WEIGHTISM: AN EXPLORATION OF UNIVERSITY EXERCISE SCIENCE STUDENTS’ VIEWS OF OBESITY

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WEIGHTISM: AN EXPLORATION OF UNIVERSITY EXERCISE SCIENCE STUDENTS’ VIEWS OF OBESITY

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Dissertation

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ABSTRACT

The prevalence of obesity stigmatization and discrimination is powerful, socially acceptable and widely under-explored. It has been well documented over the past two decades that people of size are targets of discrimination. With the escalating trend of obesity and vast documentation of weightism, future exercise professionals will treat and assist many patients of size. This study investigated the views of students’ towards obesity and weight management treatments in a first year Exercise Science course. Q Methodology was chosen as a method to explore and measure students’ subjectivity. Measuring subjectivity can be difficult to quantify especially when addressing sensitive material such as negative or discriminatory perspectives. The statement of the problem consists of a two-fold agenda exploring students’ views and implementing Q Methodology as a needs assessment to identify areas of obesity education that may be considered for potential modifications within Exercise Science curricula. This study aims to empirically assess differing views and report first-year university students’ perspectives of obesity, within an introductory exercise science course, as a starting point to determine if additional educational strategies should be implemented within the undergraduate exercise science curricula. Providing a robust education for pre-professional students is critical and in the process, it is a priority to help minimize possible obesity bias and discrimination. Understanding and evaluating students’ views towards course content material promptly during the undergraduate studies may significantly facilitate threading awareness and exposure of weightism early and
continuously throughout the undergraduate program. It is essential for students (pre-professionals) to be educated regarding extensive issues of obesity care while being sensitive to treatment options. Identifying discriminatory or unconscious bias among students is the first step. Subsequently, developing mechanisms and strategies for educators to increase bias awareness for obesity acceptance must follow.

The focus on students’ subjective perspectives related to obesity has received unduly scarce attention in previous studies. This lack of attention may be partially caused by difficulties in measuring subjectivity. This current study addressed the challenge by developing an analytical approach using a robust concourse that increased the precision of exploring views. This study revealed first-year university students’ views of obesity and demonstrated how Q Methodology can be used as a needs assessment tool in Exercise Science undergraduate program.
DEDICATION

I dedicated this dissertation to my family, both under my roof and north of the border. To my children, Abigail Emily and Ian Johann, you have innocently taught me so much. Despite our crazy overscheduled lives, it is through the lense of children that you have guided me to relish the presence with inquisitiveness. Your tender souls are filled with enduring love and this has been my fuel of motivation. To my husband Bob who managed to support my journey as a doctoral student with your capricious law enforcement shiftwork, I am forever grateful. Since a young child, I have been commonly described as strong-minded, stubborn, determined, tenacious and strong-willed and even a pain in the a$$$. Thank you to my loving parents, Wally and Donna Simpson, for your patience and endless love for without these bold characteristics you blessed me with, this doctoral endeavor may never have been completed. This dissertation is the product of love and support from all of you. And, I am thrilled that my family can now reclaim our dining room table!
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tussled with the devoted friendship of Carrie Fister. Late night assignments, meeting each other in hockey arenas to complete stats assignments and many productive lunch dates made this journey less grueling. Last but not least is my family who has helped me lug my writing materials through hundreds of miles of hockey tournaments, hotels, parking lots and coffee shops so I could juggle the identity of Mum and doctoral student. Their support and love was always offered through cups of tea, late night snacks and courteous inquiries ‘what page are you on now, Mum?’ To my children Abigail and Ian, your vitality and enthusiasm has provided enduring impetus. To my husband Bob, the years as a doctoral student have surfaced new identities for both of us. Quiet time to reflect on the power of prayer and perseverance; for the acceptance that if God brings us to it, he will bring us through it.

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CHAPTER I
THE PROBLEM

“When the social justice community unwittingly participates in anti-obesity rhetoric, its existence is further perpetuated, and fat people are left without allies – who will advocate for their acceptance and dignity if fat people themselves have an internalized anti-fat bias?” (Puhl, Moss-Racusin, & Schwartz, 2007)

This chapter presents the problem and research questions which are developed within this chapter. In addition, the researcher discusses the nature of the study, significance of the study, delimitations, and definitions of operational terms. A brief review of obesity prevalence, medical weight loss treatments, weightism, exercise science training, curricula design & evaluation, and Q Methodology are also included in this chapter.

Nature of the Study

The American Medical Association (2013) procured the diagnosis of obesity as a disease (not only a condition) to facilitate recognition of our nations ongoing obesity epidemic (Beal, 2013). In 2014, the World Health Organization reported that approximately 1.9 billion adults (39%) worldwide were overweight and over 600 million adults (13%) were obese (WHO, 2015). In clinical practice, both overweight and obesity are diagnosed by body mass index (BMI), representing a measurement of an individuals weight for their height (Wyatt, 2013). The development of evidence-based clinical
practice treatments of medical obesity includes: behavioral therapy, dietary consultation, physical activity, pharmacotherapy, and bariatric surgery. Due to the rising prevalence of obesity and the high failure rate of non-operative approaches to weight management, bariatric operations are increasing worldwide (Azizi, 2013). Healthcare provider teams working with bariatric patients (board certified surgeons, physician assistant, registered nurse, registered dietician, psychologist, and exercise physiologist) require specialized training on the multifactorial comorbidities of obesity.

Weight discrimination (weightism) is the unfair treatment based upon preconceived judgment of body size. Despite treatment options available for patients of size, weightism among healthcare settings is pervasive as negative attitudes towards obese persons are socially acceptable (Puhl & Heuer, 2010). Weight stigmatization can lead to social identity complications. The treatment of obesity is multifactorial and complex and experiencing weight bias, stigmatization and prejudice may obstruct patients’ weight loss success (Bocquier et al., 2005, Thuan et al., 2005, Befort et al., 2006). Multiple studies have substantiated the existence of weightism among multitude of healthcare professions.

Of particular interest, is the role of the Clinical Exercise Physiologist whose ability to delivery therapeutic exercise interventions in conjunction with other obesity treatments has been under-explored. Exercise therapy plays an important role in the mechanism of care for numerous chronic diseases such as obesity. Patients exposed to weightism inequities may influence reduced quality and outcome of care. Academic programs, in preparation for therapeutic exercise careers, begin with bachelor level curriculum in Exercise Science. The Commission on Accreditation of Allied Health
Education Programs (CAAHEP) defines Exercise Science as the study that is integrated into the academic preparation for professionals to work in the health and fitness industry, and are skilled in evaluating health behaviors and risk factors, conducting fitness assessments, writing appropriate exercise prescriptions, and motivating individuals to modify negative health habits and maintain positive lifestyle behaviors for health promotion. Identifying and addressing unfavorable negative attitudes at the pre-professional (student) level of training is an important mechanism for strengthening healthcare providers views of obesity (Teal et al., 2012, Wolf et al, 2010).

The National Health and Nutrition Examination Survey estimates that half of the United States population is either overweight or obese and many programs note that successful reduction of obesity necessitates a change in societal attitudes (Ogden, Carroll, Kit, & Flegal, 2014). During the formative years of pre-professional education, students’ discriminatory attitudes and beliefs are commonly unmindful to personal stigmatization towards obesity (Puhl & Brownell, 2001). Bias existing within the student population represents the vital need for curriculum to commence with recognizing and identifying negative attitudes. Both students and professionals working in health-related settings may benefit from self-awareness of personal bias linked to the identification of negative weight-related stigmas of obesity (Puhl, Luedicke, & Grilo, 2014). The common thread in weightism studies is the concern that healthcare professionals’ views of obesity may affect their clinical judgment and may deter obese individuals from seeking medical advice. Providing a robust education for pre-professional students is critical and in the process, it is a priority to help minimize possible obesity bias and discrimination.
Ramlo (2015b) explains that assessment in higher education is essentially to identify not only student learning but also how well a program impacts a student. Johns (1991) provides rationale that identifying elements of students needs, educators are able to provide students with specific course materials for success. Needs assessments are crucial in education as the process leads to changes in practice (Grant, 2002). It is essential to effectively and efficiently assess learners’ needs to identify problems or aspects of curriculum that can provide meaningful contribution to solving the problem (Kern, 2009). Typical program assessments incorporate systematic collection of information related to student learning, course learning outcomes and program outcomes (Ramlo, 2015b) and for continual improvement in educational experiences (Kern, 2009). McNeil et al., (2005) discusses that the needs assessment drives the evaluation for obtaining if there are discrepancies between what should be and what is.

