

College Wellness

Testing an Anti-Stigma Physical Activity Campaign for College Students

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Abstract

Young adulthood is a crucial period of development for long-term health and wellness, as researchers believe that health behaviors during this period serve as the foundation for health behaviors throughout adulthood (Bonnie, Stroud, & Breiner, 2015). Research has demonstrated that nearly two-thirds of college students show a decline in physical activity levels and eating patterns from their senior year of high school to their freshman year in college (Woekel, Ebbeck, Readdy, Kin-Kit, Hyo & Cardinal, 2013). This trend often continues throughout college, with 70% of students gaining weight by the time they graduate (Gropper, Simmons, Connell, & Ulrich, 2012). Concurrently, more college students are overweight than ever before; this is especially true in Appalachia, a region afflicted with various health disparities across the lifespan (Berlin, Hamel-Lambert, & DeLamatre, 2012). This leads to the purpose of this project is to examine how anti-stigma obesity health communication campaign messages sponsored by an Appalachian campus recreation center can influence perceptions of efficacy and motivation to engage in physical activity in college-aged students.

Introduction

Obesity is a health epidemic that affects the public with nearly a third of American adults being obese or overweight (Flegal, Carroll, Kit, & Ogden, 2012). Obesity does not just affect adults; research shows that nearly 20 percent of children and adolescents are obese (American Academy of Child & Adolescent Psychiatry, 2016). In young adults, “a body mass index (BMI) between 25 and 30 is used to define those who are overweight and considered at risk of becoming obese or having excess adiposity” (Fiore, Travis, Whalen, Auinger, & Ryan, 2006, p. #). Obesity is related to many physical and mental risks and complications including 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 and wellbeing outcomes are more evident in the teen and young adult population. The transitioning years from high school to college often represent the last opportunity to shape the physical activity behaviors of young adults. About 63% of college students show a decline in physical activity levels and eating patterns from their senior year of high school to their freshman year in college (Woekel, Ebbeck, Readdy, Kin-Kit, Hyo & Cardinal, 2013). 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). Thus, young adult college students are an important population to study for health interventions.

Obesity and Risks for Young Adults

There is substantial amount of research out there about obesity and its associated risks. Obesity rates are increasing and people who are obese, overweight or at risk of becoming one of the two, pose major health concerns for themselves, their community and the United States. In young adults, “A body mass index (BMI), between 25 and 30 is used to define those who are overweight and considered at risk of becoming obese or having excess adiposity (Fiore, Travis, Whalen, Auinger, & Ryan, 2006). BMI is calculated by dividing someone’s weight in kilograms by their height squared using centimeters. Obesity is a nation-wide health problem that has only shown increase in numbers, Fiore and colleagues noted in that in just one year, 1999-2000, obesity rates in the age range of 12-to-19 years old increased from 10.5% to 15.5% (2006). In an article by O’Connor, the author talks about how 70% of college students gain an average of 12 to 37 pounds during their first-year of college. The author goes onto say how this leads 31% of college students to be considered medically obese after their first-year in college (2012). Obesity also has many associated risks and complications. It is also a complex health condition, often caused by genetic, biological, behavioral, and cultural factors (American Academy of Child & Adolescent Psychiatry, 2016).

Obesity is associated with both physical risks and emotional risks. Obesity has been associated with cardiovascular disease, diabetes, joint trauma, back pain, cancer, hypertension and mortality (Ogden & Clementi, 2010). These physical risks are important to note, but in young adults, emotional/psychological risks are the more potent risks because these risks are more proximal, whereas, physical risks are more distal to young adults. Being labeled as obese or overweight often has negative psychological consequences. The more pertinent emotional/psychological risks are depression, anxiety, self-esteem, and body dissatisfaction

levels (Ogden & Clementi, 2010). The stigma of obesity creates additional barriers for obese individuals and complicates health communication message design.

Stigmas of Obesity

Stigma is a term that originated in Greece, when individuals were forced to cut or burn signs into their body to warn others of something unusual or morally wrong with the individual (Goffman, 1963). Today, Rachel Smith (2011) defines stigma best as “a socialized, simplified, standardized image of the disgrace of a particular social group” (p. 455). Smith’s definition of stigma can easily be applied to society’s view of the obesity, as our obese population is often shamed or disgraced because of their physical condition. This obesity stigma leads obese individuals to be vulnerable to maladaptive behaviors and negative attitudes that can span multiple dimensions of their lives.

Obesity stigma effects are enacted through both public stigma and self-stigma. Public stigma is the viewpoint of obesity from the perspective of the society members who are not affected by obesity. This perspective of the outgroup’s beliefs, attitudes and behaviors strongly influence the stigmatized persons’ self-stigma. Self-stigma is when individuals are made aware of public stigma, start agreeing with their stigmatizers’ attitudes or beliefs, and then devalue themselves by accepting and internally applying the stigmas (Watson, Corrigan, Larson, & Sells, 2007).

Public stigma was found to be significantly correlated with perceived physical, social, and emotional risks associated with obesity in college-aged populations (Ledford, 2017). This study utilized the Risk Perception Attitude (RPA) framework to examine the relationship

between perceived obesity risks and health self-efficacy beliefs among a sample of young Appalachian adults. The study also used stigma as a potential factor in this RPA framework.

