

2017

# Examining Risk Perceptions and Efficacy for Healthy Weight Management among Appalachian College-Aged Students: A Test and Extension of the Risk-Perception-Attitude Framework

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**EXAMINING RISK PERCEPTIONS AND EFFICACY FOR HEALTHY WEIGHT  
MANAGEMENT AMONG APPALACHIAN COLLEGE-AGED STUDENTS: A TEST  
AND EXTENSION OF THE RISK-PERCEPTION-ATTITUDE FRAMEWORK**

A thesis submitted to  
the Graduate College of  
Marshall University  
In partial fulfillment of  
the requirements for the degree of  
Master of Arts

In  
Communication Studies  
by

Victoria Ann Ledford

Approved by  
Dr. Jill Underhill, Committee Chairperson  
Dr. Camilla Brammer  
Dr. Stephen Underhill

Marshall University  
May 2017

## APPROVAL OF THESIS

We, the faculty supervising the work of Victoria Ann Ledford, affirm that the thesis, *Examining Risk Perceptions and Efficacy for Healthy Weight Management among Appalachian College-Aged Students: A Test and Extension of the Risk-Perception-Attitude Framework*, meets the high academic standards for original scholarship and creative work established by the Department of Communication Studies and the College of Liberal Arts. This work also conforms to the editorial standards of our discipline and the Graduate College of Marshall University. With our signatures, we approve the manuscript for publication.



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## ACKNOWLEDGMENTS

Completing a thesis project is no small feat, and there are so many people in my life that deserve thanks. First, without God, nothing I have accomplished would have been possible. In addition to His guidance, I am also fortunate to have been guided by a group of friends and family that deserve acknowledgment. All of you deserve individual recognition, but my thesis is already far too long. Please know that you are all appreciated. To the students, coaches, and alumni of the Marshall University Thundering Word, thank you for the impact you have had on my life. To our late director, Danny Ray, I owe much of my personal and academic growth to you. Finally, to my advisor, Dr. Jill Underhill and my thesis committee, thank you very much for agreeing to undertake this project with me. I know you agreed despite having time and personal constraints. To Dr. Underhill, thank you for your dedication and hard work; I would not have made it through the last two years without your selfless commitment to my success.

## TABLE OF CONTENTS

Title Page .....	i
Approval of Thesis .....	ii
Copyright Page .....	iii
Acknowledgements.....	iv
Abstract.....	vii
Introduction.....	1
Literature Review .....	3
The Stigmas of Obesity .....	3
The Risks of Obesity .....	5
Efficacy .....	11
The Risk Perception Attitude Framework.....	14
Stigma and the RPA .....	17
Method .....	19
Participants .....	19
Procedures .....	19
Instrumentation.....	21
General Health Efficacy.....	21
Health Self-Efficacy.....	21
Perceived Risk. ....	22
Perceived Physical Risk.....	22
Perceived Emotional Risk.....	23
Perceived Social Risk .....	23

Self-Stigma .....	24
Public Stigma.....	24
Health Motivation Scales.....	26
Covariates .....	27
Body Mass Index.....	27
Social Desirability.....	28
Analysis .....	29
Correlational Analysis and Frequency Statistics.....	29
Testing the RPA Framework.....	30
Discussion.....	33
Summary of Results .....	33
Implications .....	35
Limitations.....	38
Future Research.....	39
References.....	40
Appendix A: Letter from Institutional Review Board.....	49
Appendix B: RPA Group Membership Table .....	50
Appendix C: Solicitation Message .....	51
Appendix D: List of Universities where Students were Solicited.....	52
Appendix E: Official Copy of Questionnaire .....	53
Appendix F: Correlation Matrix.....	63
Appendix G: Distribution of RPA Groups .....	64

## **ABSTRACT**

Obesity disproportionately affects Appalachia and poses a great risk to young adults who already enact poor health behaviors. Research indicates perceptions of risk and efficacy beliefs related to obesity-preventative behaviors are motivating for positive health-related behavioral change. Moreover, literature reveals that social and emotional risks of obesity may be just as motivating as physical risks. The Risk Perception Attitude (RPA) framework posits that efficacy moderates the effect of perceived risk on associated behavioral outcomes. However, neither the RPA nor other literature addresses the role of stigma in this relationship, though obesity stigma has been linked to a variety of negative consequences. This study utilized the RPA framework to investigate the relationship between perceived obesity risks and health self-efficacy beliefs among a sample of young adults. The study also examined stigma as a potential factor in this framework. An online survey was used to collect data from 498 young adults, 263 of whom self-identified as Appalachian. Data analysis provided support for hypothesized relationships, the influence of stigma, and partial validation for the RPA framework. Implications and recommendations for future research are discussed.

## INTRODUCTION

Obesity affects more than one-third of Americans (Flegal, Carroll, Kit, & Ogden, 2012) and disproportionately plagues those in the Appalachian region (Berlin, Hamel-Lambert, & DeLamatre, 2012). Obesity is linked to heart disease, diabetes, increased risk for stroke, certain types of cancer, and overall reductions in wellbeing, making it one of the leading precursors to preventable deaths (CDC, 2016). The poor health outcomes associated with obesity are disproportionate in the Appalachian region. Self-reports indicate higher rates of diabetes, heart disease, and stroke in Appalachian Ohio (Schwartz et al., 2009), and analysis of census data has revealed higher rates of heart disease and stroke-related mortality among individuals in the Appalachian region (Halverson, Barnett, & Casper, 2002). Especially problematic is the number of obese children and young adults in the area. Young adulthood is a crucial period of development, and researchers believe that health behaviors in young adults serve as the foundation for future health behaviors throughout life (Bonnie, Stroud, & Breiner, 2015). As adolescents progress into adulthood, they become less likely to eat breakfast, exercise, and get regular physical checkups (Harris et al., 2006). Moreover, adults between the ages of 20-29 gain the most weight, averaging 3 pounds per year (Lewis et al., 2000). Thus, Appalachian young adults are an important population to consider for targeted health interventions.

Health research points to emotional, social, and mental health risks as motivating for weight-related behavioral intentions (Williams, Taylor, Wolf, Lawson, & Crespo, 2008). Moreover, efficacy has shown similar positive results for weight-related health changes (Dennis and Goldberg, 1996). Stigma may also be an important barrier to consider, as it further complicates this relationship due its pervasive nature and damaging consequences. Research indicates that stigma has negative consequences for risk perceptions and self-efficacy (Corrigan,

Larson, & Rusch, 2009). To date, however, no study has simultaneously investigated the relationship between these three variables in the obesity context. To begin, this study seeks to understand what perceived risks are most salient for Appalachian young adults. Moreover, the study seeks to understand how stigma influences those risk perceptions and associated efficacy beliefs. Finally, the study uses the Risk-Perception-Attitude framework as a mechanism to identify audience segments for targeting purposes.

## LITERATURE REVIEW

### THE STIGMAS OF OBESITY

Public discussions of stigma often take place without an accurate understanding of the concept. Rachel Smith (2011) defines stigma as “a socialized, simplified, standardized image of the disgrace of a particular social group” (p. 455). The antecedents and effects of stigma are largely enacted through power, status loss, and discrimination (Link & Phelan, 2001), or what Smith (2007) calls “social peril” (p. 463). Generally, scholars segment discussions of stigmas based on the visibility or concealability of the condition, what Goffman terms “discredited” and “discreditable” stigmas (Goffman, 1963). While both highly visible and easily concealed conditions each have associated consequences for the stigmatized individual, the inability to conceal a stigma often brings higher levels of consequence to the individual (Goffman, 1963). When society deems obese individuals as responsible for their condition, stigma runs rampant, and discourse surrounding obesity quickly devolves into rhetoric of blame (Puhl & Heuer, 2010).

Obesity stigma is a well-researched concept, yet literature remains inconclusive about the relationship between stigma and related cognitive processes. Puhl and Brownell (2006) investigated stigmatization and coping responses of obese persons, but did not find significant correlations between stigmatizing situations and self-esteem and depressive symptoms. On the other, more common side of research outcomes, internalized weight bias (or weight self-stigma) has been linked to higher levels of body image concern, greater depressive and stress symptoms, and lower levels of self-esteem (Durso, Latner, & Ciao, 2016).

To understand the effects of stigma, it is important to understand its multiple dimensions. Most commonly, researchers have discussed public stigma, which refers to outgroup attitudes, perceptions, and behaviors towards the stigmatized person. More recently, scholars have begun

to investigate the effects of self-stigma, a concept that occurs when individuals are made aware of public stigma, agree with their stigmatizers' attitudes or beliefs, and then devalue themselves by accepting and internally applying the stigmas (Watson, Corrigan, Larson, & Sells, 2007). Both public and self-stigma have damaging psychological effects. Low self-efficacy and damaged self-esteem are the primary consequences of self-stigma (Corrigan, Larson, & Rusch, 2009; Vauth, Kleim, Wirtz, & Corrigan, 2007). Though public stigma can create those same effects, self-stigma often contains greater psychological consequences, including avoidance, discrimination, and segregation (Corrigan & Watson, 2002).

The cyclical relationship between public and self-stigmas arguably characterizes weight-related discourse surrounding obesity. Examining obesity through the lens of stigma can help researchers understand how to target health interventions in such a way that they do not increase stigmatization or feelings of shame and guilt. Reducing stigmatization is important given that research points to blame, shame, and guilt as common psychological consequences for those living with obesity (Kirk et al., 2014). Improving overall health and reducing obesity rates requires an understanding of the social, mental, and physical wellbeing of affected individuals.

The majority of obesity health communication research has focused on the patient-provider interaction. Studies continuously report negative patient perceptions and mistrust of physicians in patients who are obese (Gudzune, Bennett, Cooper, & Bleich, 2014; Kirk et al., 2014). Considering the linkage between patient trust and compliance with physician-recommended health behaviors (Hojat et al., 2010), the patient-physician context is important for understanding the perpetuation of obesity stigma, but limiting obesity stigma research to this context is problematic. Because obesity stigma is enacted not only in the clinical context, but

perhaps more frequently in public contexts, research fails to provide a holistic picture of the effects of stigma or ways to counteract the negative effects of stigmatizing obese persons.