Assessments employing common Likert-scale survey frequently results in a loss of meaning (McKeown (2001). Q methodology was created to study subjectivity (Brown, 1980; Stephenson, 1953) and it can be viewed as a research or investigatory tool that offers insights often different from those that can be obtained through R methods (Brown, Durning, Selden, 2008). Q methodology is a mixed-method, providing data that reveals student perspectives. Q Methodology is an epistemologically versatile technique, which provides a unique process to measure and assess human views. Q enables researchers to ascertain, both quantitatively and qualitatively, the various similarities and differences of viewpoints within a group (Ramlo, 2008). Q can be used to describe various perspectives in ways that provide insight for program assessment (Ramlo, 2015b, Ramlo & Newman,
Students’ viewpoints may be important to educators developing and designing exercise science curricula.

Understanding and evaluating students’ views towards course content material at the beginning of the course may significantly facilitate threading awareness and exposure of weightism early and continuously throughout the undergraduate program. It is critical that exercise science students receive adequate exposure and training with diverse clientele populations. Reducing weight bias and discrimination for pre-professionals has the potential to impact patient-care of weight management related outcomes. The prevalence of obesity stigmatization and discrimination is powerful, socially acceptable and widely under-explored.

Purpose of the Study

The purpose of this study was to explore the subjectivity of first-year university exercise science students’ views of obesity and weight management treatments and to investigate the use of Q methodology as a needs assessment tool within an Exercise Science program at a public Midwestern university. Understanding students’ views of obesity leads to awareness of issues that may require educational strategies within the Exercise Science curricula.

Statement of the Problem

Despite the increasing prevalence of obesity, negative societal attitudes have not attenuated (Puhl & Heuer, 2009). It has been well documented over the past two decades that people of size are targets of discrimination. This study investigated the views of students’ towards obesity and weight management treatments in a first year Exercise Science course. With the escalating trend of obesity and vast documentation of
weightism, future exercise professionals will treat and assist many patients of size. Negative views of professionals may create a barrier to providing quality care. Q Methodology was chosen as a method to explore and measure students’ subjectivity. Measuring subjectivity can be difficult to quantify especially when addressing sensitive material such as negative or discriminatory perspectives. The statement of the problem consists of a two-fold agenda exploring students’ views and implementing Q Methodology as a needs assessment to identify areas of obesity education that may be considered for potential modifications within Exercise Science curricula. This study aims to empirically determine and describe the differing views of first-year university exercise science students about obesity, within an introductory exercise science course, as a starting point to determine if additional educational strategies should be implemented within the undergraduate exercise science curricula.

Research Questions

Specific research questions of this study are:

1. How many unique views about obesity and weight management exist among students enrolled in a freshman level exercise science course at a large public university?

2. What consensus views about obesity and weight management exist among students enrolled in a freshman level exercise science course at a large public university?

3. What differentiates the views of obesity and weight management among students enrolled in a freshman level course?
4. Can the views that emerge provide a needs assessment that can lead to curricula improvements in an exercise science program?

Delimitations

Participants in the study consisted of students enrolled in a freshman level Introduction to Exercise Science course, which is a course primarily comprised of first-year students. Demographic information such as race and nationality was not considered important in this study because the researcher is interested in the types of perspectives that exist without regard to such demographic information. Additional demographic variables such as age, gender, weight, exercise habits and BMI may be considered in the final analysis. The researcher is solely concerned with the types of students’ views in this first-year course at the present time.

Definitions of Operational Terms

- **Age**: chronological age in years, self-reported of students’ who participated in the study
- **BMI**: Body Mass Index is calculated using self-reported height and weight, body mass (weight) divided by the square of body height and expressed as kg/m$^2$ BMI provides a classification to categorize body fat for both men and women.
- **Concourse**: consists of broad range of communications surrounding the topic in the form of statements (Ramlo, 2015c)
- **Conditions of Instruction**: Set of instructions, provided by the researcher to participants, for performing the Q-sort. Example: “Sort the statements based upon your view of the use of obesity.” (Ramlo, 2015c)
• Curriculum: courses in a school, college, etc., or a particular course of study in one subject (Cambridge Dictionary, 2015)

• Exercise Science: undergraduate Bachelor’s degree, four-year academic program that encompasses a wide variety of disciplines including: Biomechanics, Sport Nutrition, Sport Psychology, Motor Control/Development, and Exercise Physiology. The study prepares for work in health & fitness industry, corporate, commercial, community and health-care settings evaluating health behaviors, risk factors, fitness assessments, exercise prescriptions and motivation to promote positive lifestyle behaviors for health promotion (CAAHEP, 2015)

• First-year university students: self-reported university rank based on completion of college credits, The University Akron defines freshman between 0-29.9 credit hours earned

• Gender: self-reported of students’ who participated in the study, refers to attitudes, feelings, and behaviors that a given culture associates with a person’s biological sex (APA, 2011)

• Needs assessment: is a process of evaluation that indicates and identifies if sufficient changes should be implemented in a program (McNeil et al., 2005)

• Obesity: is a chronic disease, defined as excess adipose (fat) tissue. Excess adiposity causes increased levels of circulating fatty acids and inflammation that can lead to health consequences (Obesity Society, 2015)

• P-Set: Chosen participants, often referred to as sorters, those who perform the Q-sort (Ramlo, RIS Qual Appr)
• Person of size: commonly used term used to describe a person who is significantly overweight; obese; fat. (Obesity Society, 2015)

• Q Sample: set of statements; selected from the concourse, the Q-sample is representative of the communications within the larger concourse (Ramlo, 2015c)

• Q Sort: is the process where participants consider each numbered statement within the Q-sample and order them based upon their preferences, likes, dislikes, into a grid provided by the researcher (Ramlo, 2015c)

• Weightism: prejudice or discrimination against people based on body size (Obesity Society, 2015).

Summary

The prevalence of obesity stigmatization and discrimination is powerful, socially acceptable and widely under-explored. Exercise science students’ study and practice to become professional clinicians, coaches, or personal trainers. Regardless of the role or title, challenges exist for clinical exercise physiologists working with patients of size. Puhl & Wharton (2009), documented that discriminatory bias based on physical size may become a barrier impairing success of health promotion. Negative perceptions may impact the clinician-client relationship, which could reduce effectiveness of care and success of adherence (Aronne, Nelinson, & Lillo, 2009; Puhl & Wharton, 2007).

Exercise clinicians must be knowledgeable regarding obesity, treatment options, and bariatric surgeries while providing patient-centered care.

Providing a robust education for pre-professional students is critical and in the process, it is a priority to help minimize possible obesity bias and discrimination. Understanding and evaluating students’ views towards course content material promptly
during the undergraduate studies may significantly facilitate threading awareness and exposure of weightism early and continuously throughout the undergraduate program. It is essential for students (pre-professionals) to be educated regarding extensive issues of obesity care while being sensitive to treatment options. Exercise clinicians’ fostering weight management and weight loss with patients of size maintains a role in both surgical and non-surgical obesity treatments striving for positive outcomes. The role of curricula within exercise science programs should aim to reduce social acceptability of weight bias (Puhl & Heuer 2007). Identifying discriminatory or unconscious bias among students is the first step. Subsequently, developing mechanisms and strategies for educators to increase bias awareness for obesity acceptance must follow.

The focus on students’ subjective perspectives related to obesity has received unduly scarce attention in previous studies. This lack of attention may be partially caused by difficulties in measuring subjectivity. This current study addresses the challenge by developing an analytical approach using a robust concourse that increases the precision of exploring views. This study will explore, reveal and describe first-year university students’ views of obesity and demonstrate how Q Methodology can be used as a needs assessment tool in Exercise Science undergraduate program.
CHAPTER II
LITERATURE REVIEW

“Obesity discrimination is prevalent throughout society and has been called the last acceptable form of prejudice”
(Chambliss et al, 2003, Puhl et al, 2001)

In this chapter, I will provide a review of literature concerning the broad research topics relevant to obesity: prevalence of obesity, fat bias, society stereotyping within professions, tools used to measured obesity bias and finally the importance of obesity education for students pursing a degree in exercise science. Specifically, I critique the importance of understanding how anti-fat views towards obesity may hinder weight management treatments by clinicians.