Stigma and attitude modification therefore play a significant role and hold the potential in helping to prevent negative outcomes for affected individuals (Sikorski, Luppia, Kaiser, Glaesmer, Schomerus, König, & Riedel-Heller, 2011). Examining the role of both public and self-stigma in shaping attitudes about obesity is integral when designing health communication campaigns. Practitioners must design nutrition and physical activity campaigns with anti-stigma messages that do not increase the feelings of shame, guilt, or embarrassment of the stigmatized individual.

Obesity Campaigns

There has been an increase in public health campaigns to target obesity, physical activity, dietary procedures, and other messages to target obesity reduction. Little is known about how the general American public perceives these types of campaigns, and how people's perceptions may influence their reception of the messages (Puhl, Luedicke, Peterson, 2013). Puhl and colleagues (2013) examined public perceptions of obesity-related health campaign messages throughout the United States. Participants, a nationally representative of American adults, viewed 10 obesity-related health campaigns that were pretested and publicly criticized as being stigmatizing of obese people, or 10 campaigns that contained more-neutral content. They had to view the entire visual and written content of the promotional media for each obesity-related campaign. The major finding in the study was that obesity-related health campaigns rated as stigmatizing were no more likely to instill motivation for improving lifestyle behaviors than campaigns rated as less stigmatizing and more neutral (Puhl et al, 2013, p. 44). This means that Puhl and his colleagues

found that regardless of their participants' body weight, the findings were consistent through all groups no matter the content they viewed.

Anti-Stigma Campaigns

When it comes to anti-stigma campaigns about obesity, there is minimal research out in the world. This does not mean that anti-stigma campaigns do not exist for other health related issues such as mental illness or even communication disorders such as stuttering. Boyle conducted an anti-stigma campaign to reduce the stigma in public speaking disorders and stuttering. The study found that educational programs contrasting myths with facts and protest approaches were effective in reducing negative stereotypes about stuttering and PWS, and interpersonal contact increased affirming attitudes when comparing pretest with posttest measures (2017). This means that an anti-stigma campaign has shown success by educating the public on myths and facts of specific topics. In a different anti-stigma campaign about mental illnesses, the researchers made a movie about 2 characters with psychological disorders as an anti-stigma campaign. After the movie, the researchers ask their participants, 591 adolescents with no psychiatric history, to answer five questions about the movie. The questions ranged from do you know of people who react the way the characters did in the movie, would help somebody who acted like the characters did in the movie, has this movie helped you better understand the disorders the characters had, etc. The findings came to be that the use of media in anti-stigma campaigns may facilitate access to information and at the same time also fight certain prejudice. In this case the role of the media is beneficial and positive, without being regarded only as a means of stigmatization (Gherman, Predescu, Iftene, Cadariu, 2008). These examples show success and need to be altered when dealing with the obesity population but show great techniques to go about doing an anti-stigma campaign.

With there being little research in the world about anti-stigma campaigns, there is even a smaller variety of research about how using visuals can reduce stigma. In a book by the National Academies of Sciences, Engineering, and Medicine, the authors talk about how there are four strategies to reduce stigma, education, mental-health literacy campaigns, contact, and peer services. Even though this book is about substance use disorders and not obesity, the ideas and strategies can be tailored to obesity. The strategy that is related to college students the most is contact because of the use of media in society. These strategies are aimed at reducing public stigma on a person-to-person basis but have also been shown to benefit self-stigma by creating a sense of empowerment and boosting self-esteem. The authors talk about how in-person and visual media contact are the two effective ways to reduce stigma in college students (2016). This means that an anti-stigma campaign containing visuals of obese/overweight people has the ability to reduce stigma through the use of a contact strategy advertisement.

Efficacy

Campaigns that target behavior related to obesity reduction must simultaneously decrease stigma and increase efficacy. Self-efficacy and outcome efficacy beliefs are critical to examine when considering health contexts such as obesity. Self-efficacy draws on social-cognitive theory proposed by Bandura (1999) and can be defined as the individual's belief in his/her own ability to implement a specific behavior or a set of behaviors (Náfrádi, Nakamoto, & Schulz, 2017). Outcome efficacy, also referred to as response efficacy, is "an individual's beliefs as to whether a response effectively prevents the threat" (Witte, 1992, p. 332). The combination of these two terms is the overall efficacy of an individual which form the beliefs needed to enable behavior change. Efficacy beliefs are a key component of positive behavior change.

Research has examined efficacy as a predictor of a variety of important health communication outcomes associated with obesity. 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). 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 a positive relationship between self-efficacy beliefs and physical activity. Most recently, Ledford (2017) found that among a sample of 564 undergraduate students at seven universities in Appalachia, Appalachian young adults feel efficacious about their general health and their abilities to eat healthily and be physically active in spite of being overweight and obese at disproportionately higher rates. Therefore, research must also consider how stigma could create a disconnect between feeling efficacious and feeling motivated to engage in healthy behavior.

