to the open-ended questions through their middle and late adulthood included more facial wrinkles, skin disorders, gray and thinning hair, height loss, weight gain, waist thickening, hip enlargement, flabby upper arms, and saggy breasts. It is also common that people experience significant decline in bodily function with advancing age. Franzoi and
Koehler (1998) examined the differences in attitudes toward 35 different body aspects between young (mean age of 19 years) and older groups (mean of age 74 years) and found that older adults were less satisfied with body aspects associated with physical functioning than their younger counterparts. The present study also found that women were likely to begin experiencing several health problems and became more concerned about their health status during middle adulthood. Moreover, a majority of the participants were increasingly focused on health-related issues in the qualitative responses, indicating that health status largely determined their evaluations about the body during late adulthood. Various health problems, such as hip and knee arthritis, eye problems, diabetes, and neuropathy, were reported.

Hypotheses predicted that actual/ideal body image discrepancy would negatively relate to body satisfaction across the adult life span, based on self-discrepancy theory. Overall, the results showed that women with a higher degree of actual/ideal body image discrepancy were likely to have lower levels of body satisfaction throughout adulthood. These findings support previous research that found a significant negative association between actual/ideal body image discrepancy and level of body satisfaction (Halliwell & Dittmar, 2006; Kowner, 2004; Kozar & Damhorst, 2009). Interestingly, only satisfaction with body weight had a significant negative correlation with actual/ideal body image discrepancy in early adulthood. In middle adulthood, all five body satisfaction items were significantly correlated with actual/ideal body image discrepancy, while three items—body satisfaction with physical appearance, body size and shape, and body weight—showed significant negative correlations with actual/ideal body discrepancy. The results suggest that body weight may be an important determinant of the actual/ideal body image discrepancy in women at all ages. Qualitative responses also focused on weight most frequently. The body weight satisfaction among five body satisfaction items revealed the highest correlations with actual/ideal body image
discrepancy throughout adulthood. Similarly, Kozar and Damhorst (2009) measured appearance self-discrepancy on ten physical attributes and found that participants felt the highest discrepancy between their perceived actual and ideal body weight. They also found body weight was the most important attribute to women’s physical attractiveness.

A further implication of the results of this study is that for older women the level of body satisfaction may not directly influence concomitant emotional and behavioral changes. In previous research, levels of body satisfaction have been negatively associated with depression, eating disorders, and risky appearance management behaviors; women with lower levels of body satisfaction are more likely to have a greater risk of depression and development of eating disorders than those women satisfied with their bodies (Benas et al., 2010; Keel et al., 2007). If women become less satisfied with their bodies as they age, the risk of these negative concomitant results should also increase with age. However, previous research has found that women were more frequently involved with risky dieting behaviors and disordered eating behaviors when they were in the younger life span than at midlife (Keel et al., 2007). This could reflect the findings that older women tend to cope with their body dissatisfaction through healthier means such as adjustment to more age appropriate body ideals or comparisons of self to real, like-age individuals. Ogle and Damhorst (2005) also found the pattern of relativistic body acceptance among women transitioning into their middle-aged years. Indeed, women in the present study qualitatively expressed that they accepted weight gain and increased fat in the midsection as an inevitable part of the normal aging process. Compared to early adulthood, fewer women actually dieted or exercised to lose weight during middle and late adulthood. A participant mentioned she accepts her current body weight and tends to concentrate on other aspects of life, such as family, friends, music, or all kinds of activities, because losing weight is impossible with her limited mobility issues, even though she still desired to be thinner.
Consistent with previous literature, this study confirmed that women placed more value on appearance when they were younger (Pliner et al., 1990; Tiggemann & Lynch, 2001). From the responses to the open-ended questions for early and late adulthood, two themes indicating divergent body image patterns emerged—*Focusing on appearance-related body aspects* in early adulthood and *Focusing on health-related body aspects* in late adulthood. When they were young adults, participants were concerned more about their body weight, size, and shape. However, as the women aged, their body image concerns shifted to body function and health status. The negative association between age and emphasis on appearance-related attributes has been well documented in previous studies. A number of studies reported that interest in and importance attached to appearance steadily decline with age (Pliner et al., 1990; Thompson et al., 1998; Tiggemann & Lacey, 2009). Similarly, Tiggemann and Lynch (2001), Augustus-Horvath and Tylka (2009), and Crawford et al. (2009) found habitual body monitoring, appearance anxiety, dietary restraints, and disordered eating behaviors were less frequently observed in middle-aged women than in young adult women. McKinley (2006) conducted a longitudinal study and found a decline in women’s body monitoring over 10 years. From in-depth interviews with 20 women in midlife transition, Ogle and Damhorst (2005) also found a shift in body concerns from appearance to health status of the body.

A desire to lose body weight and/or reduce body size is a lifelong issue for women. In support of previous research (e.g., Lewis & Cachelin, 2001; Lokken et al., 2003; Öberg & Tornstam, 2001; Tiggemann & Lynch, 2001), the women in this study held an ideal body shape always thinner than their current bodies. Body image discrepancy, calculated by subtracting the participant’s perceived ideal body shape score from her perceived actual body shape score, revealed positive scores for each of the three life stages, indicating that most of the women in this study have always been larger than they desired to be. In the qualitative
data, a consistent theme—*Desire to have a thinner body*—emerged throughout the three stages of the adult life span. Many women were highly concerned about their body weight, shape, and size at all life stages and expressed the desire to be thinner.

Clearly the desire to be thin is prevalent among young women. Wharton, Adams, and Hampl (2008) investigated body weight perceptions and weight loss strategies among college students and found 60% of female students wanted to lose weight. Other studies have found higher percentages among young women (Serdula et al., 1994; Yaemsiri, Slining, & Agarwal, 2011). Similarly, previous studies found rates of dieting are very high among middle-aged and older women (Allaz et al., 1998; Hetherington & Burnett, 1994). Allaz et al. (1998) reported about 44% of middle-aged women from 45 to 64 years old and 31% of older women over 65 years old had actually dieted within the last five years. However, it should be noted that the qualitatively reported reasons women in this study wanted to diet were different for each stage of the adult life span. During early adulthood, women wanted to lose weight to have an ideal body shape—a thin, well-proportioned body with a slim waistline. During midlife, women wanted to reduce their size in the midsection of their bodies, while many participants were likely to want to lose weight for health reasons during late adulthood.

Pregnancy was reported as an important life transition which significantly affected women’s body image perceptions during early adulthood. Participants in this study considered body changes due to pregnancy, such as an increase in body weight and size, as negative experiences, and most of them wanted to return to their pre-pregnancy body. Previous studies stated a woman’s body typically increases about 30 pounds, undergoes marked physical changes in body shape, and experiences a decline in skin and hair quality during pregnancy (Heinberg & Guarda, 2002). Indeed, due to these negative body changes, some women in previous studies choose not to have a child (Garner, 1997). Since women’s bodies rarely return to pre-pregnancy size, many women struggle to lose the pregnancy
weight and become dissatisfied with their bodies after giving birth. Baker, Carter, Cohen, and Brownell (1999) reported more women tried to lose weight in postpartum compared to pre-pregnancy.