Prevalence of obesity

The definition of obesity by the Expert Panel on the Identification, Evaluation, and Treatment of Overweight in Adults (2014) states that it is a complex multifactorial chronic disease that develops from an interaction of genotype and the environment (Jensen et al., 2014). The comprehension of how and why obesity develops is incomplete, but involves the integration of social, behavioral, cultural, physiological, metabolic and genetic factors (Clinical Guidelines, 1998). Obesity prevalence has
increased dramatically since the 1970’s (Ogden, 2013; Ogden et al., 2014; Flegal et al. 2012). The Centers for Disease Control and Prevention (CDC) states that obesity is an “epidemic” associated with numerous health risks such as type 2 diabetes, heart disease, stroke, and hypertension (U.S. Department of Health and Human Services 2011). The National Health and Nutrition Examination Survey (NHANES) state that obesity prevalence has increased dramatically, more than two-thirds (68.5%) of adults in the US were either overweight or obese in 2011-2012. The most recent data from Flegal (2012), indicate that 63.7% of adult women and 73.9% of adult men are classified as overweight or obese. In 2013, the American Medical Association, in support of scientific evidence, officially recognized obesity as a disease. The recognition of this diagnosis was implemented to emphasize attention to the obesity epidemic and assist in facilitating obesity treatment and prevention strategies (American Medical Association, 2013). Aronne, Nelinson & Lillo (2009), consider obesity a “pandemic” which is high and increasingly prevalent worldwide. In 2014, the World Health Organization reported that approximately 1.9 billion adults (39%) worldwide were overweight and over 600 million adults (13%) were obese (WH0, 2015). In clinical practice, both overweight and obesity are diagnosed by body mass index (BMI), representing a measurement of an individuals weight for their height (Wyatt, 2013).

BMI is calculated using accurate measurement of height and weight. This index is computed as the body weight (kg) divided by the stature (height [m]) squared (wt/ht²) (Flegal, 2012). According to the CDC (2012), overweight and obesity are both labels for ranges of body mass. Both terms are considered greater weight than what is healthy for a given height and shown to increase the likelihood of certain diseases and health
problems. Overweight for adult is defined as a BMI of 25.0 kg/m$^2$ to 29.9 kg/m$^2$ and obesity as a BMI of 30.0 kg/m$^2$ or higher defined by the National Heart, Lung, and Blood Institute (NHLBI) Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults (1998).

Several levels of obesity risk can be identified using the index as recommended by the NHLBI guidelines. The further subdivisions of obesity are: grade 1 (BMI 30-34.9 kg/m$^2$), grade 2 (BMI 35.0-39.9 kg/m$^2$) and grade 3/Extreme obesity (≥40 kg/m$^2$). It is important to note that the pathology of obesity stems from increased size and number of fat cells. Classification is based on the number of adipocytes, on the regional distribution of body fat, or characteristics of localized fat deposits (Bray, 2004). The number of fat cells can be estimated from the total amount of body fat. BMI does not directly measure body fat however; it correlates with the amount of body fat (CDC, 2012). Based on population basis, BMI represents a measure of weight for height and is highly correlated with the percentage of body fat (Meeuwsen, 2010).

BMI is one indicator to identify potential health risk associated with overweight or obesity. It is important to measure the distribution of subcutaneous versus visceral fat distribution (Bray, 2004; Bray et al., 2012). The NHLBI guidelines recommend employing additional techniques for body fat estimations. The ratio of waist circumference divided by hip circumference waist-hip ratio (WHR) was suggested by Vague in 1948. WHR identifies abdominal fat as a predictor of risk for obesity-related diseases. Waist circumference alone also provides criterion for evaluating the contribution of fat distribution. Waist size that is greater than 35 inches for women or greater than 40 inches for men correlate with higher health risk from overweight and
obesity (NHLBI, 2012). In addition, reliable estimates of visceral fat can be made using computed tomography (CT), dual-energy absorptiometry (DEXA), ultrasound, or magnetic resonance imaging (MRI).

BMI $\geq 25$ kg/m$^2$ has many known negative health costs, especially when combined with abdominal obesity, particularly visceral fat. These include: increased cardiometabolic risk with associated diseases and disorders such as cardiovascular disease, type 2 diabetes, coronary heart disease, degenerative joint disease, certain cancers, nonalcoholic fatty liver disease, nonalcoholic steatohepatitis, gallbladder disease, hypertension, endocrine changes, obstructive sleep apnea, altered pulmonary function, skin alterations and possible psychological dysfunction (Aronne, Nelinson & Lillo, 2009; Bray, 2004, 2012; NHLBI Obesity Task Force, 1998).

**Medical Weight Loss Treatments**

Development of evidence-based clinical practice guidelines have been established by the Endocrine Society, The Obesity Society, the European Society of Endocrinology and the NHLBI Clinical Guidelines which advise that treatment for obesity consists of a two-step process entailing both thorough assessment and treatment (Apovian et al., 2015).

Assessment, as stated above, is calculated with identifying BMI, waist circumference and risk factor status in conjunction with patients’ motivation for weight reduction. Treatment for weight loss and weight management is most successful by using combined medical interventions of dietary therapy, physical activity, and behavioral therapy. Clinical guidelines advise that combination therapy intervention be maintained for at least 6 months before considering pharmacotherapy. The American Heart Association/American College of Cardiology/The Obesity Society (AHA/ACC/TOS)
advocates this multifactorial approach in the treatment of obesity, with comprehensive lifestyle modification as the foundation for weight loss, and using adjunctive anti-obesity pharmacotherapy and/or bariatric surgery when appropriate (Jensen et al., 2014).

Treatment options in accordance with AHA/ACC/TOS and the Endocrine Society Clinical Practice Guidelines support lifestyle modification (combination of diet, physical activity, and behavioral treatments) as central mechanisms for weight management. These current first line treatments for obesity guidelines propose initial weight loss of 5%-10% of body weight within the first 6 months (Patel, 2015). The NHLBL (1998) continues to provide the framework that pharmacotherapy medications may be useful in treatment to help reinforce behavioral intentions that lead to lifestyle changes (Bray & Ryan, 2014). Long-term anti-obesity pharmacotherapies for the management of obesity currently have 2 FDA-approved agents and 4 short-term FDA-approved agents, which are indicated for patients with BMI ≥30 kg/m² or BMI ≥27 kg/m² with the presence of comorbidities associated with obesity. All approved agents (with the exception of Orlistat) mechanism of action is through regulating appetite (Patel, 2015). The two long-term anti-obesity pharmacotherapies are Lorcaserin (trade name Belviq) and Orlistat (trade name Xenical). Orlistat is the longest FDA-approved pharmacotherapy medication since 1998. Orlistat is a pancreatic lipase inhibitor that reduces intestinal digestion of fat. The four FDA-approved anti-obesity pharmacotherapies indicated for short-term use (less than 12 weeks) include: Phentermine-topiramate (trade name Qsymia), Diethylpropion, Phendimetrazine, and Benzphetamine (Apovian et al., 2015, Jensen, et al., 2014, Patel, 2015).
Due to high failure rates of medical obesity treatments (behavioral, dietary, physical activity and pharmacotherapy), the usage of bariatric surgery has grown dramatically (Kohn et al., 2009; Nguyen et al., 2011). Combined medical treatment has been successful for obesity, however, poor tolerance and adherence for many obese individuals is the primary reason why weight loss attempts often fail (Ekkekakis et al, 2006). Technological innovations have greatly contributed to the evolution and advancement of the growth of weight loss surgeries. Minimally invasive (laparoscopic) surgery has developed over the past two decades along with numerous surgical innovations (Agaba et al., 2008; Falcon & Manuel, 2012). The goal of bariatric surgery is the reduction of caloric intake though either restrictive or malabsorptive techniques. Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy, biliopancreatic diversion (BPD) and gastric banding are the four common surgical procedures. Currently, the most commonly performed procedures are RYGB and sleeve gastrectomy (Buchwald & Oien, 2013; Burke & Jing Wang, 2011; Eldar, Heneghan, Brethauer & Schauer, 2011; Reedy, 2009).

Bariatric surgery, to date, is the most effective treatment for morbid obesity (Eldar et al, 2011). Due to the rising prevalence of obesity and the high failure rate of non-operative approaches to weight management, bariatric operations are increasing worldwide (Azizi, 2013). Weight loss surgery is an option for clinically severe obesity (BMI ≥40 kg/m²) or with comorbid conditions and a BMI ≥35 kg/m², those who are motivated to lose weight but have not responded to lifestyle modification with or without pharmacotherapies (Jensen et al., 2014). The National Institutes of Health criteria for bariatric surgery include:
1. BMI 40 kg/m², or more than (100 pounds overweight for men & 80 pounds for women)
   OR
2. BMI 35 kg/m² to 39.9 kg/m² and at least two obesity-related co-morbidities
   (Type 2 diabetes, HTN, CAD, sleep apnea, respiratory disorders, non-alcoholic fatty liver disease, osteoarthritis, lipids, GI)
   AND
3. Inability to achieve a healthy weight loss sustained for a period of time with
   prior weight loss efforts (attempted and failed) with at least a 5 year weight
   history, and pass psychological and nutritional evaluations

According to the American Society for Metabolic and Bariatric surgery
(ASMBS), more than 30 obesity-related conditions show improvement post-surgery.
Comorbidities, such as type 2 diabetes, hypertension, dyslipidemia, cardiovascular
disorders, obstructive sleep apnea, renal disorders, and numerous others show resolution
or improvements from surgery (2008). Life expectancy has been shown to increase by
89% and reduce the risk of premature death by 40% (Ponstein, 2012).