Researchers have also examined health campaigns to investigate the effects of stigmatizing obesity-related language on behavioral intentions and attitudes. In a recent study, researchers compiled the most common slogans from national obesity campaign messages and recruited participants to rank their perceptions of those messages (Puhl, Peterson, & Luedicke, 2013). Notably, messages containing the word “obesity” or using harsh language such as “child obesity is child abuse” or “chubby kids may not outlive their parents” were ranked as the most stigmatizing and least motivating (p. 775-776). Alternatively, participants ranked messages emphasizing positive healthy eating habits as most favorable. Moreover, participants indicated lower intentions to comply with stigmatizing messages, indicating that obesity-related messages should not aim to highlight elements of stigma. Health campaigns often communicate about risks associated with stigmatized conditions. Scholars have found associations between stigma of a condition and associated risk behaviors (Emlet, Fredriksen-Goldson, & Hoy-Ellis, 2015; Latkin et al., 2010). Understanding how stigma influences risk is important for interventions attempting to promote positive behavior change.

### **THE RISKS OF OBESITY**

Perceived risk in the context of obesity is tied to a variety of structural factors: media (Williams, Taylor, Wolf, Lawson, & Crespo, 2008), cultural norms (Caprio et al., 2008), body image (Okop, Mukumbang, Mathol, Levitt, & Puoane, 2016), health literacy (Darlow, Goodman, Stafford, Lachance, and Kaphingst, 2008), and socioeconomic status (Gregory, Blanck, Gillespie, Maynard, & Serdula, 2008). Whereas research focused on risk has illuminated the antecedents of risky behaviors in the context of other health conditions such as HIV (Crepaz et

al., 2006), obesity itself has not been as substantially researched in terms of risk. To undertake successful health communication interventions targeting obesity, an understanding of perceived risk associated with unhealthy weight is imperative.

William Lowrance (1980) defines risk as “a compound measure of the probability and magnitude of adverse effect,” making a risk statement “a description of the likelihood and consequences of harmful effect” (p. 6). Since objective “risk” does not exist for laypeople (Slovic, 1987), health risks are often discussed according to an individual’s risk perception. The Health Belief Model constructs risk as a combination of two components: perceived susceptibility and perceived severity of a condition (Rosenstock, 1974). Empirical scholarship has shown that perceived risk can influence information seeking (Wong, 2012; Mead et al, 2012), attitudes (Cameron & Reeve, 2006), behavioral intentions (Cho & Lee, 2015; Rimal, Bose, Brown, Mkandawire, & Folda, 2009), and behaviors (Brewer et al., 2007; Janz & Becker, 1984). Perceived risk is often investigated as one of the central motivators of protective health attitudes, behaviors, and behavioral changes (Aiken, Gerend, Jackson, & Ranby, 2012).

Health communication scholars have begun to examine obesity risks in order to fill gaps in the literature. Freimuth and Hovick (2012) included obesity risk as one of 10 health risks in a broader study designed to assess the health risk perceptions among individuals living in poverty. Notably, participants in that study perceived obesity as one of the three least most worrisome health conditions. Participants perceived their risk of cancer, a car accident, heart disease, diabetes, arthritis, stroke, and even of being in a natural disaster all as more worrisome than obesity. Though an explanation for this lack of perceived risk is beyond the scope of their study, their findings create a need for further investigation. In a similar vein, Gregory et al. (2008) examined the risk of excess weight on health in a sample of overweight and obese participants.

Notably, men were less likely to report health risks associated with excess weight. Additionally, overweight participants thought their weight was less of a risk than obese participants, emphasizing the varied perceptions associated with different levels of an unhealthy weight. These studies are two of the few that examine obesity itself as a risk, but more work is needed to understand how risk perceptions are created and evolve in weight-related contexts.

Though some studies have addressed obesity itself as a risk (Etelson, Brand, Patrick, & Shirali, 2003), more have examined its comorbid risks: heart attack, stroke, diabetes, early death, and poor overall physical wellbeing (Warschburger & Kroller, 2009). Darlow et al. (2012) found that among obese women in Suffolk County, New York, perceiving oneself as overweight was positively associated with perceived risk for heart disease and diabetes. In a study examining risk perceptions versus measured objective risks of elderly obese individuals, Winter and Wuppermann (2014) found that individuals either overestimated or underestimated various risks associated with obesity. For example, individuals systematically overestimated their risk for heart attack or stroke but underestimated their risk for arthritis, rheumatism, or hypertension. Links between obesity and related risks exist in the literature, but there seems to be a lack of consensus about which obesity-related risks are most salient for particular populations.

A less investigated, yet equally important, realm of obesity risk research centers on the social and emotional risks associated with obesity. Carr and Friedman (2005) tested the relationships between morbid obesity and self-acceptance, employment discrimination, and interpersonal mistreatment. Their findings revealed that morbidly obese individuals are more likely to report mistreatment in the workplace. Of the psychological consequences examined in a study surveying obese and overweight participants, Durso, Latner, and Ciao (2016) found that individuals who internalize weight bias report higher levels of depression, body image, and

negative self-perception. These risks associated with obesity are intricately tied with stigmatization, ultimately making the facets of stigmatization the social and emotional risks associated with obesity. Qualitative research has also revealed mood issues, social struggles, and self-criticism as risks associated with being obese (Ogden & Clementi, 2010). Freimuth and Hovick's (2012) research provided important implications for health campaigns specifically targeting low-income groups. They believe that these campaigns should emphasize the emotional and cognitive components of risk for those who take little action against worrisome health risks. Moreover, Freimuth and Hovick (2012) argue that campaigns should create messages that target response efficacy in order to motivate these individuals to maintain their behaviors.

Research investigating obesity risk perceptions has also focused on the parent or caregiver perspective of children with obesity. In a review of literature from 2005-2010 concerning parental feeding of pre-school aged children, Thompson (2010) found that several themes emerged among the research. Though parents may express concerns about obesity-related health issues, those same parents report that those problems would not be concerning at the present time, as their children were too young (McGarvey et al., 2006). In another study, parents of overweight pre-school children did not perceive their children as overweight, but instead as average or underweight (Anderson, Hughes, Fisher, & Nicklas, 2005). Health communication interventions have been fruitful in changing perceptions of obesity risk in children. In a systematic review of obesity prevention and treatment interventions in children living in rural communities, Ickes and Slagle (2013) found that 15 of 17 reviewed intervention studies were to some degree successful at improving attitudes and/or behaviors. Though the literature largely focuses on childhood obesity, the success of intervention studies in changing risk perceptions

provides evidence that health communication interventions targeting obesity risk misperceptions could be efficacious among other populations.

Today, the research surrounding perceived obesity risks among young adults is scarce. However, researchers have begun to realize the importance of targeting this group. In a qualitative study designed to assess the efficacy of weight-related phone interventions, Corsino et al. (2014) found that young adults reported three themes when asked “what are some reasons people your age care about your weight?”. Participants reported answers surrounding health, social image, and “self factors.” Health issues most salient to young adults in the study were energy level, generally reducing health risk, and reducing health risks during pregnancy. In the social image and self-theme answers, participants expressed concerns about sex appeal, popularity, appearance, self-esteem, confidence, and body image. These studies emphasize the importance of assessing multiple types of risk perceptions most salient to the age group, which in this case, seem to be the social and emotional risks associated with obesity. Doing so can increase motivations for young adults who currently do not perceive chronic health conditions as threatening during this time in their lives.

Research also reveals that individuals in the Appalachian region may have weight or health-related misperceptions; multiple studies have reported mismatched self-health reports with actual reports of BMI and health conditions (Ely, Miller, & Dignan, 2011; Griffith, Lovett, Pyle, & Miller, 2011). The participants in Ely, Miller, and Dignan’s (2011) study overestimated their health, and the researchers suggest that a lack of health education likely influenced this misperception. Appalachian adults surveyed in Griffith, Lovett, Pyle, and Miller’s (2011) study also reported being healthy even when nearly two-thirds of them simultaneously reported having at least two diseases or enacting two or more poor health behaviors. Among youth, however,

results have been mixed. Smith et al. (2012) found that young adults often underestimate their risk for being obese or overweight, developing diabetes, and developing other chronic conditions. Williams, Taylor, Wolf, Lawson, and Crespo (2008) used focus groups to investigate weight perceptions among Appalachian youth living in West Virginia. Participants in their study placed great value on weight perceptions and viewed a “healthy weight” as determined by body image or a certain clothing size. In addition to having inaccurate perceptions of health, youth in the study seemed to express fear of ill-health at greater levels than expected. Many participants expressed fear about becoming overweight or developing chronic disease; their experience with overweight or chronically-ill family members was often mentioned as a precursor to this fear. Little research exists surrounding misperceptions of weight among Appalachian young adults, whose family members are often also at an increased risk for obesity. Overall, research indicates that regardless of which direction the misperception leans, health interventions are necessary to increase knowledge of what it means to be at a “healthy weight.”

To summarize, risk perception scholarship reveals a few key points. First, perceived risk has been well-documented as a motivator of behavior change (Aiken, Gerend, Jackson, & Ranby, 2012), making it an important variable in the context of weight-related self-protective behavior. Second, individuals misperceive their risk for obesity and other chronic conditions, and Appalachians overestimate their health and wellbeing (Griffith, Lovett, Pyle, & Miller, 2011). Finally, perceived risk can be physical, social, or emotional. As a whole, obese young adults seem to express more social and emotional, rather than physical, risks associated with obesity (Corsino et al., 2014; Smith et al., 2012). Understanding perceived risk in the context of obesity is especially important given the prevalence of weight-related misperceptions. To accurately measure the effect of weight-related risk perceptions on associated outcome variables, we must

first understand those risk perceptions. Therefore, the present study seeks to investigate the following questions:

*RQ 1: Which obesity-related risks (physical, social, or emotional) are most salient among Appalachian young adults?*

*RQ2: What is the relationship between public stigma levels and perceived physical, social, and emotional risks of obesity?*

*RQ3: What is the relationship between self-stigma and perceived physical, social, and emotional risks of obesity?*

## **EFFICACY**

Efficacy beliefs are seen as foundational when examining any health behavior. Both self-efficacy and response efficacy beliefs are critical to examine when considering health contexts. Bandura (1999) defines perceived self-efficacy as “the capacity to exercise self-influence by personal challenge through goal setting and evaluative reaction to one’s own performances” (p. 28). Furthermore, Witte (1992) notes that response efficacy “refers to an individual’s beliefs as to whether a response effectively prevents the threat” (p. 332). Together, response and self-efficacy form the beliefs necessary to enact behavior change.