Hypotheses

Health communication interventions targeting healthy behaviors are arguably needed for college students who are, or who are at risk for becoming, overweight or obese. Research on obesity-related campaigns crafted for this population is surprisingly limited. The majority of these campaigns have focused on education, but not the social and communicative aspects surrounding obesity. What has arguably been missing from health communication campaigns and interventions is an appreciation for the role that stigma and efficacy play when trying to measure health outcomes related to body weight (Ledford, 2017).

The current research seeks to examine how using more inclusive images from a high credibility source (the Marshall Recreation Center) can influence students' efficacy and

motivation to engage in physical activity. Moreover, I am especially interested to examine how students who are currently overweight or obese react to more inclusive advertisements. The following hypotheses and research question are being proffered for this investigation:

H1: Overweight and obese students who view physical fitness campaign material that features overweight college-aged students will report lower levels of obesity stigma than their counterparts in the control condition.

H2: Overweight and obese students who view physical fitness campaign material that features overweight college-aged students will report higher levels of efficacy to engage in physical fitness activities than their counterparts in the control condition.

H3: Overweight and obese students who view physical fitness campaign material that features overweight college-aged students will report higher levels of motivation to engage in physical fitness activities than their counterparts in the control condition.

H4: Overweight and obese students who view physical fitness campaign material that features overweight college-aged students will report lower levels of negative message perception to engage in physical fitness activities than their counterparts in the control condition.

Method

Participants

A convenience sample of undergraduate students at Marshall University will be recruited on a voluntary basis to participate in a study about health campaigns via social media, anonymous links and emails. First, students enrolled in undergraduate communication studies

courses at Marshall University will be offered a small amount of extra credit for voluntary survey completion. Participants will also be encouraged to share the study with others who might be willing to participate. A total of 226 participants completed the study. The final results come from 164 of these participants. Some participants were eliminated due to the fact they didn't complete the whole survey or view an image. The participants were between the ages of 18 and 40, with a mean age of approximately 20 years ($M= 19.98$, $SD = 17.18$). Females ($N=90$, 54.9%) outnumbered males ($N=67$, 40.8%), and participants who opted not to identify their sex ($N=7$, 4.3%). Participants were asked to indicate all races and/or ethnicities they identify with. The majority identified as White/Caucasian ($N= 141$, 86%), 5.5% as African-American or Black ($N= 9$), .6% as Asian or Asian-American ($N= 1$), 1.2% as Latino/Latina ($N=2$), and 6.7% as other or indicated that they identified with more than one race ($N=11$). The majority were freshmen ($N=63$, 38.4%), 14.7% were sophomores ($N=24$), 14.7% were juniors ($N= 24$), 18.3% were seniors ($N= 30$), and 12.2% were other (20). Three participants did not indicate their year in school.

Procedures

Study approval was obtained from the Marshall University Institutional Review Board. Data collection took place in the spring semester. Participants were directed to a consent form before beginning the online study administered through Qualtrics. Participants first filled out demographic and health-related information. They then were told that the Marshall University Rec Center was piloting new physical fitness marketing material (images) and would like student feedback on a draft. Participants were then randomly assigned to see one of four health campaign posters, which featured a clip-art couple performing a physical activity, running. The first condition will be a poster that includes a couple who are not overweight or obese engaging in

physical activity, running. The second poster will consist of the same couple running with an efficacy message on the poster. The third poster will be manipulated such that the couple are overweight/obese and running. The fourth poster will be the same overweight/obese couple with the same efficacy message that was attached to the second poster. After viewing the material, participants were asked to respond to a questionnaire that includes measures of message perception, obesity stigma, health self-efficacy, motivation to engage in physical activity (see Appendix).

Instrumentation

Body Mass Index. Body Mass Index (BMI) will be obtained by self-reports of height and weight in the survey portion. The participants BMI ranges will be divided into three categories: normal weight or underweight (BMI <24.9), overweight (BMI between 25.0 and 29.9), and obese (BMI > 29.9).

Health Self-Efficacy. A health self-efficacy scale will be 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). I will use a modified version of two of the subscales employed in Becker et al.'s (1970) Self-Rated Abilities for Healthy Practices Scale. First, I will use 4 items to measure general health self-efficacy. Then, I will use a 7-item scale that measures efficacy beliefs for exercise habits. Participants will be asked to rank their level of agreement on a 7-point Likert scale, where 1 is equivalent to strongly disagree and 7 is equivalent to strongly agree.

Public Stigma. Public stigma will be 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 will be divided into three subscales: social/character disparagement, physical/romantic unattractiveness, and weight control/blame. The remaining 13 “other” items measure a variety of attitudes with no clear theme between the items. All 47 items in the scale refer to othering attitudes. All items will be assessed on a 7-point Likert scale where 1 indicates strong disagreement and 7 indicates strong agreement.

Health Motivation Scales. One scale will be 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 will utilize the items from the second stage of the second scale: The Health Motivation Scale in Physical Activity (HMS-PA). All items will be measured on a 7-point Likert scale where 1 indicates strong disagreement and 7 indicates strong agreement.

Social Desirability. Social desirability will be assessed to determine the truthfulness of participant responses. The scale tests for 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 indicates strong agreement.

Analysis

The collected data was downloaded into an SPSS file that cleaned and prepared for analysis. Although I had basic knowledge of how to conduct statistical analysis, my mentor assisted me in analyzing the data.