The NIH, American College of Surgeons, and the ASMBS recommend that board
perform surgery certified surgeons at a center with a multidisciplinary team of experts for
follow-up care. The team of many qualified healthcare providers working with bariatric
patients (board certified surgeons, physician assistant, registered nurse, registered
dietician, psychologist, and exercise physiologist) requires specialized training on the
multifactorial comorbidities of obesity. The importance of physical activity counseling in
bariatric surgery plays a significant role in both pre- and post-operative care. Although
there are currently no evidence-based preoperative or postoperative physical activity
guidelines, the ABMBS and many other medical organizations recommend mild exercise
before surgery and postoperative physical activity to be increased to moderate-intensity
for long-term weight loss and maintenance (Blackburn et al., 2009; King & Bond, 2013;
Weight management treatment & the patient-centric approach

Medicine is moving to a more patient-centric approach with interdisciplinary teams involved in the treatment of obesity. The Institute of Medicine (IOM) action plan set for the 21st century healthcare system identified “patient-centeredness” as a component in achieving quality health care. Patient-centered care does not have a universally accepted definition however; it has been summarized by many organizations to be both respectful and responsive to patient preferences and their needs. The overarching goal of patient-centered communication is to understand the patient, their perspective, psychosocial needs and to reach a shared understanding among practitioners, patients, and families. Patient-centered approach to healthcare creates a partnership where both the patient and physician share decision-making and supports the patient’s ability to participate in their own care. Bertakis et al. (2012) posit that using this approach has many methodological strengths including increased patient participation, reduction in patients’ anxiety, increased trust in their physician and diminished need for additional specialty referrals.

Using patient-centered communication with obesity and weight management requires an interdisciplinary approach (Fismer et al, 2012). Interdisciplinary professional teams working alongside obesity patients foster insights to patients’ perspectives. The transformation of healthcare from the current disease-based treatment toward preventative care is the goal of user-centric healthcare (Matheson et al, 2011). Empowering patients to take responsibility for their own health is accomplished with
trained interdisciplinary teams. The American Dietetic Association (2009) emphasizes that the weight management health care team should consist of a physician, registered dietician, exercise professional, and psychologist.

Weightism

The phenomenon of prejudice is vast and wide. It is known to limit opportunities, is associated with negative stereotypes, stems from power and impacts many dimensions of life. Crandall (1994), states that anti-fat prejudice is both significant, important and much like other prejudices of race and gender. Despite the increasing prevalence of obesity, negative societal attitudes have not attenuated (Puhl & Heuer, 2008). It has been well documented over the past two decades that people of size are targets of discrimination. Obesity discrimination is pervasive throughout society and has been called the last acceptable form of prejudice (Chambliss et al, 2004; Puhl et al, 2001).

Weight discrimination (weightism) is the unfair treatment based upon preconceived judgment of body size. Weight stigmatization can lead to social identity complications. In obesity literature, researchers use synonyms for weight discrimination & weight bias such as anti-fat prejudice, weight stigma, anti-fat attitudes ranging from negative attitude toward, belief about (stereotype), or behavior against (discrimination) people of size (Danielsdottir, O'Brien, & Ciao, 2010). Other terms such as fat phobia and weight-based prejudice are also common.

Over time, there has been a documented 66% increase among weight-based discrimination of anti-fat prejudice, which is comparable to race-based prejudice (Andreyeva et al., 2008; Puhl et al., 2008). There are currently no federal laws to prohibit discrimination against obese individuals. Reducing weight bias will help obese persons
receive equitable treatment but it requires significant public health policy and public support to enact antidiscrimination legislation (Puhl & Heuer, 2011). Obesity stigmatization has serious risks to both psychological and physical health. Stigma generates health disparities that may produce complications in providing effective obesity prevention and weight management (Puhl et al, 2010).

Weightism most certainly intersects as a form of discrimination. Weightism has been called the new racism. Crandall (1994), declares that ‘anti-fat attitudes appear to be currently at the stage that racism was some 50 years ago: overt, expressible, and widely held’ (p. 891). Weightism intersects with other forms of oppression such as gender, race and sexual orientation; the term ‘symbolic weightism’ (Stockton, 2010) has also been used to describe the parallel to ‘symbolic racism’. Bento et al. (2012) describe weight-based discrimination as a deeply negative attitude toward the obese that is usually developed early in life, long-lasting and difficult to change. Weight discrimination (as is racism, sexism, ageism, classism, heterosexism, ableism) may also be framed as a social justice issue. Valuing diversity and acknowledging a just society, common humanity, as the goal of social justice is striving for the right to equitable treatment.

Not only does weightism intersect as a form of discrimination, it also aligns with the act of oppression. Oppression has been described by and assumed as systematically inflicting harm on people (Harvey, 1999). Oppression is rooted, distorted and a morally inappropriate relationship of unequal power. Harvey (1999) identifies civilized oppression, occurring in daily relationships and experiences, through the act of inflicting harms, not involving physical violence, which may be invisible but morally serious phenomena. The immense danger of civilized oppression with obesity is detrimental.
There is a need for the ability to analyze hidden power to become aware of naïve concepts and skills to recognize patterns of inappropriate relationships and power. Harvey (1999) states the importance of making oppression more visible, needs to be focused throughout relationships within society, including the healthcare environment. Simply concentrating on the harm inflicted does not make progress. Oppression can be prevented only by reflective and active measures.

**Weight bias discrimination in healthcare**

Discriminatory antonyms such as weight bias, weight stigmatization and weight prejudice, are pervasive as negative attitudes toward obese persons which seem to be socially acceptable. Weight-related stigma among healthcare settings has been studied with physicians, nurses, psychologists, dieticians, and exercise professionals. Commonly, the sought after question is whether such biases among health professionals influence the quality and outcome of care.

There are numerous studies investigating the evidence of inequities in healthcare settings with negative perceptions of individuals with overweight/obesity. Physicians were examined (Fogelman et al., 2002, Epstein et al., 2005, Harvey et al., 2001) to determine their attitudes of obese patients. Physicians considered overweight and obese patients to be awkward, unattractive, noncompliant, weak-willed, lazy, lack motivation and self-indulgent. Physicians perceived that patients’ obesity was caused by behavioral problem of overeating and lack of physical activity. Swartz et al., (2003) and Teachman et al., (2001) both used the Implicit Association Test to assess implicit anti-fat bias among health professionals. Strong implicit anti-fat bias associated ‘fat people’ with negative attributes (bad, lazy) and ‘thin people’ with positive attributes (good,
motivated). Explicit belief endorsed that thin people were more motivated than fat people. Physicians’ views on motivation with obese patients (Bocquier et al., 2005, Thuan et al., 2005, Ogden et al., 2001, Befort et al., 2006) suggest that their perceptions of motivation and causes of obesity may obstruct the patient-doctor communication and relationship. Negative attitudes may lead obese persons to be hesitant in seeking medical care.

Nurses’ attitudes towards obese patients (Brown et al., 2006, 2007, Gujral et al., 2011; Hoppe et al., 1997, Zuzelo et al., 2006; Ponstein, 2012) demonstrate negative attitudes, common weight-based stereotypes, and the overarching belief that obesity stems from noncompliance. Nurses reported confidence in their ability to treat and provide weight loss information along with frustration with lack of motivation from obese patients.

Researchers examining dietitians views toward obesity (McArthur et al., 1997, Oberrieder et al., 1995, Berryman et al., 2006, Harvey et al., 2002, Puhl et al., 2008) found beliefs of overeating and diet noncompliance and negative attitudes such as poor self-control, low self-esteem, and insecurity among obesity persons.

Studies provide considerable evidence that weight bias is pervasive in the health care community. Negative perceptions of obesity and obese individuals within society and the medical community cause many disparities in care (Drury & Louis, 2002; Cade & O’Connell, 1991; Frank, 1993; Hoppe & Odgen, 1997; Price, Desmond, Krol, Synder, & O’Connell, 1987; Puhl & Brownell, 2001; Young & Powell, 1985). Findings share that nurses held pessimistic views of obese patients’ adherence and success with weight loss (Hoppe & Ogden, 1997). Nurses have some ambivalence about obesity and find it an
awkward issue to raise and discuss (Ponstein, 2012). Findings also disclosed negative attitudes such as weak-willed, sloppy, or lazy by physicians. Medical practitioners’ persistent negative beliefs regarding obesity have been linked with reluctance to treat obesity (Foster et al., 2003). Puhl and Brownell (2001) pungently state that care for obese individuals will improve as bias decreases. Despite the numerous studies that document the presence of weight-based inequalities, few researchers have identified interventions strategies (Wolf, 2010).