Efficacy beliefs have been linked to attitudes (Ghaith & Yaghi, 1997), behavioral intentions (de Vries, Dijkstra, & Kuhlman, 1988), and behaviors (de Vries, Dijkstra, & Kuhlman, 1988; Parschau et al., 2014). Self-efficacy has been thoroughly explicated in the literature, with the majority of research primarily centered in psychology. Health research ranging across disciplines has also examined efficacy as a predictor of a variety of important health communication outcomes.

In the obesity context, the majority of research investigating efficacy has examined parents or physicians. In a survey of 356 pediatricians, Perrin, Flower, Garrett, and Ammerman (2005) found low self-efficacy among physicians, with only 12% of respondents reporting high

self-efficacy in their ability to manage young patients' obesity. Van Gerwen, Franc, Rosman, Le Vaillant, and Pelletier-Fleury (2009) found similar low efficacy beliefs for obesity treatment among a sample of primary care physicians. Jay et al. (2009) later found more optimistic results among a sample of 250 physicians across multiple disciplines at a single institution. In their study, approximately 50% of surveyed physicians felt efficacious in their ability to treat obese patients. Parental efficacy to manage their children's weight has also been examined in the literature. Andrews, Silk, and Eneli (2010) found relationships between parental response efficacy to provide healthy foods, response efficacy to limit unhealthy foods, and parental tracking of the child's unhealthy eating behavior.

Though the research largely focuses on efficacy of those other than obese individuals, some literature exists surrounding efficacy beliefs of individual weight management abilities. For example, Dennis and Goldberg (1996) found evidence for concrete behavior change among overweight and obese women enrolled in a 9-month weight loss program. Their results revealed a relationship between higher self-reports of efficacy beliefs at the baseline assessment and amount of weight lost at each three-month period in the program. Heijens, Janssens, and Streukens (2011) furthered this body of research by conducting an online survey among a sample of obese individuals with a history of teasing. Results showed that weight, body dissatisfaction, and self-efficacy each had direct effects on intentions to eat healthy. However, Faghiri and Buden (2015) found an unexpected positive relationship between self-efficacy and body mass index (BMI). Their study complicates previous research, which suggests that an increase in self-efficacy is related to a decrease in BMI. However, efficacy in this study was not a predictor of weight loss, suggesting a need to examine other variables in the weight loss context.

Studies examining the efficacy of overweight and obese young adults is limited, but research in this area also reveals efficacy beliefs as a key component of positive behavior change. In an intervention study utilizing self-efficacy as the construct informing a 12-week weight loss program, young adults experienced greater weight loss and improved eating habits as their self-efficacy beliefs improved (Roach et al., 2003). Most recently, Partridge, McGeechan, Bauman, Phongsavan, and Allman-Farinelli (2016) investigated the effects of a 3-month mobile-health nutrition and physical activity program on a sample of 18-35-year-old participants' self-efficacy and nutrition and physical activity behaviors. The researchers found that self-efficacy mediated the main effect of the behaviors observed at 3 months on the improved nutrition and physical activity scores observed 6 months later post-intervention. The researchers concluded that efficacy beliefs play an important role in weight and health maintenance. Furthermore, Rovniak, Anderson, Winett, and Stephens (2002) found that among a sample of 277 college students, self-regulation, operationalized as a students' goal-setting and planning behaviors, mediated the positive relationship between self-efficacy beliefs and physical activity. Additionally, self-regulation had a strong main effect on physical activity behaviors. Overall, research suggests that improving self-efficacy is key to increasing positive health behaviors among young adults.

Efficacy research in the obesity context provides some key implications. Independently, efficacy has been linked to positive weight-related health changes (Dennis and Goldberg, 1996), but the nature of that relationship remains inconclusive (Faghri & Buden, 2015). Multiple studies seemingly indicate that the role of efficacy is likely compounded by other variables (Heijens, Janssens, & Streukens, 2011; Rovniak, Anderson, Winett, & Stephens, 2002). The literature clearly indicates that efficacy plays a role in weight-related attitudes, behavioral intentions, and

behavior change; but, inconclusive data provides a need for a better understanding of efficacy in obesity contexts. Therefore, the present study seeks to answer the following research questions:

*RQ4: How efficacious do Appalachian young adults feel about their health generally?*

*RQ5: How efficacious do Appalachian young adults feel about being able to eat healthily and be physically active?*

Given literature indicating that efficacy is influenced by other variables and literature surrounding the role of stigma in the obesity context, the present study also puts forth the following hypothesis:

*H1: There will be an inverse relationship between self-stigma and efficacy beliefs.*

Though efficacy and perceived risk have been observed to have independent effects, the unique relationship between these variables has sparked interest among public health and communication scholars. The Risk Perception Attitude Framework provides a fitting framework to analyze the interplay between risk and efficacy.

### **THE RISK PERCEPTION ATTITUDE FRAMEWORK**

Rimal and Real (2003) introduced the Risk Perception Attitude framework (hereafter RPA framework) as a theoretical mechanism for examining the interplay of risk and efficacy beliefs. As an extension of the Extended Parallel Process Model (EPPM; Witte, 1992), the RPA framework categorizes individuals into four attitudinal groups based on their perception of risk and the strength of their efficacy beliefs within a context (Rimal & Real, 2003). It is relevant to note that the EPPM and the RPA framework differ in an important way. Whereas the EPPM conceptualizes threat (risk) and efficacy as components of a message, the RPA uniquely constructs perceived risk and efficacy as individual-level variables. Furthermore, the RPA situates efficacy as a moderator of risk perceptions. The model predicts that those with high risk perceptions will only engage in health protective behaviors if they have high efficacy beliefs.

Additionally, those with low risk perceptions may still engage in health protective behaviors if they have high efficacy.

Based on the pairing of efficacy beliefs and risk perceptions, individuals are classified into four attitudinal groups (See Appendix B for a table explaining RPA group membership). First, those in the *responsive* group have both high risk perceptions and high efficacy beliefs; they are thought to be the most motivated to act. Alternatively, those with high risk perceptions but low efficacy beliefs are categorized into the *avoidance group*. According to the RPA framework, the risk-induced motivations of avoidant individuals are dampened by their low efficacy beliefs. On the opposite end of the risk perception scale, those with low risk perceptions but high efficacy beliefs are termed *proactive* individuals. These individuals feel confident in their ability to engage in health protective behaviors, but may not be *as* motivated as responsive individuals due to their low risk perceptions. Finally, *indifferent* individuals are those with both low risk perceptions and low efficacy beliefs. These individuals are believed to have the lowest motivations to engage in health protective behaviors.

Studies testing the RPA framework have produced mixed results. Some have shown significant effects of the risk—efficacy relationship on outcome variables (Freimuth & Hovick, 2012; Mead et al, 2012; Rimal & Real, 2003, Study 2). Others have only demonstrated direct effects of risk and efficacy as separate, independent variables (Nan, Underhill, Jiang, Shen, & Kuch, 2012; Pask & Rawlins, 2015; Zhao & Cai, 2009). A few studies have shown either significant main effects for only risk perception (Krieger, Kam, Katz, & Roberto, 2011) or efficacy beliefs (Connolly et al., 2016; Rimal & Real, 2003, Study 1) on outcome variables. Inconsistencies in the literature, coupled with positive support for the RPA, demonstrate a need to further evaluate this framework.

RPA studies have focused on health outcomes in a variety of contexts, but have largely investigated risk—efficacy outcomes on various types of cancer (Rimal & Juon, 2010; Turner, Rimal, Morrison, & Kim, 2006; Zhao & Cai, 2009), HIV (Rimal et al., 2009a; Zhang, Zhang & Chock, 2014), and HPV-related health behaviors and intentions (Krieger, Katz, Kam, & Roberto, 2012; Katz, Kam, Krieger, and Roberto, 2012). Scholars have also explored the RPA for various other health risks, such as global climate change (Mead et al., 2012), cardiovascular diseases (Rimal, 2001), and workplace safety (Real, 2008). Of the available RPA studies, the majority test the framework in the context of HIV, HPV, or some form of cancer. Among the examined stigmatized conditions of HPV, HIV, and one study concerning diabetes, research remains inconclusive. To date, no known research grounded in RPA has examined obesity-related risk perceptions.