Results

The results of my survey did not come out like I originally hypothesized. What I did find though was a main effect of BMI category when broken down. This is what I will be reporting about for the results of my research whenever I had a main effect of BMI category that mattered for message perception, motivation level and efficacy. In the following charts; 1.00 is the representation of my participants who had a normal body weight BMI, 2.00 is the representation of my participants who fell into the overweight BMI category and 3.00 is the representation of my participants who had a BMI considered obese.

Descriptives

STIGMA

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	60	2.3879	.79867	.10311	2.1816	2.5942	1.09	4.36
2.00	40	2.4409	.80803	.12776	2.1825	2.6993	1.00	4.36
3.00	51	2.2496	.90742	.12706	1.9943	2.5048	1.00	4.55
Total	151	2.3552	.83744	.06815	2.2205	2.4899	1.00	4.55

Chart 1. H1: Stigma by BMI Category

The first hypothesis stated that overweight college-aged students will report lower levels of obesity stigma than their counterparts. All BMI categories viewed stigma around the same number.

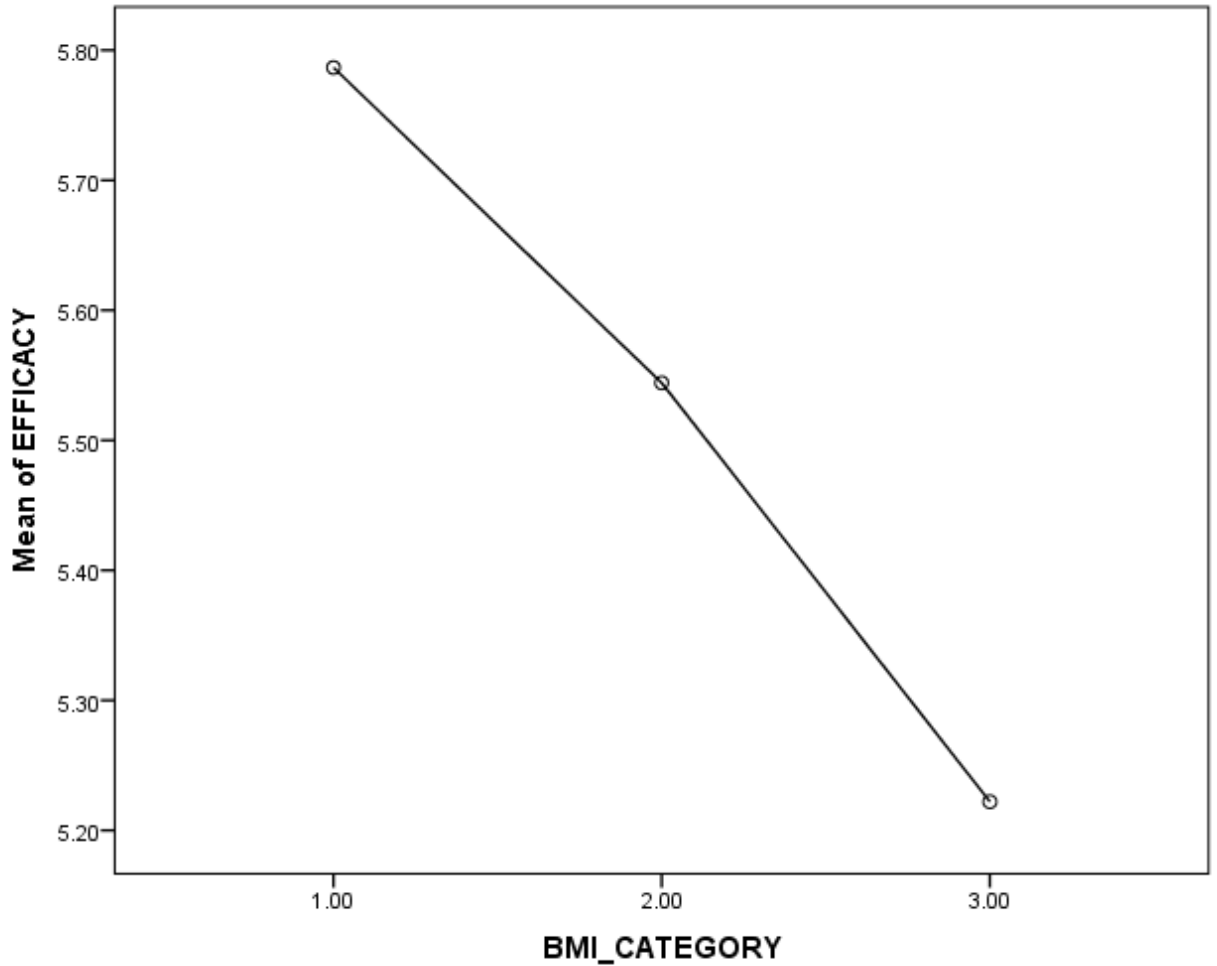
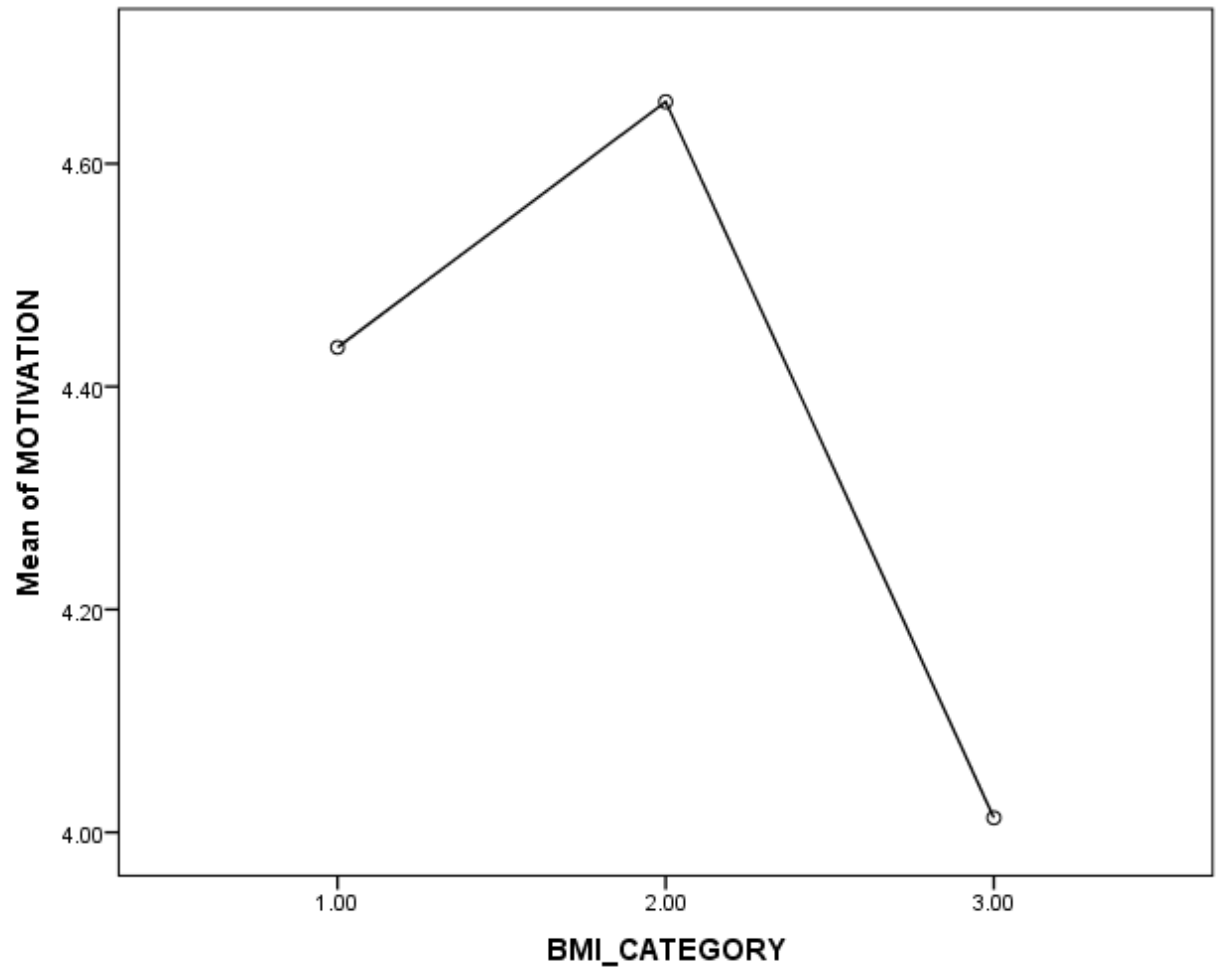