**Weight bias discrimination and students**

Similar findings with fitness professions, exercise science students, physical therapists and medical students have been observed; negative attitudes towards overweight and obese persons appear to be ubiquitous. The common thread in weightism studies is the concern that healthcare professionals’ views of obesity may affect their clinical judgment and may deter obese individuals from seeking medical advice.

Unfavorable attitudes about obese individuals have been reported in university dietetic majors and non-majors measured using an attitudinal scale (Berryman et al., 2006). Similar studies examining university students’ in a variety of disciplines revealed views towards obesity found anti-fat attitudes prevalent (Wolf, 2010; Soto et al., 2014; Peters & Jones, 2010; Fontana et al., 2013; McArthur & Howard, 2001; Chambliss, Finley & Blair, 2003; Greenleaf & Weiler, 2005). Welborn (2013) found no significant changes in obesity bias between dietetic students and practicing registered dietitians. Both students and professionals working in health-related settings may benefit from self-awareness of personal bias linked to the identification of negative weight-related stigmas of obesity (Puhl, Luedicke, & Grilo, 2014). Bias existing within the student population
represents the vital need for curriculum to commence with recognizing and identifying negative attitudes. Wolf (2010) suggests programs to help students identify their own individual obesity views using a scale such as the Fat Phobia Scale (Bacon, Scheltema, & Robinson, 2001).

Tools used to measure obesity bias

Documentation of obesity bias prevalence has been most often assessed using questionnaire methods and, as previously stated, has been reported in employment, healthcare, education and interpersonal settings. It can be difficult for adults to admit to prejudice; many scales have been implemented and validated to measure negative attitudes (Bacon, Scheltema & Robinson, 2000; Paluck & Green, 2009).

Numerous measures exist to assess beliefs and attitudes about obesity (Allison, Basile, & Yuker, 1991; Bacon, Scheltema & Robinson, 2000; Crandall, 1994; Crandall & Biernat, 1990; Foster, Wadden, Makris, & Davidson, 2003; Morisson & O’Connor, 1999; Robinson, Bacon, & O’Reilly, 1993; Teachman & Brownell, 2001). Commonly, weight bias attitudes are generally measured by surveys using semantic differential scales, ranking tasks, or attitudinal scales (Morrison & Travis, 2009). Semantic differential measures instruct participants to evaluate “fat people” and “thin people” on a point-scale with specific adjectives. Ranking tasks measurements show participants drawings portraying various types of people (e.g., obese, sitting in a wheelchair, limb brace, missing a limb and other variations) and the figures are then rank ordered according to their liking (Morrison & Travis, 2009). In the Handbook of Assessment Methods for Eating Behaviors and Weight-Related Problems (2009), the authors provide a review of attitudinal antifat scales using Likert-type response formats to measure attitudes and they
summarize the existing gap of information on reliability, validity and generalizability of many scales despite numerous tools and measures. Morrison et al. (2009) and Teachman & Mallett (2005) encourage researchers to explore other types of antifat assessments to fill these gaps of weight bias measurements.

Teachman and Brownell (2001) and Bacon, Scheltema & Robinson (2001) both designed semantic differential measures where participants rate adjectives to evaluate “fat people” and “thin people”. The Implicit Association Test (IAT) measures automatic attitudes using 7-point semantic differential scales to evaluate attitudes towards fat people relative to thin people (Teachman & Brownell, 2001). The Fat Phobia Scale (short form) consists of a 14-item semantic differential fat phobia scale using a five-point Likert-type format (Bacon, Scheltema & Robinson, 2001). Instruments such as these have been used in numerous studies but caution has been advised for researchers to consider content validity of adjectives, consistency, internal reliability, and construct validity. Additional validation is recommended as instruments used may provide limited assessment of participants (Morrison & Travis, 2009).

Attitudinal scales have also been commonly implemented to assess anti-fat prejudice. Crandall (1994), designed Anti-fat Attitudes Questionnaire (AFA) which contains 13 items using a Likert-type 0-9 format to measure anti-fat attitudes. The Anti-Fat Attitudes Scale (AFAS) consists of five items using a 5-point Likert-type response (Morrision & Connor, 1999). The Anti-Fat Attitudes Test (AFAT) is comprised of 47 items using a 5-point Likert-type scale which consists of three subscales: social/character disparagement (15 items), physical/romantic unattractiveness (10 items), and weight control/blame (9 items) combined with an additional 13 items (Lewis, Cash, Jacobi, &
Bubb-Lewis, 1997). Attitudes Toward Obese Persons Scale (ATOP) contains 20 items using a 6-point Likert-type format (Allison, Basile, & Yuker, 1991). In addition to attitudinal scales, the Beliefs about Obese Persons Scale (BAOP) (Allison, Basile, & Yuker, 1991) developed an additional measure to not only measure attitudes but also beliefs using a 10-items 6-choice Likert-type format. According to Morrison et al. (2009), the psychometric soundness of measures along with inconsistent patterns among studies using the scales raises the question of validity and variability. Exploring both attitudinal and behavioral anti-fat prejudice, it is necessary for more inquiry to use scale development displaying excellent psychometric properties.

A systematic review on published research relating to anti-fat prejudice, Danielsdottir, O’Brien, & Ciao (2010) suggest that new directions for researching anti-fat prejudice are urgently required. Additionally, there is lagging research addressing this prejudice and it is critical that new approaches with studies that adopt more rigorous experimental research designs and methodologies should be encouraged for effectiveness. Danielsdottir, O’Brien, & Ciao (2010) state that there is a shortage of published studies employing theoretical and methodological approaches. Paluck & Green (2009) also support the need for more rigorous research methods to seek to understand and remedy the social problems associated with prejudice. Therefore, it is essential, and most promising, to explore discriminatory obese views for not only examining the existence of prejudice but also to evaluate the need for reduction using theoretically driven empirical research. To understand and provide a means to formulate a reduction in bias, Paluck & Green (2009), state that researchers “must extrapolate well beyond the data, using theoretical presuppositions to fill in the empirical blanks” (pg. 19).
Theoretical perspective

The theoretical framework provides the philosophical basis of ones’ research, linking both theoretical aspects and practical components providing a mechanism for both investigation and the research process. Many doctoral candidates struggle aligning research questions, methods and findings with connecting theory with practice; this uncertainty warranted special attention that was investigated by Leshem & Trafford (2007). Leshem & Trafford emphasize that doctoral candidates must raise their level of thinking from only descriptive and content-based to meta-levels of conceptualization as conceptual appreciation plays a critical role in doctoral research. A plethora of models and theories can be found in the literature but only through focused study can rich insights be obtained, one must continue to embrace frameworks to build theoretical findings (Pettigew et al., 2001). Understanding my own personal paradigm helps to convey my thinking and how I see the world through my own perceptions and understanding. The acquisition of a paradigm provides a lens to see patterns and relations. Jonassen et al. (2005) states the theoretical framework guides the logic and explains that it (the framework) is the theory that is happening inside the mind of the researcher.

This study seeks to explore multiple perspectives of human meaning, or objectively measuring subjectivity, as such, achievable through philosophical, ontological, and epistemological framework of Q Methodology (Brown, 1980, 1992; Ramlo, 2015a). Ontology is derived from the Greek words onto (being) and logia (science of written or spoken discourse). Ontology is the study of anything involved within existence, of how something existed, the driving force inquiring the nature of
‘what’. Ontology stems from a branch of meta-physics, the study of first principles or the essence of things that is connected with human reality and phenomena of being.

Epistemology is concerned with knowledge, the theory of knowledge and in which we know something exists with the driving force inquiring to answer ‘how’ and ‘what’, the phenomena of knowing (Vasilachis de Gialdino, 2009). Methodology, concerned with more than just methods (technical aspects), is engaged in the interpretation of theoretical and philosophical context while providing an empirical means to access social phenomena (Stenner, 2008). Q is more than its technique (Q-sort) and its method (factor analysis) (Brown, 1993). Instead of, for instance, statistical significance or the simple structure of factor analysis, Q methodology is the pursuit for robust pragmatic results providing theoretical significance. Q is qualiquantology in nature; a complex mixture of qualitative and quantitative methodologies that builds phenomena based upon the exploration of perspectives (Newman & Ramlo, 2010; Stenner & Stainton-Rogers, 2004; Newman & Ridenour, 2008; Ramlo, 2015a).

This mixed methodology provides the framework for objectively studying subjectivity. Operant subjectivity can be systematically analyzed with Q, this crucial foundation occurs only when subjectivity is communicated. The ability to measure subjective behavior is what makes Q distinct (Stephenson, 1968). This ontological, and epistemological framework of Q Methodology not only provides the structure to explore the subjectivity of humans but also personally furnishes my position as researcher. I wear the identity of mother, wife, daughter, worker, and doctoral student and it is these familiarities that have led to my doctoral journey. Thus, through my experience as a
Clinical Exercise Physiologist employed in a hospital-based Bariatric Care weight loss clinic that bestowed my proficiencies with and around obesity.