The RPA framework can also be used as a meaningful tool to segment audiences and tailor public health interventions (Rimal et al, 2009b). Understanding audience demographics can enable health communication researchers to design messages that increase risk perceptions, efficacy, or both among audiences with varying characteristics. Message tailoring and targeting are widely accepted as beneficial tactics, and health disparities in the Appalachian region suggest a need for deeper audience analysis. RPA framework studies have shown correlations between RPA group membership and knowledge (Rimal et al, 2009b; Rimal & Juon, 2010), behaviors (Rimal et al, 2009b), and various behavioral intentions (Rimal, Bose, Brown, Mkandawire, & Folda, 2009a). Furthermore, obesity studies emphasize the effects of weight perceptions, perceived risk, and efficacy beliefs. These studies have provided beneficial, yet inconclusive, results. Moreover, obesity research has yet to investigate the interaction between efficacy and perceived risk, two variables commonly discussed in health and obesity literature. The RPA

provides a framework to test those interactions. As such, the present study proposes the following risk and efficacy research question and hypotheses:

*RQ6: What is the relationship between efficacy beliefs and the perceived physical, social, and emotional risks of obesity?*

*H2: Those in the responsive group will exhibit the greatest intentions to maintain regular physical activity, followed by the proactive, avoidance, and indifferent groups.*

*H3: Those in the responsive group will exhibit the greatest intentions to eat a healthy diet followed by the proactive, avoidance, and indifferent groups.*

### **STIGMA AND THE RPA**

Lack of substantial validation of the RPA suggests that other variables may be at play; in obesity-related contexts, stigma likely plays an influential role. In a study examining the relationship between internalized (self) stigma and sexual risk behaviors among a sample of LGBTQ adults, Emler, Fredriksen-Goldsen, and Hoy-Ellis (2015) found a significant positive correlation between internalized minority stigma and the degree of sexual risk behaviors. Moreover, the researchers concluded that internalized stigma was a significant predictor of sexual risk behaviors. Risk behaviors and perceived risk are by no means synonymous; in fact, research often indicates that higher perceived risk motivates individuals to enact self-protective behaviors as opposed to risk behaviors (Brewer, Weinstein, Cuite, & Herrington, 2004). Nonetheless, the influence of stigma on perceived risk has been referenced in the literature. Kasperson et al. (1988) proposed a conceptual framework that suggests risk is susceptible to social amplification, a process in which perceived risk can be amplified by psychological, social, institutional, and cultural factors. The authors hypothesize that stigma is one of the contexts in which risk meanings are interpreted and suggest that “research is needed to define the role of risk in creating stigma, the extent of aversion that results, and how durable such stigma can become” (Kasperson et al., 1988, p. 186). Moreover, research has revealed low self-efficacy and damaged

self-esteem as the primary consequences of self-stigma (Corrigan, Larson, & Rusch, 2009; Vauth, Kleim, & Wirtz, 2007). Given the potential influence of stigma in the RPA framework, the following research question is proposed:

*RQ 7: Does self-stigma interact with RPA group membership to affect healthy eating and physical activity motivations?*

## **METHOD**

### **PARTICIPANTS**

Undergraduate students at seven universities in Appalachia were recruited on a voluntary basis to participate in a study about healthy living. Five hundred and sixty-four participants completed the study, but only young adults (ages 18-25) were included in the data analysis ( $N = 498$ ). Among that age group, 18 and 19-year-olds constituted 63.6% ( $N = 317$ ) of the sample. Nearly two-thirds (60.6%) of participants identified as female ( $N = 301$ ), 38.8% ( $N = 193$ ) identified as male, and one person did not report their sex. The racial identity of the sample was majority Caucasian ( $N = 432$ , 86.7%). Of the remaining participants, 8.4% ( $N = 42$ ) identified as African American, 2.2% ( $N = 11$ ) identified as Middle Eastern, 2% ( $N = 10$ ) identified as Asian American, 1.4% ( $N = 7$ ) identified as Latino/Latina, 1.2% ( $N = 6$ ) identified as Native American, 0.2% ( $N = 1$ ) identified as Pacific Islander, and 2.8% ( $N = 14$ ) identified as “other,” listing “Asian,” “Black (Caribbean),” “Mixed” or “Other” as their identified Race. Participants were also asked if they identified as Appalachian; 57% ( $N = 281$ ) of the sample answered yes, 27.8% ( $N = 137$ ) answered no, 15.2% ( $N = 75$ ) answered unsure, and 5 participants did not respond to the question. In addition, the majority of participants were enrolled in college. Almost 98% ( $N = 486$ ) indicated they were enrolled in college, 11 participants (2.2%) indicated they were not, and 1 participant did not report their enrollment status. The majority of the participants were undergraduates ( $N = 480$ ; 98.4%).

### **PROCEDURES**

Study approval was obtained from the Marshall University Institutional Review Board (Appendix A). Data collection took place from March 8, 2017 until March 23, 2017. The survey utilized convenience sampling. First, students enrolled in undergraduate communication studies

courses at Marshall University were offered a small amount of extra credit for voluntary survey completion. Participants were also recruited from six other universities in West Virginia, Ohio, and Kentucky to obtain a larger sample of Appalachian young adults. A solicitation message (Appendix C) was sent to known forensics coaches of teams at universities (Appendix D) in those states. Participants were also encouraged by word of mouth to share the survey with others who might be interested in participating.

Participants were first directed to a consent form before beginning the online survey administered through Qualtrics (Appendix E). Participants were asked to report various demographic information relevant to the aims of the study. Participants were asked to indicate their sex, age, race, college enrollment status, and self-identification as Appalachian or non-Appalachian. Though geographic location is often used to determine whether or not an individual is classified as “Appalachian,” Krok-Schoen, Palmer-Wackerly, Dailey, and Krieger (2015) argue that self-identity questions regarding Appalachia often target more cultural values and characteristics rather than geographical residence. Because the present study was focused on individual perceptions, participants were simply asked if they identified as Appalachian. Participants were also asked to report their weight and height and some general health information about their smoking, drinking, and exercise habits and their general health status in order to not sensitize them to the aims of the study. Response options for body weight were categorized in ten-pound ranges. Response options for height were categorized in two-inch ranges. These choices were made because research has indicated that individuals misreport their exact weight and height (Bowring et al., 2012). Next, participants were given a battery of measures designed to assess health efficacy beliefs, healthy eating motivations, physical activity motivations, risk perceptions, self-stigma, public stigma, and social desirability. The entire

survey took approximately 20 minutes to complete. Upon completion, participants were thanked for their participation and given the opportunity to go to an external site (Google Forms) and enter relevant information to receive extra credit.

## **INSTRUMENTATION**

**General Health Efficacy.** Efficacy was measured using two different scales designed to measure efficacy beliefs related to health behaviors. The first scale inquired about general health efficacy beliefs. For all four scale items, participants were asked to rank their level of agreement on a 7-point Likert scale, where 1 was equivalent to strongly disagree and 7 was equivalent to strongly agree. General health self-efficacy was measured using a modified version of Rimal and Real's (2003) scale designed to assess individual self-efficacy of general health behaviors. Example items included: "I am able to protect myself against health risks" and "I am able to be healthy." The scale was reliable ( $M = 5.96$ ,  $SD = 1.27$ ,  $\alpha = .94$ ).

**Health Self-Efficacy.** A second health self-efficacy scale was employed to measure efficacy of task-specific health behaviors, as efficacy is dependent upon the level of difficulty of the target behavior (Becker, Stuijbergen, Oh, & Hall, 1970). Using a modified version of two of the subscales employed in Becker et al.'s (1970) Self-Rated Abilities for Healthy Practices Scale, the present 13-item scale measured efficacy beliefs for nutrition and exercise habits, the two outcome variables of interest in the study. Participants were asked to rank their level of agreement on a 7-point Likert scale, where 1 was equivalent to strongly disagree and 7 was equivalent to strongly agree. Seven items assessed exercise self-efficacy, and six items assessed nutrition self-efficacy. Example items for the exercise factor included: "I able to do exercises that are good for me" and "I am able to keep from getting hurt when I exercise." Example items

for the nutrition factor included: “I am able to find healthy foods that are within my budget” and “I am able to eat a balanced diet.” The overall scale was reliable ( $M = 5.64$ ,  $SD = 1.25$ ,  $\alpha = .94$ ).

**Perceived Risk.** Perceived risk for obesity was operationalized into three risk types: physical, emotional, and social. In line with Rosenstock’s (1974) risk theory outlined in the Health Belief Model, each risk type was measured in two parts: severity and susceptibility. Each measure was assessed on a 7-point Likert Scale where 1 was equivalent to strongly disagree and 7 was equivalent to strongly agree. Each of the three risk types was analyzed on its own scale, and then all three risk types were combined into an Overall Perceived Risk Scale which was reliable ( $M = 5.26$ ,  $SD = 1.02$ ,  $\alpha = .89$ ), as were the overall factors of perceived severity ( $M = 6.08$ ,  $SD = 1.13$ ,  $\alpha = .94$ ) and perceived susceptibility ( $M = 4.51$ ,  $SD = 1.44$ ,  $\alpha = .89$ ).

**Perceived Physical Risk.** Perceived physical risk for obesity was measured using a modified version of a scale proposed by Tenconi (2003). Four items were used to assess perceived severity of obesity, and five were used to assess susceptibility. One item proposed in Tenconi’s (2003) study was removed due to reliability concerns. The item: “obesity is a serious medical condition and can cause some forms of cancer” was not employed in the current study. Negatively worded items were reverse coded for scale reliability. The overall physical risk scale was reliable ( $M = 4.82$ ,  $SD = 1.06$ ,  $\alpha = .75$ ). The two subscales were also examined:

*Perceived Physical Severity.* Example items for the severity factor included: “obesity is a serious medical condition and can cause diabetes” and “obesity is a severe threat that can shorten my life expectancy. The severity factor was reliable ( $M = 6.17$ ,  $SD = 1.30$ ,  $\alpha = .96$ ).

*Perceived Physical Susceptibility.* Example items for the susceptibility factor of the scale included: “the likelihood of me becoming obese is low” and “I am at risk for obesity because I do not eat enough vegetables and fruit.” The susceptibility factor was reliable ( $M = 3.74$ ,

$SD = 1.68, \alpha = .85$ ).

**Perceived Emotional Risk.** Perceived emotional risk was measured by six items designed to assess three emotional consequences of obesity alluded to in the literature: self-devaluation, depression, and poor self-esteem. The overall emotional risk scale was reliable ( $M = 5.71, SD = 1.34, \alpha = .89$ ). The subscales were also examined:

*Perceived Emotional Severity.* The three items for the severity factor were all worded as follows “Being overweight is a serious condition that can cause \_\_\_\_\_,” where the object of the sentence was each of the three emotional risks: self-devaluation, depression, and poor self-esteem. The severity factor was reliable ( $M = 6.09, SD = 1.26, \alpha = .94$ ).