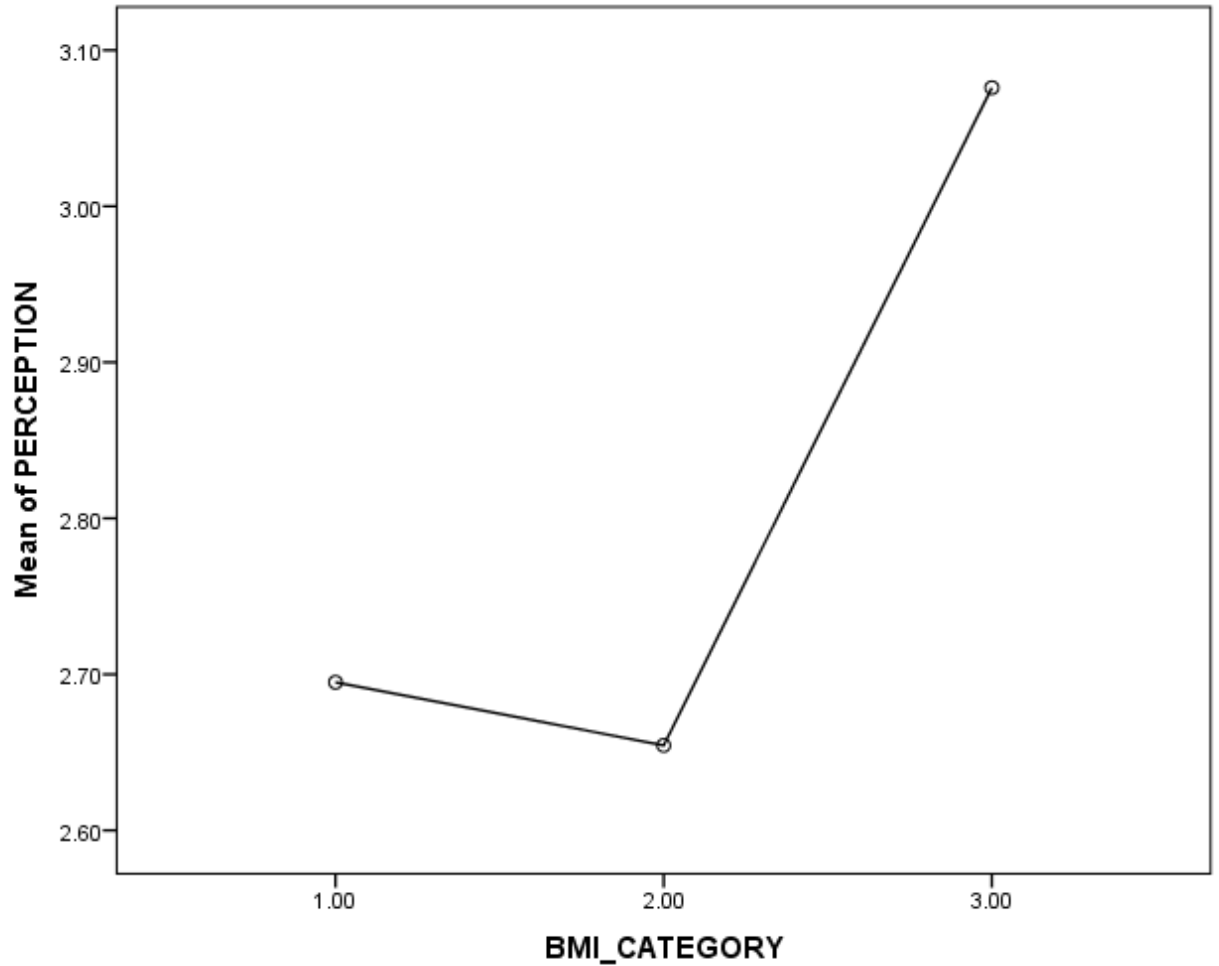
Chart 2. H2: BMI Category & Efficacy Perceptions