Interestingly, the effect of menopause on women’s body image, frequently demonstrated in previous studies, was not found in this study. Only one participant mentioned she experienced premenopausal effects on her health status during middle adulthood. Menopause can cause a change in hormone levels, and thus is associated with weight gain, usually gravitating to the midsection (Tiggemann & Slevec, 2012). Previous studies have also reported several symptoms, such as skin dryness, skin tone loss, and sagging breasts, as problematic physical changes resulting from menopause (Dillaway, 2005). As opposed to the effects of menopause on physical changes, however, its concomitant effects on body image have not been clearly identified in previous research. While Deeks and McCabe (2001) found a negative association between menopause and body satisfaction, Koch, Mansfield, Thurau, and Carey (2005) and McKinley and Lyon (2008) did not find effects of menopause on women’s perceived attractiveness and body esteem. As it is unclear whether the physical changes experienced during middle adulthood are due to age or menopause (Janelli, 1993), participants in this study might not specifically mention their menopause experiences or understand that changes in their bodies are related to menopause.

An interesting finding from this study was that body image was Not a priority concern for many women during their early and middle adulthood. Participants explained that taking care of family was the primary issue and that housekeeping required more time and workload in their earlier lives. Even though it does not necessarily mean women in the past were not concerned about their body image, it seems possible that the importance of appearance, in particular body weight, was not as high as nowadays. This has important implications because it may reflect cohort differences in body images among women. Women
currently in their late adulthood have had different formative experiences in comparison to
currently in their early and middle adulthood. For example, the 80-year-old women in
this study were born in 1933, and they were in their early adulthood in the 1960s, middle
adulthood in the 1980s, and late adulthood after 2000. The idealistic and conforming view of
women as housewives in the 1950s is well shown in Home Economics High School Text Book
of 1954—“Have dinner ready, prepare yourself, prepare the children, minimize the noise,
make him comfortable, listen to him, make the evening his” (Elder, 2000, p. 133-134). At this
time, young women in high school learned that marriage was their main goal in life and the
family’s well-being is the fundamental priority in women’s lives.

The variances in and the covariances between the intercept and slope factors in the
linear LGMs provide interesting implications regarding the associations between past and
current body images. Significant variances in the intercept and the slope of the perceived
actual body shape were found, while variances for the intercept and the slope of both the
ideal body shape and the actual/ideal body image discrepancy were not significant. This
indicates significant individual differences in actual body shape during early adulthood,
significant differences in the changes of women’s actual body shape through the adult life
span, and no significant individual differences in ideal body shape and actual/ideal body
image discrepancy. This also means the sample in this study had varied body weights and
sizes over time. Descriptive statistics showed that the current height and weight of the
participants during late adulthood ranged from 4 feet 5 inches to 5 feet 10 inches and from 71
pounds to 255 pounds, respectively. Regardless of what body shapes women had during early
adulthood and how much their body shapes changed over time, women considered a thin
body shape (mean score of 3.36 on the figure rating scale) as an ideal during early adulthood.
The average ideal body shape increased about one size throughout the entire adult life span.
Women in this study have almost unanimously always wanted to be thinner, and the desired
level of thinness linearly increased over time. Additionally, covariance between the intercept and the slope for selected ideal body shape was significant and positive, meaning that there was a steeper increasing trend among those who had a larger ideal body shape during early adulthood.

Significant variances in the intercept of all five body satisfaction variables—satisfaction with physical appearance, body shape and size, body weight, physical attractiveness, and physical functioning—were found, indicating significant individual differences in body satisfaction levels during early adulthood. All variances in the slope of body satisfaction variables, except satisfaction with physical functioning, were non-significant. The covariances between the initial levels and the rates of change for all body satisfaction scale items were statistically non-significant, except for the satisfaction with body functioning. This implies that, regardless of how satisfied women were with their bodies during early adulthood, their levels of body satisfaction with physical appearance, body shape and size, body weight, and physical attractiveness decreased over time. A significant negative covariance between the intercept and the slope of satisfaction with physical functioning means those who were more satisfied with their physical functioning during early adulthood showed a steeper decline in their satisfaction levels over time.

A value for the squared multiple correlations (SMC) in LGM means how much variation in a measure can be explained by the latent growth trajectory. When a low value of the SMC is detected in a measure for a particular time period, further investigation may be required to identify what occurred during that period and explain the departure from the trajectory pattern. In this study, one variable—ideal body shape—had an apparently low value for the SMC at the stage of early adulthood, compared to middle and late adulthood. The SMC for each repeated measure of ideal body shape was .05, .45, and .64 at early, middle, and late adulthood, respectively. This might occur because the sample included a
wide age range among participants, from 65 to 94 years. The ideals of body shape held by these women varied when they were in early adulthood. From the 1940s to 1950s in western cultures, starlets and pin-up girls with notable curves, such as Betty Grable and Marilyn Monroe, were considered to have ideal bodies. At the same time, a slim body (e.g., Audrey Hepburn and Grace Kelly) was also popular during this time period. On the other hand, during the 1970s the ultra-thin high fashion model increasingly became the iconic beauty. Thus, ideal body shape memories in this study included a variety of ideal body shapes, representing changing historical standards of ideal body shape over three decades.

**Contributions**

This study made both theoretical and methodological contributions to the study of body image development. Supporting Thompson’s (2002) argument, the findings validate the strengths of the application of the life course perspective for the study of body image development. The life course perspective emphasizes trajectories of body image, the effects of life transitions on body image, and the relationships between body image in the past and in later life span (Dannefer, 2003). The findings of the LGM analysis reveal how women’s body images have changed and developed as they aged throughout the adult life span. The LGM analysis also demonstrated the associations between early body image and the rates of changes over time. Through the qualitative approach, the influence of major life transitions and historical circumstances on body image perceptions was highlighted. Also, the women’s relativistic weightings of body image in their lives at various stages became more apparent in the qualitative data.

The results of this study suggest that retrospective data obtained by asking older women to recall their past can be a useful method for body image development research. Because body image has been an important issue for women at all ages, most participants were able to easily remember and describe their past and current body image perceptions in
detail. The more salient one’s past experiences are, the more accurately people tend to remember. The majority of older women easily remembered their past body image perceptions. About 91% and 82% of the participants in this study reported it was very easy or somewhat easy to recall how they thought about their body when they were 30 and 50 years old, respectively. Furthermore, this study overcomes the limitations of previous body image development studies by tracing the developmental changes of body image within the same individuals throughout the adult life course. The results from cross-sectional and cohort-sequential data can be only valid in the absence of cohort effects.