*Perceived Emotional Susceptibility.* The three items for the susceptibility factor followed a similar pattern as the severity factor and included the phrasing: “Being overweight puts me at an increased risk for \_\_\_\_\_,” using the same three emotional risks. The susceptibility factor was also reliable ( $M = 5.32, SD = 1.91, \alpha = .98$ ).

**Perceived Social Risk.** Perceived social risk was measured by 4 items designed to assess two social consequences of obesity: social isolation and social discrimination. The overall perceived social risk scale was reliable ( $M = 5.53, SD = 1.37, \alpha = .83$ ).

*Perceived Social Severity.* Two items assessed perceived social severity. Items included were “Being overweight is a serious condition that can cause social discrimination,” and “Being overweight is a serious condition that can cause social isolation.” The perceived social severity factor was reliable ( $M = 5.87, SD = 1.35, \alpha = .91$ ).

*Perceived Social Susceptibility.* Two items assessed perceived social susceptibility. The two items were: “Being overweight puts me at an increased risk for social discrimination,” and

“Being overweight puts me at an increased risk for social isolation.” The perceived social susceptibility factor was reliable ( $M = 5.20$ ,  $SD = 1.89$ ,  $\alpha = .96$ ).

**Self-Stigma.** Self-stigma was measured using Lillis, Luoma, Levin, and Hayes’ (2010) Weight Self-Stigma Questionnaire (WSSQ). The WSSQ is divided into two subscales that assess self-devaluation and fear of enacted stigma. Because the present study did not have exclusion criteria, we employed only the fear of enacted stigma subscale. The self-devaluation subscale presumes the existence of a weight *problem* with items such as “I caused my weight problems” and “I feel guilty because of my weight problems.” Our sample includes those of all weight sizes, and thus, the fear of enacted stigma subscale seems to include more appropriate language for the present sample. The modified six-item subscale included items such as: “I feel insecure about others’ opinions of me” and “Others are ashamed to be around me because of my current weight.” All items were assessed on a 7-point Likert scale where 1 indicated strong disagreement and 7 indicated strong agreement. The fear of enacted stigma subscale was reliable ( $M = 4.10$ ,  $SD = 1.24$ ,  $\alpha = .74$ ).

**Public Stigma.** Public stigma was assessed using a slightly modified version of the Anti-Fat Attitudes Test (AFAT), a scale originally developed by Lewis, Cash, Jacobi, and Bubb-Lewis (1997) designed to assess prejudice, stereotypes, and discrimination towards “fat people.” The 47-item scale is divided into three subscales: social/character disparagement, physical/romantic unattractiveness, and weight control/blame. The remaining 13 “other” items assess a variety of attitudes with no clear theme between the items. Examples of the “other” items included: “Jokes about overweight people are funny,” “If I have the choice, I’d rather not sit next to an overweight person,” and “I hate it when overweight people take up more room than they should in a theater or on a bus or a plane.” All 47 items in the scale refer to othering attitudes, which asked

participants to answer questions not about themselves but about “fat people.” For the present study, the scale was slightly modified to alter every mention of the word “fat” to “overweight” due to the stigmatizing nature of labels (Smith, 2016). All items were assessed on a 7-point Likert scale where 1 indicated strong disagreement and 7 indicated strong agreement. Overall, the 47-item scale was reliable ( $M = 2.51$ ,  $SD = 1.10$ ,  $\alpha = .97$ ). The subscales were also examined:

**Social/Character Disparagement.** The 15-item Social/Character disparagement subscale assessed individual’s beliefs about an overweight person’s personality and how much their weight reflected their character. Example items included: “Overweight people don’t care about anything except eating,” “Most overweight people don’t keep their surroundings neat and clean,” and “Society should respect the rights of overweight people.” The social/character disparagement subscale was reliable ( $M = 2.11$ ,  $SD = 1.22$ ,  $\alpha = .94$ ).

**Physical/Romantic Unattractiveness.** Ten items were used to assess levels of physical and romantic attractiveness towards overweight persons. Example items included: “Overweight people shouldn’t wear revealing clothing in public,” “I don’t understand how someone could be sexually attracted to an overweight person,” and “If I were single, I would date an overweight person.” The physical/romantic unattractiveness subscale was reliable ( $M = 2.92$ ,  $SD = 1.16$ ,  $\alpha = .84$ ).

**Weight Control/Blame.** Weight control/blame was assessed through nine items designed to assess beliefs about whether overweight people are responsible for their weight. Example items included: “If overweight people really wanted to lose weight, they could,” “Overweight people have no willpower,” and “Overweight people do not necessarily eat more than other people.” The weight control/blame subscale was reliable ( $M = 3.11$ ,  $SD = 1.26$ ,  $\alpha = .88$ ).

**Health Motivation Scales.** Two scales were used to measure health related motivations and intentions. In a 2009 article, Xu proposed two scales designed to measure healthy eating and physical activity-related motivations, which conceptualized motivation as consisting of four stages: development of tendencies, planning and making intentions, initiation of the action, and persistence of the behavior. The present study utilized the items from the first two stages of each of the two scales: The Health Motivation Scale in Healthy Eating (HMS-HE) and the Health Motivation Scale in Physical Activity (HMS-PA). All items were measured on a 7-point Likert scale where 1 indicated strong disagreement and 7 indicated strong agreement.

**Healthy Eating Motivations.** Fifteen items, divided into two subscales of tendency and motivation towards healthy eating, were used to assess participants' health motivations related to healthy eating behaviors. Overall, the Healthy Eating Motivations scale was reliable ( $M = 5.45$ ,  $SD = 1.09$ ,  $\alpha = .92$ ).

*Healthy Eating Motivational Tendency.* Eight items assessed healthy motivation tendency related to healthy eating behaviors. Example items included: "I tend to eat healthily for the purpose of being healthy" and "I do not have the motivation to eat healthily." This subscale was reliable ( $M = 5.20$ ,  $SD = 1.13$ ,  $\alpha = .84$ )

*Healthy Eating Intention and Planning.* Intentions and planning to eat healthily were measured by 7 items. Example items included: "I plan to eat healthily because I want to be healthy" and "I don't care whether I eat healthily or not." The subscale was reliable ( $M = 5.73$ ,  $SD = 1.17$ ,  $\alpha = .89$ ).

**Physical Activity Motivations.** Fifteen items were also used to assess motivations towards physical activity-related behaviors. This scale was similarly divided into two subscales

designed to understand physical activity related motivations developed in the tendencies stage and the intention/planning stage. Overall, the scale was reliable ( $M = 5.69$ ,  $SD = 1.20$ ,  $\alpha = .95$ ).

*Physical Activity Motivational Tendency.* Nine items assessed motivational tendency related to physical activity behaviors. Example items included: “I desire to perform physical activities to be healthy” and “My intention of being healthy through physical activities is strong.” The subscale was reliable ( $M = 5.65$ ,  $SD = 1.22$ ,  $\alpha = .93$ ).

*Physical Activity Intention and Planning.* Six items assessed intentions and planning related to physical activity behaviors. Example items included: “I plan to perform physical activities because I want to be healthy” and “To be healthy, I plan to perform physical activities regularly.” The subscale was reliable ( $M = 5.71$ ,  $SD = 1.32$ ,  $\alpha = .90$ )

## **Covariates**

**Body Mass Index.** Body Mass Index (BMI) was obtained by self-reports of height and weight. Options for weight were listed in 10-pound ranges, and options for height were listed in 2-inch ranges to account for misreporting of height and weight. Once data was imported into SPSS, a new BMI variable was created which categorized individuals into one of three categories: normal weight or underweight (BMI <24.9), overweight (BMI between 25.0 and 29.9), and obese (BMI > 29.9). Nearly 49% of participants were normal weight ( $N = 271$ ), 28.4% ( $N = 158$ ) were overweight, and 23% ( $N = 128$ ) were obese, making the overweight and obese participants comprise 51.4% ( $N = 286$ ) of the sample.

**Social Desirability.** Social desirability was assessed to determine the truthfulness of participant responses. Crowne and Marlow (1960) developed a Social Desirability Scale (SDS) to assess a participant's desire to report socially desirable and culturally approved responses in social science research. The present study employed a 20-item short form of the SDS validated by Strahan and Gerbasi (1972). All items were measured on a 7-point Likert scale where 1 indicated strong disagreement and 7 indicated strong agreement. A higher score indicated a participant reporting more socially desirable results. Negative items were reverse coded for scale reliability. The 20-item social desirability scale was reliable ( $M = 4.21$ ,  $SD = .75$ ,  $\alpha = .79$ ). Due to its lack of significance as a covariate, social desirability was dropped from the analysis.

## ANALYSIS

### CORRELATIONAL ANALYSIS AND FREQUENCY STATISTICS

For questions referring specifically to Appalachian young adults, data analysis was used to exclude those non-identifying as Appalachian. For the remaining questions, the entire sample of young adults was analyzed. Frequency statistics and bivariate correlations were used to investigate relationships (See Appendix F for correlation matrix).

The first research question asked which obesity-related risks (physical, social, or emotional) were most salient among Appalachian young adults. Results indicated that emotional obesity-related risks were reported as most salient among Appalachian young adults ( $N = 263$ ;  $M = 5.81$ ,  $SD = 1.28$ ), followed by social obesity-related risks ( $M = 5.46$ ,  $SD = 1.36$ ) and physical obesity-related risks ( $M = 4.81$ ,  $SD = 1.04$ ).

Research question 2 inquired about the relationship between public stigma levels and the perceived physical, social, and emotional risks of obesity. Correlational analysis revealed a significant inverse relationship between public stigma and physical risk ( $r(414) = -.245$ ,  $p < .01$ ); social risk ( $r(414) = -.143$ ,  $p < .01$ ); and emotional risk ( $r(414) = -.161$ ,  $p < .01$ ).

Research question 3 inquired about the relationship between self-stigma and each risk type. Correlational analysis revealed a significant positive relationship between self-stigma and physical risk ( $r(466) = .493$ ,  $p < .01$ ); emotional risk ( $r(466) = .345$ ,  $p < .01$ ); and social risk ( $r(466) = .341$ ),  $p < .01$ ).