The second hypothesis posited that overweight college-aged students will report higher levels of efficacy to engage in physical fitness than their counter parts. This shows that the normal weight and overweight BMI categories did not have a significant change, but the obese (3.00) BMI category did.



H3: BMI Category & Motivation Level

The third hypothesis speculated that overweight college-aged students will report higher levels of motivation to engage in physical fitness than their counter parts. The chart shows that BMI categories had no significant change with their motivation levels, but BMI category 3 showed a significant decrease in motivation levels.



H4: BMI Category & Negative Message Perception

The fourth hypothesis hypothesized that overweight college-aged students will report lower levels of negative perception to engage in physical fitness than their counterparts. The chart shows that there is no significant change between BMI categories 1.00 and 2.00, but there is a significant change for BMI category 3.00.

		Correlations			
		EFFICACY	STIGMA	PERCEPTION	MOTIVATION
EFFICACY	Pearson Correlation	1	-.364**	-.271**	.288**
	Sig. (2-tailed)		.000	.001	.000
	N	158	153	151	152
STIGMA	Pearson Correlation	-.364**	1	.299**	-.062
	Sig. (2-tailed)	.000		.000	.452
	N	153	156	149	151
PERCEPTION	Pearson Correlation	-.271**	.299**	1	-.344**
	Sig. (2-tailed)	.001	.000		.000
	N	151	149	154	148
MOTIVATION	Pearson Correlation	.288**	-.062	-.344**	1
	Sig. (2-tailed)	.000	.452	.000	
	N	152	151	148	155

** . Correlation is significant at the 0.01 level (2-tailed).

Chart 5. Correlations with Entire Sample

This last chart just shows the relationship between the four variables that the study sought out. This is not split up between BMI category, this is throughout the entire sample that was recorded. The chart shows that there is a significant inverse relationship between efficacy and stigma, a significant inverse relationship between efficacy and message perception, and a positive relationship between efficacy and motivation. The chart also shows a significant positive relationship between stigma and perception. The last thing the chart shows is an inverse relationship between perception and motivation in this study.

Conclusions

The study showed how the varying body types did not matter for motivation, perception, stigma and efficacy for the total sample. The visual manipulation or efficacy induction did not matter in the total sample. The biggest takeaway comes from the main effect my research had when dividing the participants into the BMI category and then comparing the variables between

the three categories. Doing this showed a main effect/ significant change in three of the four variables. The obese BMI category, regardless of what image they saw, thought all messages were significantly more offensive than the other two BMI categories. There are three main takeaways from this study.

The first takeaway is that using non-fit models did not decrease motivation levels of individuals with a normal BMI. This means that for a place like the Marshall Recreation Center, they can try to appeal to a different population than they already have, and it will not affect how people view them. An example of this would be if the Marshall Recreation Center was using just fit models to advertise their business, it will not hurt to change the images to target a different population, the fit group will not be demotivated by the switch of advertisement.