**Limitations**

There are some limitations in that the data collected can provide only a broad and general picture of women’s body image development throughout the adult life span. Participants’ body images were captured only three times throughout the entire adult life span with more than 20-year intervals between some ages. Each of three adult life stages is sufficiently long for an individual to experience significant changes in body image perceptions. The responses from participants in this study did not cover how women perceived their bodies when they were in their early 20s. Single women before marriage might have had different body images. Moreover, participants in this study aged from 65 to 94, including at least two generations (e.g., mothers and daughters). Those over 65 years are generally considered as old people and stereotyped as one group. However, the changes a person experiences every 10 years during the stages of later life might be as great as the changes occurring during other ages. Gerontologists often tend to divide the older population group into three age categories—young-old (ages 65-74), old-old (ages 75-84), and oldest-old (ages 85 and older)—because each of the three age cohorts can have different characteristics (Chou & Chi, 2002). Thus, the results of this study can be strengthened with future studies.
investigating how women perceived their body image during many more specific periods of life, as well as specific focus on how important life transitions affected women’s body image.

In this study, the generalizability of the findings is limited due to the sample characteristics and sampling method. The sample only included White, older women with education that appeared to be skewed towards higher levels. Using a convenience, non-random sampling method, this study recruited participants through senior communities and centers after conducting seminars on the topic of Women and Body Ideals Throughout History and Across Cultures. Seminar attendees may have greater interests in their appearance and more concerns about their body image compared to those who did not attend the seminar. The high response rate (52.7%) may reflect the high level of interests in body image among participants. Therefore, neither the findings from the quantitative and qualitative data analysis can be applied across the entire U.S. population.

The major limitation of retrospective data includes recall bias. Despite inclusion of several methods to improve the accuracy of retrospective body image memory, such as adopting both quantitative and qualitative approaches and asking participants to refer to their own pictures at each life stage when completing the questionnaire, the problem of recall bias cannot be ignored. Memories—especially for past autobiographical experiences and past emotions—can be altered and reconstructed, based on an individual’s current attitude or affective states (Brewin, Andrews, & Gotlib, 1993; Levine, Prohaska, Burgess, Rice, & Laulhere, 2001). In addition, older people are more likely to recall past negative experiences in a more positive way than do younger people (Comblain, D’Argembaeu, & Linden, 2005). Therefore, it is possible that older participants in this study reported higher levels of past body satisfaction than the levels they actually felt at the time. It has been found that body weight and height tend to be recalled with good accuracy over a long period (Koprowski, Coates, & Bernstein, 2001; Tamakoshi et al., 2003). However, some studies have found
current body weight may influence an individual’s ability to recall their past body weight. Perry, Byers, Mokdad, Serdula, and Williamson (1995), and Koprowski et al. (2001) reported that women who were overweight tended to underestimate their past weight. At the same time, other studies found, regardless of age, women tended to underestimate their past body weight (Casey et al., 1991). Thus, it is possible that the older women in this study reported their past body weight during early and middle adulthood as less than their actual body size was in the past.

**Future Research Directions**

Further research is necessary to assess body image development within a more diverse sample of women in terms of age, ethnicity, education level, and socioeconomic status. One of the major objectives in body image development study is to find the aging effects that commonly occur across generations. This study, focusing on only those women aged 65 and over, cannot provide the valid information across various age groups. Future studies investigating several different generations should be conducted to identify the aging effects on body image development across generations. Research has consistently found ethnic/racial differences in body image because an individual’s body image usually depends on the social and cultural context in which she belongs. Women in different cultures may vary in their beliefs about the ideal body shape (Cachelin, Rebeck, Chung, & Pelayo, 2002; Grabe & Hyde, 2006). Previous studies have also found a significant association between education level and body satisfaction (Allaz et al., 1998; Rebourssin et al., 2000). Allaz et al. reported those with higher education were less satisfied with their current body weight. Due to the significant association between socioeconomic status and body image, future research with samples with a wider variety of income and social class could expand understandings of women’s body image throughout the adulthood.

Further research is needed to examine the covariate effects of several variables on
body image trajectories in the LGM analysis. In this study, significant variances in intercept and slope factors of several body image variables were discovered. For example, significant variances existed in intercept and slope factors of satisfaction with physical functioning, indicating that women differ in the younger self level and the rates of changes of satisfaction with physical functioning. To better explain these variances in both intercept and slope, it might be appropriate to add covariates to LGMs. Predictors, identified in previous studies to significantly affect women’s body image, can be added to the models. In this study, adding demographic variables, such as age, education level, and BMI, as covariates to the model might produce a model with a better fit and further explain individual differences in body image variables. Participants’ health status may affect women’s body image perceptions during late adulthood and needs to be studied further. Qualitative data analysis of this study also revealed that women’s major body concerns shifted to health-related body aspects during late adulthood and health condition and physical function are the important determinants of older women’s body satisfaction.

Finally, it would be interesting to investigate the quadratic trajectories of body image variables throughout the adult life span. This study tested linear LGMs with intercept and slope factors. The slope growth factor in linear LGM measures linear change in body image perceptions throughout women’s adult life span. In addition to intercept and slope factors, a quadratic LGM is able to examine another growth factor—the quadratic. Beyond what is predicted by the linear growth factor, the quadratic growth factor can provide a concavity, either upward or downward, trajectory of research variables over time. Thus, a quadratic LGM is able to detect different rates of growth for each stage of adult life span. According to the descriptive statistics, means of several body image variables in this study revealed different rates of change throughout the adult life span. For example, means of the perceived actual body shape showed a higher increasing rate from early to middle adulthood (increasing
rate of 24% from $M = 3.53$ at Time 1 to $M = 4.37$ at Time 2) than from middle to late adulthood (increasing rate of 11% from $M = 4.37$ at Time 2 to $M = 4.87$ at Time 3). The perceived level of satisfaction with body weight also showed different decreasing rates in the means from early to middle adulthood (decreasing rate of 11% from $M = 5.87$ at Time 1 to $M = 5.23$ at Time 2) than from middle to late adulthood (decreasing rate of 13% from $M = 5.23$ at Time 2 to $M = 4.64$ at Time 3). This study could not examine the quadratic LGM because it requires more than four repeated measurements (i.e., age points) for each variable. Future research with data from more repeated measurements for each variable will allow researchers to examine whether a quadratic trajectory can better explain women’s body image development throughout the entire adult life span.
APPENDIX A:
APPROVAL OF THE USE OF HUMAN SUBJECTS
Date: 2/8/2012
To: Minsun Lee
117 Crystal St #206
Ames, IA 50010

From: Office for Responsible Research

Title: Women's Body Image Throughout the Adult Lifespan

IRB ID: 12-078

Study Review Date: 2/6/2012

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement, survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to his/her financial standing, employability, or reputation.