Research questions 4 and 5 inquired about efficacy beliefs among Appalachian young adults. Results indicated that Appalachian young adults ( $N = 280$ ) feel efficacious about their general health ( $M = 5.98$ ,  $SD = 1.22$ ) and efficacious about their abilities to maintain a healthy lifestyle through physical activity and healthy eating ( $M = 5.66$ ,  $SD = 1.20$ ).

Research question 6 inquired about the relationship between efficacy beliefs and the physical, social, and emotional risks of obesity. Correlational analysis revealed that perceived social risk had a significant positive relationship with health self-efficacy ( $r(466) = .098, p < .01$ ). Emotional and physical risks showed no significant relationship with efficacy.

Hypothesis 1 predicted an inverse relationship between self-stigma and efficacy beliefs. Efficacy beliefs for the remainder of the analysis were analyzed using the more specific Health Efficacy Scale since the outcome variables of the study concerned the behaviors outlined in that scale. Correlational analysis confirmed Hypothesis 1, revealing a significant inverse relationship between self-stigma and health efficacy beliefs to eat healthily and be physically active ( $r(487) = -.167, p < .01$ ).

### **TESTING THE RPA FRAMEWORK**

To determine RPA group membership, median splits of health efficacy and overall perceived risk (a combination of physical, social, and emotional risk) were utilized. Other scholars have demonstrated the effectiveness of this method for RPA group segmentation and have shown little error between experimentally induced RPA groups and groups extracted post-data collection using the median split technique (Turner et al., 2006). The median split resulted in four nearly evenly distributed groups (see Appendix G).

Hypothesis 2 predicted that those in the responsive group would exhibit the greatest intention to maintain regular physical activity, followed by the proactive, avoidance, and indifferent groups. Results of a one-way ANOVA with RPA group membership as the independent variable and physical activity motivation as the dependent variable revealed significant group differences in the overall model,  $F(3, 490) = 31.32, p < .00$ . Post hoc comparisons using the Tukey HSD post-hoc test indicated significant differences between the

indifferent (1) group ( $M = 5.01$ ,  $SD = 1.11$ ) and the avoidance (2) group ( $M = 5.45$ ,  $SD = 1.10$ ), the proactive (3) group ( $M = 6.01$ ,  $SD = 1.15$ ), and the responsive (4) group ( $M = 6.21$ ,  $SD = .98$ ). The avoidance group also differed significantly from the proactive and responsive groups. However, no group differences were noted between those in the proactive and responsive groups.

Hypothesis 3 predicted that those in the responsive group would exhibit the greatest intentions to eat a healthy diet followed by the proactive, avoidance, and indifferent groups. Results of a one-way between subjects ANOVA with RPA group membership as the independent variable and healthy eating motivation as the dependent variable revealed significant group differences in the overall model,  $F(3, 484) = 22.98$ ,  $p < .00$ . Tukey HSD post hoc test revealed significant differences between mean scores for the indifferent (1) group ( $M = 4.84$ ,  $SD = 1.05$ ) and the proactive (3) ( $M = 5.77$ ,  $SD = 1.09$ ) and responsive (4) groups ( $M = 5.92$ ,  $SD = .98$ ); between the avoidance (2) group ( $M = 5.17$ ,  $SD = .91$ ) and the proactive and responsive groups, but no differences were noted between groups with the same efficacy level (indifference and avoidance; proactive and responsive).

Finally, research question 7 asked if self-stigma interacts with RPA group membership to influence healthy eating and physical activity motivations. Results of a two-way ANCOVA revealed non-significant main effects for self-stigma,  $F(2, 463) = 1.05$ ,  $p = .35$ , but significant interaction effects for RPA group membership and self-stigma,  $F(6, 484) = 2.45$ ,  $p < .05$  on healthy eating motivation, indicating that self-stigma has a significant interaction with RPA group membership on healthy eating motivations.

For physical activity motivation, results of a two-way ANCOVA revealed significant main effects for self-stigma,  $F(2, 469) = 5.12$ ,  $p < .01$ , but the interaction between RPA group

membership and self-stigma was not quite statistically significant,  $F(6, 469) = 2.04, p = .059$ .

BMI was not a significant covariate in this analysis.

## **DISCUSSION**

More than 30% of Americans living in Appalachia are obese (Berlin, Hamel-Lambert, & DeLamatre, 2012; Flegal, Carroll, Kit, & Ogden, 2012). Appalachian young adults are at increased risk for obesity due to the poor health behaviors characteristic of this age group. It is imperative that young adults enact obesity-preventative behaviors now, as those behaviors form the foundation for the behaviors that they will enact throughout the course of their lives (Bonnie, Stroud, & Breiner, 2015). Health research indicates that efficacy and perceived risk can motivate positive weight-related behavioral change. The Risk Perception Attitude (RPA) framework further posits that efficacy moderates the effect of perceived risk on behavioral outcomes. No RPA study has yet to explore this relationship in the obesity context, let alone examine the role of stigma as influential in the framework. The present study sought to extend the RPA framework by examining the role of stigma, risk perceptions, and efficacy beliefs in shaping the healthy-eating and physical activity-behaviors of young adults.

## **SUMMARY OF RESULTS**

Research questions and hypotheses were proposed to investigate relationships between perceived obesity risks, efficacy, and stigma and examine their influence on desired weight maintenance behaviors. The first research question of the study investigated which obesity-related risks were most salient among Appalachian young adults. Appalachian young adults in this sample ranked emotional, social, and then physical obesity risks as most salient. The second research question investigated the relationship between public stigma and the perceived physical, social, and emotional risks of obesity. Public stigma was significantly and inversely correlated with perceived physical, social, and emotional obesity risks. The third research question investigated the relationship between self-stigma and the perceived physical, social, and

emotional risks of obesity. Analysis revealed that self-stigma was significantly and positively correlated to perceived physical, social, and emotional obesity risks.

The next set of research questions and one hypothesis investigated efficacy beliefs and perceived obesity risks. The fourth and fifth research questions investigated the efficacy beliefs among Appalachian young adults. Results revealed that Appalachian young adults feel efficacious about their general health and their abilities to eat healthily and be physically active. Research question 6 investigated the relationship between efficacy beliefs and perceived obesity risks. Results indicated that efficacy only had a significant positive correlation with perceived social obesity risks. Self-stigma was also hypothesized to have an inverse relationship with self-efficacy related to healthy eating and physical activity. Analysis confirmed the first hypothesis.

The final two hypotheses posited that RPA group membership would predict behavioral intentions to maintain regular physical activity and to eat healthily. When testing intentions to maintain regular physical activity, results revealed that as efficacy among RPA groups increased, so did behavioral intentions to be physically active. Moreover, of the two low-efficacy groups, those with higher perceived obesity risk exhibited greater behavioral intentions to be physically active. However, among those in the two high efficacy groups, perceived risk did not significantly affect behavioral intentions related to physical activity. For intentions to eat healthily, results showed a similar pattern, where the two high efficacy groups exhibited greater behavioral intentions to eat healthily than did the two low efficacy groups. However, perceived obesity risk did not affect behavioral intentions to eat healthily among groups with the same efficacy levels.

One final research question investigated the role of self-stigma in the RPA framework. Results revealed that self-stigma had a significant main effect on behavioral intentions to

maintain physical activity, but self-stigma did not significantly interact with RPA group membership to affect physical activity-related behavioral intentions. Furthermore, BMI was tested as a covariate in both analyses, and was only significant in the model testing healthy eating intentions. For intentions to eat healthy, results did reveal a significant interaction effect. Self-stigma did not have significant main effects on intentions to eat healthy, but self-stigma and RPA group membership did significantly interact to predict behavioral intentions to eat healthy, insofar as when self-stigma increased as RPA group membership did, behavioral intentions to eat healthy decreased.

### **IMPLICATIONS**

Results of this study affirm previous research which suggests that emotional risks related to obesity are most salient among Appalachian young adults (Corsino et al., 2014). These findings provide insight into how future behavioral interventions and health campaigns can craft messages that motivate Appalachian young adults. Perhaps this population requires an emphasis of emotional risks rather than physical obesity risks because physical risks may seem too distal among the current age group.

Additionally, results reveal that public and self-stigma are significantly related to perceived physical, emotional, and social risks of obesity. Notably, public and self-stigma were significantly correlated with each risk type; public stigma was negatively correlated, while self-stigma was positively correlated. Such a finding suggests the importance of delineating between these two stigma types. For the present study, public stigma levels were of less concern. However, it is noteworthy that individuals who enacted more public stigma perceived themselves at less of a risk for obesity. Perhaps those who do not perceive themselves as at risk for obesity feel more entitled to public stigma attitudes. Future research is needed to examine how stigma

influences risk. More importantly, the relationship between obesity self-stigma and perceived obesity risks suggests a relationship not presently addressed in the literature. If perceived risk and self-stigma have such a relationship, self-stigma could dampen behavioral intentions motivated by high risk perceptions. Currently, some literature indicates that Appalachians have inaccurate weight perceptions (Ely, Miller, & Dignan, 2011; Griffith, Lovett, Pyle, & Miller, 2011). However, the present findings may help explain the inconsistency in related literature, as some studies have reported that young adults in Appalachia over-emphasize their risks for obesity-related conditions (Williams, Taylor, Wolf, & Lawson, 2008). More research is needed to investigate the obesity risk perceptions among young adults, especially those in Appalachia. Furthermore, researchers must begin to investigate the relationship between self-stigma and perceived risk in a variety of health contexts.

Results from the present study also provide unique insight into the efficacy beliefs among Appalachian young adults. The present sample reported efficacy beliefs higher than expected in an area susceptible to fatalistic health beliefs (Freimuth & Hovick, 2012). Perhaps, the age of the sample largely contributed to the high efficacy beliefs that were reported. Furthermore, the positive correlation between perceived social risk and health self-efficacy is one finding that remains unclear, as literature does not necessarily support this finding. However, this finding was unsurprising, as the RPA predicts a more complex relationship between efficacy and perceived risk. Literature does lend support to the inverse relationship found between obesity self-stigma and health efficacy beliefs, as literature indicates that low self-efficacy is one of the primary consequences of self-stigma (Corrigan, Larson, & Rusch, 2009). Such a finding supports the need for investigating self-stigma in the obesity context.