The complexities of patient care united with inequities and stigmatization of obesity has directed the excursion of inquiry in my dissertation. Not only as a clinician but also as an educator have I witnessed adversity regarding obesity. As a college instructor teaching therapeutic exercise for chronic diseases, such as obesity, has surfaced disproportionate feedback by students related to obesity challenges. It is my desire to explore operant subjectivity to discover the how and why people think the way they do. Despite being only one person on this adventure, the potential impact for social change and acceptance of all can only begin when vigorous typologies have been explored. My positionality to delve into under-examined views seeking comprehension of how humans perceive weight management related issues is one of personal necessity. Understanding subjectivity may lead to formation of transformation.

The philosophical basis of Q places the researcher in a unique position, not only computing statistical significance as performed in quantitative research, but the ability to build theoretical significance through investigating various perspectives along abductory lines (Stephenson, 1961). The researcher is placed firmly within the data, differing than the role of researcher in psychology seeking pure objectivity. Q accepts the position of researcher using abduction as Charles S. Peirce (1839-1914) suggested, “abduction consists in studying the facts and devising a theory to explain them” (as cited in Watts & Stenner, 2012). The interpretation is an active process driven by the logic of abduction (Watts & Stenner, 2012). Exploring viewpoints using hand rotation permits the researcher to uncover discoveries and build theory from the interrelationships of sorts.
This framework distributes multifaceted mixed-methods of inquiry to study subjectivity. Reflecting on the aim of this study, employing the theoretical perspective of Q methodology frames this unique exploratory ontological framework enabling an interactive continuum using qualitative and quantitative methods. Q provides structure to reveal qualitative aspects of human behavior (Brown, 1980).

Stenner (2011) contends (as cited in Ramlo, 2015a) that:

Q operates with an ontology in which ultimate realities are neither subjects nor objects, but actual occasions of experience…This is no ordinary “mixing” of methods and it is precisely not a matter of object “natural world” being contrasted with a socially constructed and subjective “human world”: it is a qualiquantology. (p. 201)

Q methodology embraces a philosophy, which is different than R methodology, that has its foundation within the question of how subjectivity can best be studied with an answer that falls into the less traditional position of placing the internal standpoint of the observed as its center (Ramlo, 2015c). It is common that epistemology is intended to be the relationship between the observer and the observed however in Q, the belief is that only the observed can capture and reveal their subjectivity as represented by their Q sort (Stephenson, 1953). R methodology is data reduction technique that correlates items into factors based on external aspects of human behavior, which essentially, is the study of all that is objective (Brown, 1980). Q possesses an inherent epistemology with a series of well-defined stages (Brown, Durning, & Selden, 2008) with the focus of measuring subjectivity (Stephenson, 1935). Undoubtedly, it is with my situated knowledge, conceptual appreciation, along with this framework that I approach the empirical research of my dissertation.
The prevalence of obesity stigmatization and discrimination is powerful, socially acceptable and widely under-explored. The potential for weightism suppression requires public policy and implementation of widespread diversity education training. Threading obesity diversification into curricula may disseminate knowledge that will turn into social action. Reducing weight bias and discrimination for pre-professionals has the potential to impact patient-care of weight management related outcomes.

Exercise Science Curricula

Preparing Exercise Science students to become successful and valued members of the health care team begins at the academic level. Academic standards, by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), are implemented for both undergraduate curriculum in exercise science and graduate curriculum in exercise physiology through the Committee on Accreditation for the Exercise Sciences (CoAES). To ensure quality and reduce liability, the American College of Sports Medicine (ACSM) offers specialty certifications for exercise professionals. Future exercise professionals must possess specialized training within undergraduate Exercise Science curriculum learning about both healthy and high risk clients. The highly sought after certification, ACSM Certified Exercise Physiologist, aligns with undergraduate Exercise Science curriculums and students are eligible to sit for the certification upon completion of the Bachelor degree. Job task analysis (JTA) defines the major areas of professional practice. JTA requires training on pre-exercise participation health screenings, physical fitness assessments, interpretation of results, development of exercise prescriptions, behavioral and motivational strategies, fitness management, and
administration for employment in commercial, community, studio, corporate, university, and hospital settings.

Exercise professionals must also have academic exposure to population epidemiology, chronic diseases, rehabilitation, prevention, nutrition, behavioral modification and stress management strategies to effectively respond to exercise-related complications in allied health environments (Matheson, et al. 2011). Exercise therapy plays an important role in the mechanism of care for numerous chronic diseases such as cardiovascular disease, diabetes mellitus, kidney disease, cancer, hypertension, dyslipidemia, metabolic, immunological, neuromuscular, pulmonary, and orthopedic disorders. Therefore, thorough comprehension of exercise prescription and manipulation of exercise training variables is imperative in exercise science curricula.

The healthcare system is shifting towards using the patient-centered approach, focusing on disease prevention and health promotion; it is critical that exercise science students receive adequate exposure and training with diverse clientele populations. In addition to health and fitness concepts, curricula must recognize the significance of communication that is empathetic, individualized, patient focused, and non-judgmental to avoid squashing detrimental motivation and commitment (Fismer et al., 2012). Exercise professionals work in diverse interdisciplinary environments with registered dieticians, psychologists and physicians where efficient healthcare teams address patients and clients with numerous chronic conditions. Exercise science curricula must employ diverse teaching strategies and assessments such as written, experiential, problem-based, learning communities and technology infused education for adequate preparation of future allied healthcare professionals.
Educational curriculum needs

Pre-professional students require a rich educational foundation to comprehend the complexity of obesity. Obesity care, as explained in the definition of obesity, is multifactorial requiring effective teamwork from an array of specialized healthcare providers. The knowledge base is complex and layered to provide a comprehensive foundation for pre-professional students’ copious education relative to obesity care. Lubrano et al. (2010), indicate that obesity and the many dimensions of the disease be incorporated into undergraduate curricula addressing contemporary medicine, including surgical interventions. Behavioral approaches and modification are vital when implementing weight management programs in conjunction with increasing physical activity levels and decreasing energy intake (Donnelly et al., 2009). Preparing these pre-professionals to recognize the needs of obese clients through on-going needs assessment, realistic and measureable goals, risk stratification, and behavior modification, is essential for both effective weight management and weight loss. Comprehension of obesity stems from academic framework supporting a concrete understanding of cellular and molecular biology and pathophysiology (Ahima, 2011). Obesity care is complex and vast requiring pre-professional training and education to be mindful and receptive of evidence-based obesity treatments. Providing a robust education for pre-professional students is critical and in the process, it is a priority to help minimize possible obesity bias and discrimination. Understanding and evaluating students’ views towards course content material at the beginning of the course may significantly facilitate threading awareness and exposure of weightism early and continuously throughout the undergraduate program.
According to Ottenritter (2004), undergraduate curriculum is essential to addressing obesity awareness as students forge attitudes and ideas and shape their future conduct both personal and professionally. It has become increasingly crucial that educators maintain the role of creating transformative learning environments to minimize obesity bias (Rukavina & Li, 2008). It is imperative that recognition of weight discrimination is viewed as both a social injustice and public health issue. The role of curricula within exercise science programs should aim to reduce social acceptability of weight bias (Puhl & Heuer 2011). Identifying discriminatory or unconscious bias among students is the first step. Subsequently, developing mechanisms and strategies for educators to increase bias awareness for obesity acceptance must follow.

**Exercise Science Program Evaluation**

Curriculum design and development incorporating weight management and obesity should prepare students for the workforce. Ongoing program assessments are common in higher education for numerous motives such as program improvement, student learning, and accreditation (Ramlo, 2015b). Jonassen et al. (2005) provides rationale that identifying elements of students’ needs, educators are able to provide students with specific course materials for success. Needs assessments are crucial in education as the process leads to changes in practice (Grant, 2002). Typical program assessments incorporate systematic collection of information related to student learning, course learning outcomes and program outcomes (Ramlo, 2015b) and for continual improvement in educational experiences (Kern, 2009). Grant (2002) ascertains that assessment of students’ needs should identify both what students have experienced and what they know. The majority of tools used for needs assessment use quantitative
methods which generate computerized data covering wide ranging material and often unable to probe into personal agendas and opinions of individuals (Grant, 2002). Assessments employing common Likert-scale survey frequently results in a loss of meaning (McKeown 2001). According to Benesch (1996), needs analysis is a political and subjective process. Q methodology was created to study subjectivity (Brown, 1980; Stephenson, 1953). Q methodology is a mixed-method, providing data that reveals student perspectives. McKeown (2001) suggests that Q methodology offers a solution to Likert-scale surveys by providing descriptive results for each perspective that emerges.