The determination of exemption means that:

- You do not need to submit an application for annual continuing review.

- You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designees may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.
# INSTITUTIONAL REVIEW BOARD (IRB)
## Exempt Study Review Form

**Title of Project:** Women's Body Image Throughout the Adult Lifespan

**Principal Investigator (PI):** Min Sun Lee  
**University ID:** 1533149126  
**Phone:** 515-514-0429  
**Email Address:** sinbylad@iastate.edu  
**Correspondence Address:** 117 Crystal St. Unit 207 Ames, IA 50010

**Departments:** Apparel, Educational Studies, and Hospitality Management (AESHM)  
**College/Center/Institute:** College of Human Sciences

**Faculty Level:**  
- Tenure-Track Faculty  
- Tenure-Eligible Faculty  
- Adjunct Faculty  
- Collaborator Faculty  
- Emeritus Faculty  
- Extension to Families/Youth Specialist  
- Field Specialist III  
- Postdoctoral Associate  
- Graduate/Undergrad Student  
- Other (specify: )

**FOR STUDENT PROJECTS (Required when the principal investigator is a student):**  
**Name of Major Professor/Supervising Faculty:** Dr. Mary Lynn Dimnart  
**University ID:** 0552157017  
**Phone:** 515-294-9919  
**Email Address:** midnmhst@iastate.edu  
**Campus Address:** 1008 Lebarron

**Type of Project:** (check all that apply)  
- Thesis/Dissertation  
- Class Project  
- Other (specify: )

**Alternate Contact Person:**  
**Email Address:**  
**Correspondence Address:**  
**Phone:**

**ASSURANCE:**  
- I certify that the information provided in this application is complete and accurate and consistent with any proposal(s) submitted to external funding agencies. Misrepresentation of the research described in this or any other IRB application may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.
- I agree to provide proper surveillance of this project to ensure that the rights and welfare of the human subjects are protected. I will report any problems to the IRB.
- I agree that modifications to the originally approved project will not take place without prior review and approval by the IRB.
- I agree that the research will not take place without the receipt of permission from any cooperating institutions, when applicable.
- I agree to obtain approval from other appropriate committees as needed for this project, such as the IACUC (if the research includes animals), the IBC (for research involving biohazards), the Radiation Safety Committee (for research involving x-rays or other radiation producing devices or procedures), etc.
- I agree that all activities will be performed in accordance with all applicable federal, state, local, and Iowa State University policies.

**Signature of Principal Investigator:**  
**Date:** Jan 30, 2012

**Signature of Major Professor/Supervising Faculty:**  
**Date:** 1/30/13

**Signature of Department Chair:**  
**Date:**

**For IRB:**  
- ☐ Not Research Per Federal regulations  
- ☐ No Human Participants  
- Review Date:  
**Use Only:**  
- ☑ Minimal Risk  
- ☐ Exempt Per 45 CFR 46.101(b)

**IRB Reviewer’s Signature:**  
**Date:**

Office for Responsible Research: 04/30/11
Exempt Study Information

Please provide Yes or No answers, except as specified. Incomplete forms will be returned without review.

Part A: Key Personnel

List all members and relevant qualifications of the project personnel. Key personnel includes the principal investigator, co-principal investigators, supervising faculty member, and any other individuals who will have contact with the participants or the participants’ data (e.g., interviewers, transcribers, coders, etc.). This information is intended to inform the committee of the training and background related to the specific procedures that each person will perform on the project. For more information, please see Human Subjects - Persons Required to Obtain IRB Training.

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<thead>
<tr>
<th>NAME</th>
<th>Non-personal contact or communication with subjects, or access to private identifiable data?</th>
<th>Involved in the consent process?</th>
<th>Contact with human blood, tissues, body parts, or hazardous materials?</th>
<th>Other Roles in Research</th>
<th>Qualifications (i.e., special training, degrees, certifications, coursework, etc.)</th>
<th>Human Subjects Training Date</th>
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<td>Principal Researcher, Coder</td>
<td>ISU Human Subjects Training</td>
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Office for Responsible Research: 08/20/11
Part B: General Overview

Please provide a brief summary of the purpose of your study:

The objectives of this study are: (1) to understand the changes that occur throughout the lifespan regarding how women view and internalize their body image and (2) to explore patterns in adult women's body image development. Three research questions guide this study: (1) how do women perceive their body image in each phase of their lifespan—early, middle, and late adulthood—, (2) how have women's body image changed as they age, and (3) what are the relationships of previous body images to current body image perceptions.

Please provide a brief summary of your research design:

Participants of this study will be about 100 older women aged 65 and over and will be contacted through a variety of senior communities, centers, and agencies in Iowa. All participants in this study will be recruited on a voluntary basis. This study plans to use retrospective self-reported data obtained by asking older participants to recall their past and current body image perceptions. As this study focuses on three phases of adult lifespan, the same body image measure will be repeatedly used to assess participants' body image perceptions throughout their adult lifespan (body image perceptions when they were about 30 years old, about 50 years old, and now). Body image perceptions will be measured in terms of perceived current body shape, perceived ideal body shape, and the levels of body satisfaction. Both open-ended and closed-ended questions will be adopted in the survey questionnaire to improve the accuracy of retrospective data.

For data collection procedures, the researcher will first contact senior communities, centers, and agencies to explain the entire project and obtain permission to conduct a seminar with the topic of "Women, Aging, and Body Ideals Throughout History and Across Cultures" at each location. The researcher will work with administrators at each location to set up a schedule for the seminar and to assist in advertising the event and identifying the members/residents who are interested in participating in the seminar. On the scheduled date, after conducting the seminar, the seminar attendees will be informed about the body image research survey. The researcher will leave a packet of surveys, including a cover letter and a self-administered questionnaire. Women who are willing to participate in this study, will be asked to pick up a survey packet from the administrators of each location, individually complete a survey questionnaire, and return the survey back to the administrators in a sealed envelope. Participants also will be asked to leave the signed consent form with the administrators in a separate pile. The researcher will visit each location to pick up the returned questionnaires after two weeks of distribution. During the two weeks, the administrator will be asked to distribute a reminder to return the questionnaires, if needed.

Part C: Exemption Categories

☐ Yes ☐ No 1. Are you conducting research on Educational Practices? If Yes, please answer questions 1a through 1e. If No, please proceed to question 2.

☐ Yes ☐ No 1a. Will the research be conducted in an established or commonly accepted educational setting, such as a classroom, school, professional development seminar, etc.?

☐ Yes ☐ No 1b. Will the research be conducted in any settings that would not generally be considered to be established or commonly accepted educational settings? If Yes.
please specify: ___

☐ Yes ☐ No 1c. Will the research involve the study of normal educational practices (e.g., activities that normally occur in the educational setting)? Examples include research on regular or special education instructional strategies, or the effectiveness of instructional techniques, curricula, or classroom management methods.