Results also provide some theoretical support for the RPA framework, as the findings overall revealed significant models for RPA groups related to both physical activity and healthy eating motivations and intentions. The lack of significant differences noted among high efficacy groups for physical activity motivation and among both high and low efficacy groups with varying levels of risk perception for healthy eating motivation have been found in past research. Sullivan, Beckjord, Rutten, and Hesse (2008) found the same result in a study testing efficacy and perceived risk related to cancer. In their study, no significant differences were found between individuals in the high efficacy groups with varying levels of perceived risk or between individuals in the low efficacy groups with varying risk perceptions. The replication of this finding suggests a need to further investigate efficacy among different samples. In the present study, this finding could also be due to the high efficacy reported among the sample, rendering the median split less effective than it might be if reported efficacy beliefs contained more variance.

In general, our results show strong influence of self-stigma within the RPA framework. One aim of this study was to examine how stigma fit into the RPA in the obesity context, and results indicated that self-stigma, more than public stigma, plays a role. For healthy eating motivation, obesity self-stigma and RPA group membership interacted significantly to impact intentions to eat healthily. As self-stigma increased, RPA group membership interacted in a way in which behavioral intentions to eat healthily decreased. Notably, for the individuals in the responsive group, with the highest levels of efficacy and perceived risk, behavioral intentions to eat healthy were higher when RPA group membership interacted with low self-stigma. The opposite effect was true for responsive individuals with high self-stigma levels. Among this group, behavioral intentions were notably lower when self-stigma was incorporated into the

model. The effects for the other three groups are less notable, but for the responsive group, it seems that self-stigma could have polarizing consequences. If individuals have high efficacy and high perceived risk, but fall susceptible to self-stigmatizing beliefs, their motivation to enact obesity-preventative behaviors could be dampened. At the same time, responsive individuals who have lower self-stigma might be even more motivated to act. It is also important to note that BMI was a significant covariate in the aforementioned model. Essentially, further correlational findings indicate that as BMI increases, so does self-stigma. This finding validates the need for investigating self-stigma and public stigma as separate entities. Furthermore, it reinforces the need for a deeper understanding of obesity self-stigma.

These preliminary findings affirm the role of stigma in influencing health behaviors and perhaps suggest that other variables play a role in the relationship between perceived risk and efficacy on behavioral outcomes. These findings not only validate the RPA framework, but suggest that other key variables besides perceived risk and efficacy may play a role in affecting obesity-related behavioral intentions. Researchers should use these findings to further investigate both extensions of the RPA framework. Those creating campaigns and crafting interventions should not underestimate the power of stigma in influencing behavioral outcomes.

### **LIMITATIONS**

As with every research project, we must acknowledge the limitations of this study. First, the study is inevitably limited by the volunteer sample recruited for the study. Volunteer samples often contain a set of similar psychological characteristics that prevent generalizability of a study's results (Wrench et al., 2013). Despite a relatively large sample size, the results of this study still cannot be generalized beyond the present sample. Similar studies in the future should employ random samples in order to provide the most generalizable results.

The nature of the study design itself may have also limited the study. Rimal and Real's (2003) first test of the RPA framework used an experimental design which induced both risk and efficacy beliefs, and other researchers have mimicked this method. The survey design of the present study may have limited our ability to validate the RPA framework. The insignificant differences between RPA groups with the same efficacy levels could be explained by the survey design of the study, as a median split cannot account for individuals who misreport or overestimate their efficacy beliefs.

Finally, one last noteworthy limitation may be due to the exploratory nature of the risk scales utilized in the study. Since no measures of social or emotional obesity risks exist in the literature, we created these measures. Though both measures were highly reliable, the overall perceived risk scale was inevitably influenced by the inclusion of these measures, which may not wholly address the perceived risks of obesity.

### **FUTURE RESEARCH**

Additional research is needed to investigate the role of stigma in the RPA framework, and the RPA framework still needs substantial validation in a variety of contexts. Scholars should not underestimate the role of stigma in these studies. Moreover, researchers need to investigate the health attitudes of Appalachian young adults, especially related to obesity-preventative behaviors. Almost no research exists in this area, though the population is one of the most at-risk for obesity-related conditions and overall poor health behaviors. Though preliminary, the results of the present study shed light on the perceived risks and efficacy beliefs among Appalachian young adults. If health campaigns are to adequately target populations, researchers must continue to investigate health beliefs in one of the nation's most underserved areas.

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## APPENDIX A: LETTER FROM INSTITUTIONAL REVIEW BOARD



Office of Research Integrity  
Institutional Review Board  
One John Marshall Drive  
Huntington, WV 25755

FWA 00002704

IRB1 #00002205  
IRB2 #00003206

March 6, 2017

Jill Underhill, PhD  
Communication Studies Department

RE: IRBNet ID# 1027865-1

At: Marshall University Institutional Review Board #2 (Social/Behavioral)

Dear Dr. Underhill:

**Protocol Title:** [1027865-1] Examining risk perceptions and efficacy for healthy weight management among Appalachian college-aged students: A test and extension of the Risk-Perception-Attitude Framework

**Expiration Date:** March 6, 2018

**Site Location:** MU

**Submission Type:** New Project APPROVED

**Review Type:** Exempt Review

In accordance with 45CFR46.101(b)(2), the above study and informed consent were granted Exempted approval today by the Marshall University Institutional Review Board #2 (Social/Behavioral) Designee for the period of 12 months. The approval will expire March 6, 2018. A continuing review request for this study must be submitted no later than 30 days prior to the expiration date.

This study is for student Victoria Ledford.

If you have any questions, please contact the Marshall University Institutional Review Board #2 (Social/Behavioral) Coordinator Bruce Day, ThD, CIP at 304-696-4303 or day50@marshall.edu. Please include your study title and reference number in all correspondence with this office.

## APPENDIX B: RPA GROUP MEMBERSHIP TABLE

Behavioral Outcomes



	Low Efficacy	High Efficacy
Low Risk	<i>Indifferent</i> (Group 1)	<i>Proactive</i> (Group 3)
High Risk	<i>Avoidance</i> (Group 2)	<i>Responsive</i> (Group 4)

## APPENDIX C: SOLICITATION MESSAGE

Dear Colleagues,

I am writing to request your help in recruiting participants for my research study. The study is online and available through Qualtrics. It will take students approximately 20 minutes to complete. I very much appreciate your help!

Here is the text for the e-mail to send to your students:

Dear Students,

A new research study called “Perceptions and Beliefs about A Healthy Lifestyle” is now available via the Qualtrics link below. This online study will take about 20 minutes to complete. <If you choose to offer extra credit to your students, please insert a message here detailing the amount of extra credit.> I will e-mail you every student who fills out the information at the end of the study with their name, course, section number, and instructor.

This study will close at 11:59 p.m. on March 23, 2017.

You can find the link to the study here:

[https://marshall.az1.qualtrics.com/jfe/form/SV\\_8rkWv6drXnO91u5](https://marshall.az1.qualtrics.com/jfe/form/SV_8rkWv6drXnO91u5)

**APPENDIX D: LIST OF UNIVERSITIES WHERE STUDENTS WERE SOLICITED**

Davis and Elkins College  
Marshall University  
Ohio University  
Shepherd University  
University of Kentucky  
West Virginia Wesleyan University  
Western Kentucky University

**APPENDIX E: OFFICIAL COPY OF QUESTIONNAIRE**



Marshall University IRB

Approved on:	3/6/17
Expires on:	3/6/18
Study number:	1027865

**Consent Form**

You are invited to participate in a research project entitled “Perceptions and Beliefs about A Healthy Lifestyle” designed to investigate how individuals view themselves and various health behaviors. The study is being conducted by Dr. Jill Underhill and Ms. Victoria Ledford from Marshall University and has been approved by the Marshall University Institutional Review Board (IRB). This research is being conducted as part of the Master’s Thesis requirements for Ms. Victoria Ledford.

Participation is completely voluntary and there will be no penalty or loss of benefits if you choose to not participate in this research study or to withdraw. If you choose not to participate you may close the survey window. The study will provide you with a series of questions. You may choose to not answer any question by simply leaving it blank. Your replies will be anonymous; so, do not type your name anywhere on the form. Completing the on-line study indicates your consent for use of the answers you supply. If you are eligible to receive extra credit for participation, a link to a separate Google form will be provided at the end of the study. Your name will not be linked with your responses. Once you complete the study you can delete your browsing history for added security. There are minimal social risks related to this study; because of the nature of the study, we encourage you to take the survey in private.

If you have any questions about the study or in the event of a research related injury, you may contact Dr. Jill Underhill or Ms. Victoria Ledford at 304-696-3013. If you have any questions concerning your rights as a research participant, you may contact the Marshall University Office of Research Integrity at (304) 696-4303.

By completing this survey, you are also confirming that you are **18** years of age or older.

Please print this page for your records.

Thank you for agreeing to participate in the Perceptions and Beliefs about a Healthy Lifestyle study. We first need to collect some basic information from you, the types of things you would normally report at a doctor's visit.

My age is \_\_\_\_\_ years.

I identify as:

- Male
- Female
- Other

Please indicate your Race. Check all that apply.

- Caucasian
- African American
- Asian American
- Latino/Latina
- Native American
- Pacific Islander
- Middle Eastern
- Other (please specify)

Are you enrolled in college?

Yes/No

If so, please indicate your year in college.

- Freshman
- Sophomore
- Junior
- Senior
- Other (please specify)

Do you consider yourself to be Appalachian?