The needs assessment process according to Kern (2009), supports that health professions develop curricula using a six-step approach for improvement, which is not linear, but a dynamic and interactive process. Kerns method illustrates the comprehensive approach which includes emphases on needs assessment. For the purpose of this study, steps #1 and #2 will only be addressed. The first essential element is to perform a targeted assessment of the learners. Step 1 Problem Identification and General Needs Assessment begins with identifying the problem of interest. In other words, explicitly identify whom the problem affects in relationship to curricula. This study seeks to explore first year university students’ views of obesity related topics in an exercise science curriculum. Step 2 Targeted Needs Assessment outlines learners’ strengths and weakness and learners environment for competencies of needs. Methods and resources for consideration on how curriculum developers will acquire a general needs assessment can vary but Kern states the decision on the method must suit the specific needs. Kern’s first two steps in the six-step approach to curriculum development provide strong rationale that can assist the curriculum developer/educators. Kern asserts that:
A well-done targeted needs assessment allows curriculum developers to provide specific information about learners and the learning environment that facilitates adoption of the curriculum by other institutions or training programs...by clarifying the characteristics of one’s targeted learners and their environment, the curriculum developer can help assure that the curriculum being planned not only addressed important general needs but also is relevant and applicable to the specific needs of its learners and their learning institution. (p. 38)

It is essential to effectively and efficiently assess learners’ needs to identify problems or aspects of curriculum that can provide meaningful contribution to solving the problem (Kern, 2009). McNeil et al., (2005) discusses that the needs assessment drives the evaluation for obtaining if there are discrepancies between what should be and what is. Ramlo (2015b) explains that assessment in higher education is essentially to identify not only student learning but also how well a program impacts a student. Results of assessments in education have potential to lead to informed decision making of modifications, revisions, and adaptations to better meet students needs and capabilities. Exploring views’ of obesity using a Q methodology needs assessment tool provides the opportunity to identity misconceptions, ideologies and bias, which may be addressed through transformation in exercise science curricula.

**Classroom transformation**

Noted by many as the most influential educational thinker, works by John Dewey express the importance of democratic ideals and social reform. John Dewey has numerous writings advocating for democracy in education. For Dewey, the professor is to deliver knowledge and cultivate the interests and experiences of the student to create social and interactive processes. It is Dewey’s educational theories that provide support that education and schooling are instrumental in creating social change and reform (My Pedagogic Creed 1897). In his work, *How we Think*, reflective thought (critical thinking)
is defined as “active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusion to which it tends” (Dewey, 1910). Students must be able to examine their beliefs and knowledge through honest inquiry (Dewey 1910 What is thought? In How We Think 1-13). Papadimos (2009), states that reflective thought is necessary for the promotion of equality and distinctiveness. Exercise science graduates have the potential to influence and support clients and patients to reach their health goals and physical ambitions. It is through social justice curricula that pre-professionals develop and adopt ‘open minded attitudes’ of all those with whom they work. Uncovering students’ views of obesity can be sensitive yet, imperative (Greenleaf & Weiller, 2005). Unconscious or hidden bias is also known as implicit stereotype. Implicit bias or stereotype is the unconscious attribution of particular qualities to a member of a certain social group (Greenwald & Banaji, 1995). Exploring and assessing how students view obese persons and obesity treatment interventions may begin to cultivate how to facilitate open-mindedness using curricula. Dewey’s progressive education supports that students learn by experience and reality both are achieved through interactions. Exploring students’ views provides a means for needs assessment discovery for both individual student and the educator. Dewey supports the notion that both teacher and student must learn together. Embracing Dewey’s thinking, exploring first-year university freshmen views’ of obesity unearths potential for classroom change striving for social justice.

It is important to synthesize that enhancing students’ obesity awareness along the undergraduate curriculum of exercise science also aligns with Duit & Treagust (2003) conceptual change framework of students’ pre-instructional conceptions towards
concepts. The active process of knowledge restructuring is rooted in the learning process of understanding the content which evolves into students’ development of conceptual change. Treagust & Duit (2008), explains that learners should play an active role in the process with intention to learn. This dissertation is not examining students’ changes in views but rather examining what views exist and if there is relevance in identifying students’ views.

Marcum (2009) recommends that the first step to changing bias is identifying attitudes followed by the pivotal role of promoting change through education. Obesity sensitivity to promote fat acceptance of pre-professionals students is imperative but the delicate assessment of students’ discriminatory views, attitudes, and beliefs can be very difficult to measure. Danielsdottir, O’Brien & Ciao (2010) assert “research effort seeking to address [anti-fat] prejudice is lagging” (p. 57). Assessing prejudicial views such as weightism can prove difficult due to assessing consciously held views, relying on self-report and may be subject to socially desirable responses from participants (Bento, White & Zacur, 2012; Puhl, Luedicke & Grilo, 2014; Teachman & Brownell, 2001). Puhl et al. (2014) state the need for “further research is needed to better understand individual differences in weight bias” (p. 1009). Employing research methodology referred to as Q methodology, known also as simply Q, to assess students’ views of obesity offers the best solution to uncovering sensitive opinions to understand how people think (Brown et al., 1999). Q methodology provides researchers the ability to identify, both quantitatively and qualitatively, diverse opinions within a group, and the number of individuals who hold those opinions (McKeown & Thomas, 1988; Stephenson, 1953). As mentioned earlier, typical Likert surveys seek to find the mean of a series of responses but assessing ones
opinion or subjectivity can be determined using the mixed-methods approach of Q methodology. Q methodology provides the process to investigate different views that exist about a topic in ways that preserve meaning (McKeown B & Thomas D., 1998). The strength of Q is that it does not seek to determine the mean of a series of responses like typical Likert surveys but instead provides a way to determine the different views that exist approaching a topic (Newman & Ramlo, 2010; Ramlo, 2015b).

Q Methodology as a needs assessment

Q Methodology is a unique mixed methods research approach. It involves the systematic study of human subjectivity to provide a means to determine a specific population’s subjective viewpoint(s) (Brown 1980, 1993, 1997; Stephenson 1953). Developed by psychologist William Stephenson at the University of Oxford in the 1930s is also referred as Q method, Q sorting, or simply Q (Webler et al, 2009). Q consists of procedures, theory, and focus on objectively measuring subjectivity (Brown, 1980). Although Q Methodology was developed over 80 years ago, Q remains relatively uncommon in behavioral and social science research (Ramlo & Newman, 2010).

Shinebourne (2009, p. 94) explains, “Q method is considered particularly suitable for researching the range and diversity of subjective experiences, perspectives, and beliefs.”

Originally developed for use in psychology research, Q has been used in a variety of fields (business, health, environmental studies, political science and many other fields) to examine participants’ attitudes, viewpoints, or perceptions. Q seeks to interpret patterns and relationships on groups of people based on similarities of subjective perspectives. Q is considered an exploratory technique. It cannot prove hypotheses. However, Q brings a sense of coherence to complex and socially contested research
questions (Stainton Rogers, 1995). As in all research, the question and context determines the research methods, therefore, the question and Q sample must be both broad and representative. Therefore, justification for Q methodology is ideal for researching questions posed to reveal social perspectives such as Exercise Science students’ views of obesity. Dennis (2001) states that Q is a relevant methodology that may be applied to the study of attitudes related to aspects of health and health beliefs.

Rather than itemizing strengths and weaknesses, it is more helpful here to state that Q has many distinctions from other forms of research analyses. Q has been compared to narrative analysis; while similar, Q offers numerous differences (Watts & Stenner, 2005). With qualitative research it can be difficult to minimize researcher’s bias, Q reduces the impact of researcher’s frame of reference by using complex statistical analyses (Newman & Ramlo, 2010). In addition, an advantage is that participants’ responses can be compared in a consistent manner across the same set of Q statements. According to Webler et al. (2009), an advantage to Q method is that participants’ responses can be directly compared in a consistent manner. All participants respond to the same set of Q statements and this is different from many other types of qualitative discourse analysis. The majority of other discourse analysis methods analyze text to find underlying patterns or meanings. Q method is self-referential and reveals social perspectives.

Random sampling of the participant population is not required rather the concourse of statements is sampled representatively. In comparison to many types of qualitative research, rather than using a priori to code data, participants themselves sort the statements, which emerge factors minimizing researcher bias. Tests of validity and
additional criterion used to validate or invalidate viewpoints are not a concern in the Q sorting process. Q sorting removes this need since participants simply express their points of views (Brown, 1980). Q is interested in exploring perspectives of the set population not at generalizing perspectives to the larger population.