The second takeaway is that visual images may or may not be an effective way to reduce stigma. There are only a handful of research out there about reducing stigma using visuals in any way. This means that more research is needed in this field to better show the relationship between visual images and reducing stigma.

The third takeaway is understanding that efficacy statements are much more than slogans. This means that an efficacy statement that is catchy might not be efficacious as it was in this study.

Future Research

There are three questions that come from this study that need future research to answer them. The first is how can visuals be used as a stigma-reduction communication strategy? With the growing popularity of media, is imagery the way to go when trying to reduce stigma in a public health campaign? The second question is how can we better target overweight people who

may be more open to persuasion about physical activity? In this study, the results showed that the second BMI category, overweight, led the race in most charts. There was not a significant change between BMI category 1.00 and BMI category 2.00, but how can we target the people who have the desire to get more active, but just need to increase their self-efficacy and motivation and decrease the feeling of stigma? The last question is how can we craft efficacy statements that will be efficacious? This basically means what makes an efficacy statement work or efficacious and are there some strategies better than others?

References

- American Academy of Child & Adolescent Psychiatry. (2016). *Obesity in children and teens*. Retrieved from http://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFFGuide/Obesity-In-Children-And-Teens-079.aspx
- Bandura, A. (1999). Social cognitive theory: An agentic perspective. *Asian Journal of Social Psychology*, 2, 21-41.
- Becker, H., Stuijbergen, A., Oh, H. S., & Hall, S. (1970). Self-rated abilities for health practices: A health self-efficacy measures. *Health Values*, 17(5), 42-50.
- Bonnie, R. J., Stroud, C., & Breiner, H. (2015). *Investigating the health and well-being of young adults*. Washington D.C. National Academies Press.
- Boyle, M. P. (2017). Personal Perceptions and Perceived Public Opinion About Stuttering in the United States: Implications for Anti-Stigma Campaigns. *American Journal Of Speech-Language Pathology*, 26(3), 921-938. doi:10.1044/2017_AJSLP-16-0191
- CDC. (2016). *Adult obesity facts*. Retrieved from <https://www.cdc.gov/obesity/data/adult.html>.
- Fiore, H., Travis, S., Whalen, A., Auinger, P., & Ryan, S. (2006). Potentially protective factors associated with healthful body mass index in adolescents with obese and nonobese parents: A secondary data analysis of the third national health and nutrition examination survey, 1988-1994. *Journal Of The American Dietetic Association*, 106(1), 55-64.
- Flegal K. M., Carroll M. D. , Kit B. K., & Ogden C. L. (2012) Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999–2010. *Journal of the American Medical Association*, 307(5), 491–97.

- Gherman, A., Predescu, E., Iftene, F., & Cadariu, A. A. (2008). THE ROLE OF MEDIA IN ANTI-STIGMA CAMPAIGNS. ANTI-STIGMA CAMPAIGN: A BRIEF RESEARCH REPORT FOR OBSESSIVE COMPULSIVE DISORDER AND SPECIFIC PHOBIA. *Journal Of Cognitive & Behavioral Psychotherapies*, 8(2), 227-238
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, N.J.: Prentice-Hall.
- Ledford, V. A. (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* (Master's thesis). May
- Lewis, R. J., Cash, T. F., Jacobi, L., & Bubb-Lewis, C. (1997). Prejudice toward fat people: The development and validation of the antifat attitudes test. *Obesity Research*, 5(4), 297-307.
- Náfrádi, L., Nakamoto, K., & Schulz, P. J. (2017). Is patient empowerment the key to promote adherence? A systematic review of the relationship between self-efficacy, health locus of control and medication adherence. *Plos ONE*, 12(10), 1-23.
doi:10.1371/journal.pone.0186458
- National Academies of Sciences, Engineering, and Medicine. 2016. *Ending Discrimination Against People with Mental and Substance Use Disorders: The Evidence for Stigma Change*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/23442>.
- O'Connor, A. (2012, September). 70% of Students Gain Weight During College: Study. *Health*.

- Ogden, J. & Clementi, C. (2010). The experience of being obese and the many consequences of stigma. *Journal of Obesity*, doi: <http://dx.doi.org/10.1155/2010/429098>.
- Puhl, R., Luedicke, J., & Lee Peterson, J. (2013). Public Reactions to Obesity-Related Health Campaigns: A Randomized Controlled Trial. *American Journal Of Preventive Medicine*, 45(1), 36-48. doi:10.1016/j.amepre.2013.02.010
- Roach, J. B., Yadrick, M. K., Johnson, J. T., Boudreaux, L. J., Forsythe, W. A. 3rd, & Billon, W. (2003). Using self-efficacy to predict weight loss among young adults. *Journal of the American Dietetics Association*, 103(10), 1357-1359.
- Rovniak, L. S., Anderson, E. S., Winett, R. A., & Stephens, R. S. (2002). Social cognitive determinants of physical activity in young adults: A prospective structural equation analysis. *Annals of Behavioral Medicine*, 24(2), 149-156.
- Sikorski et al. (2011). The stigma of obesity in the general public and its implications for public health – a systematic review. *BMC Public Health*, 11(1), 661-668.
doi:10.1186/14712458-11-661.
- Smith, R. A. (2011). Stigma communication and health. In T. L. Thompson, R. Parrott, & J. Nussbaum (Eds.), *Handbook of Health Communication (2nd ed., pp. 455 – 468)*. London: Taylor & Francis.
- Strahan, R. & Gerbasi, K. C. (1972). Short, homogenous versions of the Marlow-Crowne social desirability scale. *Journal of Clinical Psychology*, 28(2), 191-193.
- Watson, A. C., Corrigan, P., Larson, J. E., & Sells, M. (2007). Self-stigma in people with mental illness. *Schizophrenia Bulletin*, 33(6), 1312-1318.