- Yes
- No
- Unsure

Please indicate your height:

- 4'9" or shorter      1
- 5'0"-5'1"              2
- 5'2"-5'3"              3
- 5'4"-5'5"              4

- 5'6"-5'7"            5
- 5'8"-5'9"            6
- 5'10"-5'11"         7
- 6'0"-6'1"            8
- 6'2"-6'3"            9
- 6'4"-6'5"            10
- 6'6" or taller        11

Please check the box that most closely corresponds to your weight range in pounds:

Less than 100	100-110	111-120	121-130	131-140	141-150	151-160	161-170	171-180
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181-190	191-200	201-210	211-220	221-230	231-240	241-250	More than 250
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Have you smoked cigarettes or vaped at least once in the last seven days?

Yes/No

Would you consider yourself a regular smoker (of cigarettes, e-cigarettes, or other)?

Yes/No

Have you consumed alcohol in the last 7 days?

Yes/No

Have you engaged in binge drinking (5 or more drinks in one sitting) in the last month?

Yes/No

Have you exercised for at least 30 minutes in the last 7 days?

Yes/No

Do you consider yourself to be healthy?

Yes/No

Next, we would like to know how confident you feel about your ability to be healthy. Please indicate how strongly you agree or disagree with the following statements.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

I am able to be healthy.

I am able to do what is needed to have good health.

I am able to protect myself against health risks.

Even when faced with obstacles, I am able to protect myself against health risks.

I am able to do exercises that are good for me

I am able to fit exercise into my regular routine

I am able to tell which foods are high in fiber content

I am able to find ways to exercise that I enjoy

I am able to do stretching exercises

I am able to find Healthy foods that are within my budget

I am able to figure out from labels what foods are good for me

I am able to eat a balanced diet

I am able to figure out how much I should weigh to be healthy

I am able to keep from getting hurt when I exercise

I am able to drink as much water as I need to drink every day

I am able to find accessible places for me to exercise in the community

I am able to know when to quit exercising

Now, we would like to know a little bit about some of your health tendencies and motivations. Please indicate how strongly you agree or disagree with the following statements.

Strongly Disagree 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 7
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I plan to eat healthily because I want to be healthy.

I do not have any plan to eat healthily.

I have the intention to eat healthily for the purpose of being healthy.

I do not have any intention to eat healthily.

I plan to eat healthy food more often because I want to be healthy.

I do not intend to eat healthily.

I don't care whether I eat healthily or not.

I tend to eat healthily for the purpose of being healthy.

I desire to eat healthily for the purpose of being healthy.

I have the motivation to eat healthily for the purpose of being healthy.

I do not have the desire to eat healthily.

I do not have the motivation to eat healthily.

I am motivated to eat healthily because I want to be healthy.

I need to eat healthily for the purpose of being healthy.

I may not eat healthily, although I want to be healthy.

I plan to perform physical activities because I want to be healthy.

I do not have any plan to perform physical activities to be healthy.

I never think to perform physical activities to be healthy.

I do not have the intention to perform physical activities for the purpose of being healthy.

To be healthy, I plan to perform physical activities regularly.

I do not intend to perform physical activities for the purpose of being healthy.

I tend to engage in physical activities to be healthy.

I intend to perform physical activities to be healthy.

I desire to perform physical activities to be healthy.

I am motivated to perform physical activities to be healthy.

I do not have the desire to perform physical activities to be healthy.

I do not have the motivation to engage in physical activities to be healthy.

I wish to be healthy through performing physical activities.

I have the need to perform physical activities to be healthy.

My intention of being healthy through physical activities is strong.

Now we would like to know a little bit about how you perceive weight. Please rank how much you agree or disagree with the following statements.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Being overweight is a serious medical condition and can cause diabetes

Being overweight is a serious medical condition and can cause cardiovascular disease

Being overweight is more harmful than most people realize

Being overweight is a severe threat that can shorten my life expectancy

The likelihood of me becoming overweight is low

Compared to most people my age I understand my risk of becoming overweight is low

I am at risk for becoming overweight because I do not eat enough vegetables and fruit

I am at risk for becoming overweight because I do not limit my fat and sugar intake

I am at risk for becoming overweight because my family or a family member is overweight.

Being overweight puts me at an increased risk for social discrimination

Being overweight puts me at an increased risk for social isolation

Being overweight is a serious condition that can cause social discrimination

Being overweight is a serious condition that can cause social isolation

Being overweight is a serious condition that can cause self-devaluation

Being overweight is a serious condition that can cause depression

Being overweight is a serious condition that can lead to poor self-esteem

Being overweight puts me at an increased risk for self-devaluation

Being overweight puts me at an increased risk for depression

Being overweight puts me at an increased risk for poor-self-esteem.

We would also like to ask you just a few more questions about how you feel about your weight and the weight of others. Please rank how much you disagree or agree with the following statements:

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

I feel insecure about others' opinions of me

People discriminate against those who have had weight problems

It's difficult for people who haven't had weight problems to relate to those who have.

Others think I lack self-control because of my current weight

People think that I am to blame for my current weight.

Others are ashamed to be around me because of my current weight

If overweight people don't get hired, it's their own fault.

Overweight people don't care about anything except eating

I'd lose respect for a friend who started getting overweight

Most overweight people are boring.

Society is too tolerant of overweight people.

When overweight people exercise, they look ridiculous.

Overweight people are just as competent in their work as anyone.

Being overweight is sinful.

I prefer not to associate with overweight people.

Most overweight people are moody and hard to get along with.

If bad things happen to overweight people, they deserve it.

Most overweight people don't keep their surroundings neat and clean.

Society should respect the rights of overweight people.

Overweight people are unclean.

It's hard to take overweight people seriously.

If I were single, I would date an overweight person.

Overweight people are physically unattractive.

Overweight people shouldn't wear revealing clothing in public.

I can't believe someone of average weight would marry an overweight person.

It's disgusting to see overweight people eating.

It's hard not to stare at overweight people because they are so unattractive.

I would not want to continue in a romantic relationship if my partner became overweight.

I don't understand how someone could be sexually attracted to an overweight person.

People who are overweight have as much physical coordination as anyone.

Overweight people should be encouraged to accept themselves the way they are.

There's no excuse for being overweight.

Most overweight people buy too much junk food.

Most overweight people are lazy.

If overweight people really wanted to lose weight, they could.

Overweight people have no will power.

The idea that genetics causes people to be overweight is just an excuse.

If overweight people knew how bad they looked, they would lose weight.

Most overweight people will latch onto almost any excuse for being overweight.

Overweight people do not necessarily eat more than other people.

Jokes about overweight people are funny.

If someone in my family were overweight, I'd be ashamed of him or her.

I can't stand to look at overweight people.

Overweight people are disgusting.

If I have the choice, I'd rather not sit next to an overweight person.

I hate it when overweight people take up more room than they should in a theater or on a bus or plane.

Most overweight people don't care about anyone but themselves.

Overweight people don't care about their appearance.

If I owned a business, I would not hire overweight people because of the way they look.

I'd feel self-conscious being seen in public with an overweight person.

The existence of organizations to lobby for the rights of overweight people in our society is a good idea.

Overweight people obviously have a character flaw, otherwise they wouldn't become overweight.

It makes me angry to hear anybody say insulting things about people because they are overweight.

Finally, we would like you to your responses to just a few more general questions.

Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
1	2	3	4	5	6	7

Please indicate how much you agree or disagree with the following statements.

I'm always willing to admit it when I make a mistake.

I always try to practice what I preach.

I never resent being asked to return a favor.

I have never been irked when people expressed ideas very different from my own.

I have never deliberately said something that hurt someone's feelings.

I like to gossip at times.

There have been occasions when I took advantage of someone.

I sometimes try to get even, rather than forgive and forget.

At times, I have really insisted on having things my own way.

There have been occasions when I felt like smashing things. **R**

I never hesitate to go out of my way to help someone in trouble.

I have never intensely disliked anyone.

When I don't know something, I don't at all mind admitting it.

I am always courteous, even to people who are disagreeable.

I would never think of letting someone else be punished for my wrong doings.

I sometimes feel resentful when I don't get my way.

There have been times when I felt like rebelling against people in authority even though I knew they were right.

I can remember "playing sick" to get out of something.

There have been times when I was quite jealous of the good fortune of others.

I am sometimes irritated by people who ask favors of me.

**We thank you for your time spent taking this survey.**

**Your response has been recorded.**

**If you are eligible to receive extra credit for participation, follow the link below to a separate Google form to input your information. Your name will not be linked with your responses.**

[https://docs.google.com/forms/d/e/1FAIpQLSfUUojumYIPJ1ekF-iCD2C4luIpBFiC00rgiDOif3OVckuwmA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSfUUojumYIPJ1ekF-iCD2C4luIpBFiC00rgiDOif3OVckuwmA/viewform?usp=sf_link)

## APPENDIX F: CORRELATION MATRIX

	<i>Mean</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>
1. Health Self Efficacy	5.64	1.20	1.00								
2. Overall Perceived Risk	5.27	1.00	.000	1.00							
3. Physical Risk	4.81	1.04	-.084	.798**	1.00						
4. Emotional Risk	5.73	1.31	.065	.892**	.459**	1.00					
5. Social Risk	5.45	1.36	.098*	.851**	.414**	.899**	1.00				
6. Self Stigma	4.12	1.23	-.167**	.472**	.493**	.345**	.341**	1.00			
7. Public Stigma	2.54	1.11	.021	-.230**	-.245**	-.161**	-.143**	.031	1.00		
8. Healthy Eating Motivation	5.40	1.08	.364**	.079	-.098*	.189**	.188**	-.122*	-.197**	1.00	
9. Physical Activity Motivation	5.64	1.20	.348**	.112*	-.078	.221**	.207**	-.204**	-.230**	.745**	1.00

\*  $p < .05$  \*\*  $p < .01$

## APPENDIX G: DISTRIBUTION OF RPA GROUPS

<i>RPA Group</i>	<i>N</i>
Group 1: <i>Indifference</i>	99
Group 2: <i>Avoidance</i>	111
Group 3: <i>Proactive</i>	110
Group 4: <i>Responsive</i>	104