☐ Yes ☐ No 1d. Will the research involve anything other than normal educational practices, such as the effects of drugs or physical exercise on learning? If Yes, please specify: ___

☐ Yes ☐ No 1e. Will the procedures include randomization into different treatments or conditions, radically new instructional strategies, or deception of subjects? If Yes, please specify: ___

☒ Yes ☐ No 2. Does your research involve use of educational tests, survey procedures, interview procedures, or observations of public behavior? If Yes, please answer questions 2a through 2c. If No, please proceed to question 3.

☒ Yes ☐ No 2a. Will the research involve one or more of the following? (Check all that apply)

☐ The use of educational tests (cognitive, diagnostic, aptitude, achievement)
☒ Surveying or interviewing adults
☐ Observations of public behavior of adults
☐ Observations of public behavior of children, when the researcher will not interact or intervene with the children

☐ Yes ☐ No 2b. Are all of the participants elected or appointed public officials or candidates for public office?

☐ Yes ☐ No 2c. Will any of the information be recorded in a manner that is or could reasonably be personally identifiable, either directly or indirectly, through identifiers linked to the subjects, by the investigator or anyone else?

☐ Yes ☐ No 3. Does the research involve the collection or study of currently existing data, documents, records, pathological specimen, or diagnostic specimen? If Yes, please answer questions 3a through 3c. If No, please proceed to question 4.

☐ Yes ☐ No 3a. Are the data, documents, records, or specimens publicly available?

☐ Yes ☐ No 3b. Will any of the information be recorded in a manner that is personally identifiable, either directly or indirectly, through identifiers linked to the subjects, by the investigator or anyone else?

☐ Yes ☐ No 3c. Will the data you record for your study include ID codes? If Yes, please answer 3ci and 3cii.
3a. Does a "key" exist linking the ID codes to the identities of the individuals to whom the data pertains?

☐ Yes ☐ No

3b. Will any persons on the research team have access to this key?

☐ Yes ☐ No

4. Does your research involve Taste and Food Quality tests and Consumer Acceptance Studies involving food? If Yes, please answer questions 4a through 4c. If No, please proceed to question 5.

☐ Yes ☐ No

4a. Is the food to be consumed normally considered wholesome, such as one would find in a typical grocery store?

☐ Yes ☐ No

4b. If the food contains additives, are the additives at or below the level normally considered to be safe by the FDA, EPA or Food Safety and Inspection Service of USDA? Consider additives in commercially available foods found at a grocery store and/or any additives that are added to food for research purposes.

☐ Yes ☐ No

4c. If there are agricultural chemicals or environmental contaminants in the food, are they at or below the level found to be safe by the FDA, EPA or Food Safety and Inspection Service of USDA?

☐ Yes ☐ No

5. Is your study a research or demonstration project to examine
   • Federal public benefit or service programs such as Medicaid, unemployment, social security, etc.; or
   • Procedures for obtaining benefits or service under these programs; or
   • Possible changes in or alternatives to those programs or procedures; or
   • Possible changes in methods or levels of payment for benefits or services under these programs?

☐ Yes ☐ No

5a. If Yes, is the research or demonstration project pursuant to specific federal statutory authority?

☐ Yes ☐ No

Part C: Additional Information

Office for Responsible Research: 08/08/11
6. Does your research involve any procedures that do not fit into one or more of the categories in Items 3-5 listed above, such as the following? (Check all that apply.)

- Usability testing of websites, software, devices, etc.
- Collection of information from private records when identifiers are recorded
- Procedures conducted to induce stress, moods, or other psychological or physiological reactions
- Presentation of materials typically considered to be offensive, threatening, or degrading
- Video recording or photographing non-public behaviors
- Use of deception (e.g., misleading participants about the procedures or purpose of the study)
- Physical interventions, such as
  - blood draws
  - new collection of biological specimens
  - use of physical sensors (ECG, EKG, EEG, ultrasound, etc.)
  - exercise, muscular strength assessment, flexibility testing
  - body composition assessment
  - measuring of height and weight
  - x-rays
  - changes in diet or exercise
- Tests of sensory acuity (i.e., vision or hearing tests, olfactory tests, etc.)
- Consumption of food (other than as described in #4) or dietary supplements
- Clinical studies of drugs or medical devices
- Other; please specify: __________

6a. If Yes, is your research conducted in an established educational setting, and are the checked procedures part of normal educational practices given that setting? If Yes, please describe:

7. Do you intend or is it likely that your study will include any persons from the following populations? (Check all that apply.)

- Prisoners
- Cognitively impaired
- Children (persons under age 18)
- Wards of the State
- Persons who are institutionalized

7a. If Yes, please describe how they will be involved and what procedures they will complete:

8. Will any of the following identifiers be collected or linked to the data at any time point during the research? (Check all that apply.)

- Names: First Name Only, Last Name Only, First and Last Name
- Phone/fax numbers
- ID codes that can be linked to the identity of the participant (e.g., student IDs, medical record numbers, account numbers, study-specific codes, etc.)
- Addresses (email or physical)
- Social security numbers
☐ Yes ☒ No  9. Is there a reasonable possibility that participants' identities could be ascertained from any combination of information in the data? If Yes, please describe: ___

10. If Yes to either #8 or #9 above, please answer the following:

☐ Yes ☒ No  10a. Could any of the information collected, if disclosed outside of the research, reasonably place the subjects at risk of any of the following? (Check all that apply.)

☐ Criminal liability
☐ Civil liability
☐ Damage to the subjects' financial standing
☐ Damage to the subjects' employability
☐ Damage to the subjects' reputation

☐ Yes ☒ No  10b. Does the research, directly or indirectly, involve or result in the collection of any information regarding any of the following? (Check all that apply.)

☐ Use of illicit drugs
☐ Criminal activity
☐ Child, spousal, or familiar abuse
☐ Mental illness
☐ Episodes of clinical depression
☐ Suicidal thoughts or suicide attempts
☐ Health history
☐ History of job losses
☐ Exact household income other than in general ranges
☐ Negative opinions about one's supervisor, workplace, teacher, or others to whom the subject is in a subordinate position
☐ Sexual preferences or behaviors
☐ Religious beliefs
☐ Any other information that is generally considered to be private or sensitive given the setting of your research; if so, please specify: ___

After completion of Parts A, B, and C of this application, please send the completed form to:

Institutional Review Board (IRB)
Office for Responsible Research
1138 Pearson Hall
Ames, IA 50011-2200

Data collection materials (e.g. survey instruments, interview questions, recruitment and consent documents, etc.) do not need to be submitted with this application.

If you have any questions or feedback, please contact the IRB office at irb@iastate.edu or 515-294-4566.
Dear Activity Director:

I am writing to request permission to conduct the one hour **Women and Body Ideals Seminar** at your community as a special event or activity.