Witte, K. (1992). Putting the fear back into fear appeals: The Extended Parallel Process Model.

Communication Monographs, 59, 329-349.

Woekel, E., Ebbeck, V., R. Y., Readdy, T., Kin-Kit, L., Hyo, L., & Cardinal, B. J. (2013).

Physical activity, nutrition, and self-perception changes related to a university "Lifetime Fitness for Health" curriculum. *Physical Educator*, 70(4), 374-394.

Xu, X. (2009). Health motivation in health behavior: Its theory and application. *UNLV Theses,*

Dissertations, Professional Papers, and Capstones, 42. Retrieved from

<http://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1044&context=thesesdissertations>.

Appendix A- Study Questionnaire

Thank you for agreeing to participate in the Health Campaigns study. We first need to collect some basic information from you, the types of things you would normally report at a doctor’s visit.

I identify as:

Male

Female

Other

Please indicate your age.

Please indicate your height.

- 4’9” or shorter 1
- 4’9”-4’10” 2
- 4’11”-5’0” 3
- 5’1”-5’2” 4
- 5’3”-5’4” 5
- 5’5”-5’6” 6
- 5’7”-5’8” 7
- 5’9”-5’10” 8
- 5’11”-6’0” 9
- 6’1”-6’2” 10
- 6’3”-6’4” 11
- 6’5” or greater 12

Please select 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	251-260
261-270	271-280	281-290	291-300	301-310	Greater than 310		

Please indicate your Race.

Caucasian

African American

Asian American

Latino/Latina

Native American

Pacific Islander

Other (please specify)

Please indicate your year in college.

Freshman

Sophomore

Junior

Senior

Other (please specify)

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

Yes/No

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

Yes/No

Have you consumed alcohol in the last 7 days?

Yes/No

STUDENTS ARE THEN RANDOMLY ASSIGNED TO VIEW EXPERIMENTAL OR CONTROL CONDITION POSTER.

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
------------------------	--------------------------	------------------------	--------------	---------------------	-----------------------	---------------------

I am interested in learning more about working out at the campus recreation center.

I would like to learn more about physical fitness programs offered at the campus recreation center.

I would like to know more about special programming for students new to physical fitness at the campus recreation center.

The poster motivates me to workout at the campus recreation center.

The poster makes me want to workout at the campus recreation center.

The poster encouraged me to workout at the campus recreation center.

The poster made me want to plan to work out at the campus recreation center.

The poster did not motivate me to workout at the campus recreation center.

The poster did not make me feel like working out at the campus recreation center.

Now we would like to know what you thought about the poster you viewed.

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

I felt that the poster was objectionable.

I felt that the poster was offensive.

I felt that the poster was insulting.

I felt that the poster was hypocritical.

I felt that the poster was effective.

I felt that the poster was unhelpful.

I felt that the poster was insensitive.

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 1	Moderately Disagree 2	Slightly Disagree 3	Neutral 4	Slightly Agree 5	Moderately Agree 6	Strongly Agree 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 find ways to exercise that I enjoy.

I am able to do stretching exercises.

I am able to keep from getting hurt when I exercise.

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 how you perceive body 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

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 people lack self-control when they are overweight.

Overweight people don't care about anything except eating.

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.

I prefer not to associate with overweight people.

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

If bad health conditions happen to overweight people, they deserve it.

Society should respect the rights of overweight people.

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.

Appendix B- Visual Images

These people are as real as most New Year's resolutions to workout.
The good news is that you still have plenty of time before summer to get healthy.



What's holding you back?

Everybody can exercise!

Start making **real** progress today!



Image 1. Fit couple with no efficacy statement.

These people are as real as most New Year's resolutions to workout.
The good news is that you still have plenty of time before summer to get healthy.



What's holding you back?

Everybody can exercise!

All you need to start is a body and a good playlist. You got those, **you got this!**

Start making **real** progress today!



Image 2. Fit couple with efficacy statement.

These people are as real as most New Year's resolutions to workout.
The good news is that you still have plenty of time before summer to get healthy.



What's holding you back?

Every **BODY** can exercise!

Start making **real** progress today!



Image 3. Visual manipulation of obese couple with no efficacy statement.

These people are as real as most New Year's resolutions to workout.
The good news is that you still have plenty of time before summer to get healthy.



What's holding you back?

Every **BODY** can exercise!

All you need to start is a body and a good playlist. You got those, **you got this!**

Start making **real** progress today!



Image 4. Visual manipulation of obese couple with efficacy statement.