I am Min Sun Lee who is a Ph. D. student in Apparel, Merchandising, and Design major at Iowa State University. I have finished all required course works and currently working on my dissertation research—Women’s Body Image Throughout the Lifespan.

With my interest areas of study, **I would like to voluntarily conduct a seminar for your community members.** The topic of this seminar is “Women and Body Ideals Throughout History and Across Cultures.” This seminar will explore how the standards of women’s ideal body have changed throughout history and across various different cultures.

I think **this seminar can be a special event or activity for your community members.** I will prepare all materials and equipment for this seminar and I am also willing to provide some refreshments for the attendees. In addition, at the end of the seminar there will be an opportunity to participate in a body image research survey.

If you are interested in this seminar, I would like to have a meeting with you or activity manager of your community and provide more information about this seminar in detail.

For your information, I have provided the poster for the seminar. The specific information of date, time, and location will be updated once the final schedule will be approved.

Thank you in advance for considering this opportunity for me to conduct the seminar at your community. Please let me know if you need any additional information. I look forward to hearing a favorable response to my request.

Thank you very much,

Sincerely,

Min Sun Lee  
PhD Student  
Apparel, Merchandising, and Design Program  
AESHM Department  
Iowa State University  
515-520-0429  
sinbylad@iastate.edu
APPENDIX C:
SEMINAR POSTER EXAMPLE
Women & Body Ideals Student Seminar

WOMEN and BODY IDEALS
Throughout History and Across Cultures

Date & Time: Thur. March 22nd.
3:00 pm
Location: Dining Room

Seminar Leader: Min Sun Lee
Ph.D. Student in Apparel, Merchandising, & Design Major at Iowa State University

Join us to explore:

★ How have the standards of women’s ideal body changed throughout history and across various cultures?

Cost: Free
Light refreshments will be provided.

For more information, contact Min Sun Lee at 515-520-0429
or by email at sinbyl@gmail.com
APPENDIX D:
CONSENT FORM
INFORMED CONSENT DOCUMENT

Title of Study: Women’s Body Image Throughout the Adult Lifespan

Investigators:

Minsun Lee, PhD Student
Apparel, Merchandising, & Design Program
31 MacKay Hall
Iowa State University
Ames, IA 50010
sinbylad@iastate.edu
515-520-0429

Dr. Mary Lynn Damhorst, Professor
Apparel, Merchandising, & Design Program
1068 LeBaron Hall
Iowa State University
Ames, IA 50010
mldehrst@iastate.edu
515-294-9919

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time by e-mailing or calling one of the above investigators.

INTRODUCTION
The purpose of this study is to understand the changes that occur throughout the lifespan regarding how women view and feel about their body image. In this study, we attempt to understand how women perceive their body image throughout their adult lifespan and to explore patterns in adult women’s body image development. You are being invited to participate in this study because you are a woman aged 65 and over.

DESCRIPTION OF PROCEDURES
If you agree to participate, you will be asked to complete a questionnaire consisting four parts (Part I: demographics; Part II: body image when you were about 30 years old; Part III: body image when you were about 50 years old; Part IV: your current body image). Demographic information includes age, height, weight, ethnicity, education level, and marital status. The questionnaire will take no more than 30 minutes of your time to complete.

RISKS
There are no foreseeable risks at this time from participating in this study. If you are uncomfortable thinking about your body satisfaction and dissatisfaction, you may not wish to participate in the study.

BENEFITS
If you decide to participate in this study there may be no direct benefit to you. However, the findings may be of interest to developmental psychologists and gerontologists. While our society has been experiencing substantially increasing numbers in the older population, older individual's psychological well-being has been one of the important issues. In addition, Western societies are currently emphasizing thinness as an ideal for female beauty, and women receive more social pressures to be beautiful than ever before. Especially among women, body image often plays a key role in predicting an individual's quality of life. A number of women continue to struggle with body image issues throughout their life course. Understanding how women perceive body image in each phase of their lifespan and how their body image perception changes throughout their adult life course will broaden our knowledge of women's body image development and body image during the aging process.

COSTS AND COMPENSATION
You will not have any costs from participating in this study. You will not be compensated for participating in this study.
PARTICIPANT RIGHTS
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. You can skip any questions that you do not wish to answer.

CONFIDENTIALITY
Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, auditing departments of Iowa State University and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information. Data will be retained for three years and destroyed after completing the research. If the results are published, your identity will remain completely confidential.

QUESTIONS OR PROBLEMS
You are encouraged to ask questions at any time during this study.

- For further information about the study contact Min Sun Lee [email: sinbylad@iastate.edu, phone: (515) 520-0429] or Dr. Mary Lynn Damhorst [email: mldhmrst@iastate.edu, phone: (515) 294-9919].
- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.

***************************************************************************************************

PARTICIPANT SIGNATURE
Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you satisfactorily, that you have been given the time to read the document, and that your questions have been satisfactorily answered. You will receive a copy of the written consent form that you may keep.

Participant’s Name (printed) ________________________________________________________________

(Participant’s Signature) ________________________________________________________________ (Date)

** Please leave this signed consent form with the administrator (or the activity manager) of your community in a separate pile and turn in your survey to the administrator in a sealed envelope provided.
APPENDIX E:
DATA COLLECTION QUESTIONNAIRE
Body Image Throughout the Adult Life Span Survey

Females aged 65 and over may complete this survey. We are interested in how you have perceived your body throughout your adult life. This survey takes about 30 minutes to complete.

NOTE: This survey is composed of four parts [Part I: personal information; Part II: body image when you were about 30 years old; Part III: body image when you were about 50 years old; and Part IV: your current body image]. Please THINK ABOUT HOW YOU THOUGHT ABOUT YOUR BODY IN EACH STAGE OF LIFE as you answer the following questions.

**Before you begin this survey, we strongly recommend you find some pictures of yourself from when you were about 30 and about 50 years of age and use them as a reference.** These may help you recall your past feelings and ideas regarding your body.

Please check responses and fill in items where there are blank spaces. You may skip items if you do not wish to answer them or do not know the answer.

**Part I. Personal Information**

In what year were you born? ________

Of which of the following ethnic group(s) do you consider yourself a member? Please check all that apply.

[ ] White/European American  [ ] African American/Black
[ ] Native Hawaiian and Other Pacific Islander  [ ] Asian American
[ ] American Indian/Alaska Native  [ ] Hispanic or Latino
[ ] Other (please specify) ______________________

What is your current marital status? Please check one.

[ ] Never married  [ ] Married  [ ] Widowed
[ ] Separated  [ ] Divorced  [ ] Other __________________

What is the highest level of formal education you have completed? Please check one.

[ ] Less than 9th grade  [ ] 9th to 12th grade, no diploma
[ ] High school graduate (includes equivalency)  [ ] Associate’s degree
[ ] Some college, no degree  [ ] Graduate or professional degree
[ ] Bachelor’s degree

What is your current approximate height in feet and inches? Feet _______ Inches _______.

What is your current approximate weight in pounds? Pounds _______.

Questions continued on the next page
Part II. BODY IMAGE WHEN YOU WERE ABOUT 30 YEARS OLD

The questions below ask about your body image when you were about 30 years old. **Think about how your body looked, and how you thought and felt about your body when you were about 30 years old.**

If you have one, please refer to a picture of yourself when you were about 30 years old. Read each of the following questions carefully and provide your response by writing your ideas when asked or circling one number that best describes what you thought or how you felt about your body when you were about 30 years old.

<table>
<thead>
<tr>
<th>Were you able to find and refer to pictures of yourself from when you were about 30 years old?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Yes</td>
</tr>
<tr>
<td>[ ] No</td>
</tr>
</tbody>
</table>

Please indicate how hard it is to recall your past feelings and ideas about your body **WHEN YOU WERE ABOUT 30 YEARS OLD.**

<table>
<thead>
<tr>
<th>Very Easy</th>
<th>Somewhat Easy</th>
<th>Somewhat Difficult</th>
<th>Very Difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Section A: Body Shape When You Were about 30 Years Old

Please describe, in general, what you thought about your body **WHEN YOU WERE ABOUT 30 YEARS OLD.** How did you feel about your body then?

Questions continued on the next page
Please choose a figure you think best represents your OWN body WHEN YOU WERE ABOUT 30 YEARS OLD.

---

Section B: Ideal Body Shape When You Were about 30 Years Old

Please describe the ideal body you had (what you wanted to have) WHEN YOU WERE ABOUT 30 YEARS OLD (e.g., What was your desired body weight and shape? Who did you want to look like?).
Section C: Body Satisfaction When You Were about 30 Years Old

How **SATISFIED** were you with each of the following aspects of your body **WHEN YOU WERE ABOUT 30 YEARS OLD**?

<table>
<thead>
<tr>
<th></th>
<th>Extremely Dissatisfied</th>
<th>Neutral</th>
<th>Extremely Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance</td>
<td>1 2 3 4</td>
<td>5 6</td>
<td>7 8 9</td>
</tr>
<tr>
<td>Body size and shape</td>
<td>1 2 3 4</td>
<td>5 6</td>
<td>7 8 9</td>
</tr>
<tr>
<td>Body weight</td>
<td>1 2 3 4</td>
<td>5 6</td>
<td>7 8 9</td>
</tr>
<tr>
<td>Physical attractiveness</td>
<td>1 2 3 4</td>
<td>5 6</td>
<td>7 8 9</td>
</tr>
<tr>
<td>Physical functioning</td>
<td>1 2 3 4</td>
<td>5 6</td>
<td>7 8 9</td>
</tr>
</tbody>
</table>
Part III. BODY IMAGE WHEN YOU WERE ABOUT 50 YEARS OLD

The questions below ask about your body image when you were about 50 years old. **Think about how your body looked, and how you thought and felt about your body when you were about 50 years old.**

If you have one, please refer to a picture of yourself when you were about 50 years old. Read each of the following questions carefully and provide your response by writing your ideas when asked or circling one number that best describes what you thought or how you felt about your body when you were about 50 years old.

<table>
<thead>
<tr>
<th>Were you able to find and refer to pictures of yourself from WHEN YOU WERE ABOUT 50 YEARS OLD?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Please indicate how hard it is to recall your past feelings and ideas about your body WHEN YOU WERE ABOUT 50 YEARS OLD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Easy</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Section A: Body Shape When You Were about 50 Years Old**

Please describe, in general, what you thought about your body WHEN YOU WERE ABOUT 50 YEARS OLD. How did you feel about your body then?

Questions continued on the next page
Please choose a figure you think best represents your OWN body WHEN YOU WERE ABOUT 50 YEARS OLD.

1  2  3  4  5  6  7  8  9

Section B: Ideal Body Shape When You Were about 50 Years Old

Please describe the ideal body you had (what you wanted to have) WHEN YOU WERE ABOUT 50 YEARS OLD (e.g., What was your desired body weight and shape? Who did you like to look like?).

Questions continued on the next page
**Please choose a figure you think best represents your IDEAL body WHEN YOU WERE ABOUT 50 YEARS OLD.**

![Figure 1-9]

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
</table>

**Section C: Body Satisfaction When You Were about 50 Years Old**

**How SATISFIED were you with each of the following aspects of your body WHEN YOU WERE ABOUT 50 YEARS OLD?**

<table>
<thead>
<tr>
<th>Aspect</th>
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<th>Neutral</th>
<th>Extremely Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body size and shape</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body weight</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical attractiveness</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions continued on the next page
Part IV. YOUR CURRENT BODY IMAGE
The questions below ask about your current body image. Think about how your body looks, and how you think and feel about your body nowadays.

Please read each of the following questions carefully and provide your response by writing your ideas when asked or circling one number that best describes what you think or how you feel about your body nowadays.

Section A: Body Shape Nowadays

Please describe, in general, what you think about your body NOWADAYS. How do you feel about your body?

Please choose a figure you think best represents your OWN body NOWADAYS.

Questions continued on the next page
Section B: Ideal Body Shape Nowadays

Please describe the ideal body you have (what you want to have) NOWADAYS (e.g., What is your desired body weight and shape? Who do you want to look like?).

Please choose a figure you think best represents your IDEAL body NOWADAYS.

Questions continued on the next page
### Section C: Body Satisfaction Nowadays

**How SATISFIED are you with each of the following aspects of your body NOWADAYS?**

<table>
<thead>
<tr>
<th></th>
<th>Extremely Dissatisfied</th>
<th>Neutral</th>
<th>Extremely Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body size and shape</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body weight</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical attractiveness</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical functioning</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Additional Question

What body changes did you experience throughout your life from when you were about 30 years old to now? (e.g., have you experienced any big changes in your body size, weight, or shape?)

*Thank you very much for your time.*

Please return this survey to the activity manager of your community using the envelope provided.
APPENDIX F: DETECTING OUTLIER
Table F.1. Detecting outlier

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Q1</th>
<th>Q3</th>
<th>g</th>
<th>Q3-Q1</th>
<th>g^</th>
<th>Q1-g^</th>
<th>Q3+g^</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
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<td>84</td>
<td>2.2</td>
<td>11</td>
<td>24.2</td>
<td>48.8</td>
<td>108.2</td>
</tr>
<tr>
<td>Height</td>
<td>60</td>
<td>65.25</td>
<td>2.2</td>
<td>5.25</td>
<td>11.55</td>
<td>48.45</td>
<td>76.8</td>
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<tr>
<td>Weight</td>
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<td>172.5</td>
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<td>4</td>
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<td>1</td>
<td>2.2</td>
<td>0.8</td>
<td>6.2</td>
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<tr>
<td>Ideal_Figure_30</td>
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<td>4</td>
<td>2.2</td>
<td>1</td>
<td>2.2</td>
<td>0.8</td>
<td>6.2</td>
</tr>
<tr>
<td>BS_Appearance_30</td>
<td>5</td>
<td>8</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-1.6</td>
<td>14.6</td>
</tr>
<tr>
<td>BS_Size_Shape_30</td>
<td>5</td>
<td>7</td>
<td>2.2</td>
<td>2</td>
<td>4.4</td>
<td>0.6</td>
<td>11.4</td>
</tr>
<tr>
<td>BS_Weight_30</td>
<td>5</td>
<td>8</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-1.6</td>
<td>14.6</td>
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<tr>
<td>BS_Attractiveness_30</td>
<td>5</td>
<td>7.25</td>
<td>2.2</td>
<td>2.25</td>
<td>4.95</td>
<td>0.05</td>
<td>12.2</td>
</tr>
<tr>
<td>BS_Functioning_30</td>
<td>5.75</td>
<td>8</td>
<td>2.2</td>
<td>2.25</td>
<td>4.95</td>
<td>0.8</td>
<td>12.95</td>
</tr>
<tr>
<td>Own_Figure_50</td>
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<td>5</td>
<td>2.2</td>
<td>1</td>
<td>2.2</td>
<td>1.8</td>
<td>7.2</td>
</tr>
<tr>
<td>Idea_Figure_50</td>
<td>3</td>
<td>4</td>
<td>2.2</td>
<td>1</td>
<td>2.2</td>
<td>0.8</td>
<td>6.2</td>
</tr>
<tr>
<td>BS_Appearance_50</td>
<td>4</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-2.6</td>
<td>13.6</td>
</tr>
<tr>
<td>BS_Size_Shape_50</td>
<td>4</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-2.6</td>
<td>13.6</td>
</tr>
<tr>
<td>BS_Weight_50</td>
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<td>7</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-2.6</td>
<td>13.6</td>
</tr>
<tr>
<td>BS_Attractiveness_50</td>
<td>4</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-2.6</td>
<td>13.6</td>
</tr>
<tr>
<td>BS_Functioning_50</td>
<td>5</td>
<td>7</td>
<td>2.2</td>
<td>2</td>
<td>4.4</td>
<td>0.6</td>
<td>11.4</td>
</tr>
<tr>
<td>Own_Figure_Now</td>
<td>4</td>
<td>6</td>
<td>2.2</td>
<td>2</td>
<td>4.4</td>
<td>-0.4</td>
<td>10.4</td>
</tr>
<tr>
<td>Idea_Figure_Now</td>
<td>4</td>
<td>5</td>
<td>2.2</td>
<td>1</td>
<td>2.2</td>
<td>1.8</td>
<td>7.2</td>
</tr>
<tr>
<td>BS_Appearance_Now</td>
<td>4</td>
<td>6</td>
<td>2.2</td>
<td>2</td>
<td>4.4</td>
<td>-0.4</td>
<td>10.4</td>
</tr>
<tr>
<td>BS_Size_Shape_Now</td>
<td>4</td>
<td>6</td>
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<td>2</td>
<td>4.4</td>
<td>-0.4</td>
<td>10.4</td>
</tr>
<tr>
<td>BS_Weight_Now</td>
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<td>6</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-3.6</td>
<td>12.6</td>
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<tr>
<td>BS_Attractiveness_Now</td>
<td>4</td>
<td>6</td>
<td>2.2</td>
<td>2</td>
<td>4.4</td>
<td>-0.4</td>
<td>10.4</td>
</tr>
<tr>
<td>BS_Functioning_Now</td>
<td>4</td>
<td>7</td>
<td>2.2</td>
<td>3</td>
<td>6.6</td>
<td>-2.6</td>
<td>13.6</td>
</tr>
<tr>
<td>BS_Total_30</td>
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<td>7.6</td>
<td>2.2</td>
<td>2.6</td>
<td>5.72</td>
<td>-0.72</td>
<td>13.32</td>
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<tr>
<td>BS_Total_50</td>
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<td>6.8</td>
<td>2.2</td>
<td>2.45</td>
<td>5.39</td>
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<td>12.19</td>
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<tr>
<td>BS_Total_Now</td>
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<td>6</td>
<td>2.2</td>
<td>2</td>
<td>4.4</td>
<td>-0.4</td>
<td>10.4</td>
</tr>
</tbody>
</table>
APPENDIX G:
BASIC MEASUREMENT MODEL RESULTS
### Table G.1. Basic measurement model results of body satisfaction scale for three adult life stages

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>NFI</th>
<th>IFI</th>
<th>TLI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>2.74</td>
<td>3</td>
<td>.43</td>
<td>.99</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>.01</td>
</tr>
<tr>
<td>M2</td>
<td>2.78</td>
<td>3</td>
<td>.43</td>
<td>.99</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>.01</td>
</tr>
<tr>
<td>M3</td>
<td>3.66</td>
<td>3</td>
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<td>.99</td>
<td>1</td>
<td>.99</td>
<td>1</td>
<td>.05</td>
<td>.01</td>
</tr>
</tbody>
</table>

*Note.* M1 = measurement model for early adulthood; M2 = measurement model for middle adulthood; M3 = measurement model for late adulthood

NFI = normed fit index; IFI = incremental fit index; TLI = Tucker-Lewis index; CFI = comparative fit index; RMSEA = root mean squared error of approximation; SRMR = standardized root mean squared residual
APPENDIX H:
UNCONSTRAINED MODEL
(LONGITUDINAL CONFIRMATORY FACTOR ANALYSIS)
Figure H.1. Unconstrained model structure of body satisfaction measure for longitudinal confirmatory factor analysis
APPENDIX I:
WEAK FACTORIAL INVARIANCE MODEL
(LONGITUDINAL CONFIRMATORY FACTOR ANALYSIS)
Figure I.1. Weak factorial invariance model structure of body satisfaction measure for longitudinal confirmatory factor analysis
APPENDIX J:
STRONG FACTORIAL INVARIANCE MODEL
(LONGITUDINAL CONFIRMATORY FACTOR ANALYSIS)
Figure J.1. Strong factorial invariance model structure of body satisfaction measure for longitudinal confirmatory factor analysis
APPENDIX K:

STRICT FACTORIAL INVARIANCE MODEL
(LONGITUDINAL CONFIRMATORY FACTOR ANALYSIS)
Figure K.1. Strict factorial invariance model structure of body satisfaction measure for longitudinal confirmatory factor analysis
REFERENCES


analysis of the body-self relations questionnaire. *Journal of Personality Assessment, 55*(1/2), 135-144.


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CA: Sage.