The concourse can be developed using a variety of techniques from anecdote circles, participant interviews or literature reviews. The concourse does not need to be theory-driven and is concentrated into a set number of statements (approximately #30-50) providing a general overview of relevant viewpoints of the particular research content (Brown, 1980). This selection becomes the Q sample and is generated through the concourse resulting in Q statements, which should be short, ‘stand-alone’ sentences that are easy to read and understand (Webler et al., 2009). Statements in the Q sample are then broken down into themes to be ‘broadly representative’ of the question (Watts & Stenner, 2005). This process of generating statements from the concourse should fit into equal themes using Fisher’s design principles (Brown, 1980). Themes in the Q sample are then condensed into a set number of statements (approximately #30-50) providing a general overview of relevant viewpoints of the particular research content. These themes encompass major content areas of the posed question. Using Fisher’s balance block design to produce a representative sample from the concourse, the Q sample construction will be systematic (Ward, 2009). It is important to note that in Q, the sample size is represented by the number of statements in the Q sample, not the number of sorting participants.

Statements are placed on individual cards/paper for participants to read and categorize based upon their own personal viewpoints. Participants are given instructions
to rank statements, pre-sorting the set of items into three categories, most like my view, neutral, and least like my view. Then, participants physically sort each pile, within a Gaussian distribution, regarding a particular topic according to their own point of view relative to each other onto a grid (Brown, 1980; Ramlo, 2008). Plenty of space and time should be allotted for participants to complete the sorting process. Specific conditions of instructions are explained to participants by the research. An example of instructions would be “sort the statements into three equal piles base upon your view of technology in the classroom, most like your view, most unlike your view and neutral. Then using the grid provided, rank order each statement from +5 to -5 position”. The next step is gathering supporting information from participants such as open-ended questions, which is conducted post-sorting. This can be performed through a post-sorting interview process, which then is transcribed by the researcher or using paper-pencil response by the participant. Information gathered during this task can be very useful later during the analysis and interpretation to capture precise views of emergent factors (Watts & Stenner, 2005). The Q sort utilizes factor analysis and correlation to determine consensus and differences of that population’s opinions, beliefs, and/or attitudes (McKeown & Thomas, 1988). Q methodology provides broad categories (factors) aligning identification of similarities and differences, which facilitates investigation between patterns and relationships from participants’ perspectives (Shinebourne, 2009).

Likert-scale surveys are similar to Q Methodology in that participant’s rate each statement on a distribution scale ranging from strongly agree to strongly disagree. However, Q is unique from Likert-scale surveys in that it forces participants to physically place each statement relative to others into the normalized or Gaussian distribution based
upon that participant’s opinion within a particular setting, known as the condition of instruction (Brown 1980, 1993; McKeown & Thomas, 1988, Ramlo, 2008). Figure 1 Displays an example of how statements are ranked in comparison to others into the force distribution grid. It can be commonly misinterpreted that the sorting process is Q methodology rather, the combination of mixed-methods blending the Q sort process and the pattern analysis that utilizes correlation and factor analysis (Ramlo, 2008).

![Figure 1. Sample of a Q-sort grid](image)

Factor analysis groups people (not items) into similar categories (factors) using complex statistical analyses (Brown, 1980; Newman & Ramlo, 2010; Stephenson, 1953). Q methodology utilizes by-person factor analysis to identify groups of participants with comparable statement views (Watts and Stenner, 2005). The Q sorts are analyzed using
correlation, factor analysis, and calculation of factor scores (Brown, 1980). Correlation coefficient is computed to compare patterns in response across respondents. In Q research, subjects and variables are identified; the “subject” being the Q statements and the “variables” are the Q sorts/participants completed sorts. Patterns among the Q sorts identify perspectives (beliefs, subjectivity) into groups of similarity.

There are several software programs available to compute Q studies; a common program is called PQMethod (Schmolck, 2008). Software provides analysis first by using factor extraction: principle components and Centroid extraction, then factor rotation with Varimax and hand rotation, finally, individual flagging provides tables with descriptive factor scores. The statistical calculation is quantitative, but the theoretical discretion of researchers provides strong qualitative aspects in the factor analytic procedures stated above, especially interpreting and naming the factors. The researcher decides on the final number set of factors after analyzing the statistical significance, and then the researcher interprets and labels the factors to best describe social narratives (Webler et al., 2009). Each factor represents a group’s viewpoint that is explained through salience. These themes (factors) contain elements that describe and clarify what participants’ agree and disagree about and highlights identities and viewpoints that distinguish groups.

Q methodological software used for factor interpretation will provide numerous files of outputs and tables illustrating the loading of participants Q sorts. Valuable summarized data is found in ‘Factor Correlations’, the eigenvalues and significant loadings, ‘Item/Factor Scores’, ‘Distinguishing statements’ and an array of other very important configurations of items. Q provides the opportunity for researchers to clarify
differences and similarities between perspectives, while having the ability to reveal where consensus is balanced among participants. Q studies can be very helpful for program analysis, can be used in conjunction with survey research, can illuminate beliefs among participants, and can classify participants into profiles. The combination of both quantitative and qualitative methodology provides the systematic integration of subjectivity into the research process, therefore; strengthening both the methods and results of examining social perspectives.

Summary

Exercise science students’ study and practice to become professional clinicians, coaches, or personal trainers. The prevalence of obesity within the American population coupled with weightism validates the need for trained clinical professionals to assist with weight management exclusive of bias (Richardson, 2015). Puhl & Wharton (2009), documented that discriminatory bias based on physical size may become a barrier impairing success of health promotion. It is the role of the exercise science curriculum to prepare students to work with special populations, paying particular attention to the obese population (Richardson, 2015). Assessing pre-professional students’ views of obesity and weight loss interventions necessitates investigation to begin awareness of negative attitudes of weightism. Additionally, Richardson (2015) stated that exercise science students’ acceptance of bariatric surgery needs further attention. Strong negative views regarding the growing trend in surgical interventions may result in students being unprepared for supportive relationships with future clients or patients who would best be served with this type of intervention.
According to Chambliss (2004), many students pursing exercise science degrees hold keen interests in athleticism, health, and physical function, which may contribute to negative attitudes of obesity. Negative perceptions may impact the clinician-client relationship, which could reduce effectiveness of care and success of adherence (Aronne, Nelinson, & Lillo, 2009; Puhl & Wharton, 2007). Richardson (2015) articulates that instructors need to understand and assess students’ views related to obesity then subsequently use curricula to reduce anti-fat bias. Pervasive negative attitudes toward obese persons may exist. Weightism is not only a form of discrimination but can also align with the act of oppression (Harvey, 1999). The goal of educating pre-professional exercise science students is to not only understand the disease of obesity as well as reduce the social acceptability of weight bias (Puhl & Heuer, 2011). Harvey (1999), states the importance of making oppression more visible in the healthcare environment. Weight discrimination must be viewed as both a social injustice and public health issue.

Documentation of the prevalence of obese bias has been most often assessed using questionnaire methods and it can be difficult for adults to admit to prejudice (Teachman & Mallett, 2005). Uncovering students’ views of obesity and weight management treatment may be the beginning to raising awareness for social acceptance. Q methodology provides a comprehensive empirical understanding of students’ subjective views about obesity and weight management treatment. Q methodology is a complete methodology such that it includes specific procedures, theory, and philosophy related to its purpose of objectively measuring subjectivity (Brown, 1980). The strength of Q methodology is that it does not seek to find the mean of a series of response like typical Likert-surveys but instead, provides a way to determine the different views that
exist about a topic in ways that preserve meaning (McKeown & Thomas, 1988). This study aims to demonstrate how Q methodology can be used as a needs assessment tool for pre-professional exercise science students’ comprehensive obesity education.
“Fundamentally, a person’s subjectivity is merely his own point of view. It is neither a trait nor a variable, nor is it fruitful to regard it as a tributary emanating from some subterranean stream of consciousness. It is pure behavior of the type we encounter during the normal course of the day.”
(Stephenson, 1980: 46)

The purpose of this chapter is to present the methods and procedures used to investigate pre-professional exercise science students’ views of obesity and weight loss interventions. The chapter includes derivation of the general and specific research hypotheses, descriptions of the participants, sampling procedures and a systematic review of Q methodology. This chapter also discusses a pilot study completed to investigate students’ views of obesity and exercise to both illustrate the use of Q methodology but also to support the methodological choices made within this current study. The statistical treatment section clarifies how the results of the Q sorts will be factored and interpreted. The end of the chapter provides limitations to the study.
Derivation of General and Specific Research Hypotheses

Weight discrimination (weightism) is the unfair treatment based upon preconceived judgment of body size. Weight stigmatization consisting of anti-fat prejudice can lead to many complications (Andreyeva et al., 2008; Danielsdottir et al., 2010; Puhl et al., 2008). Stigma generates health disparities that may produce complications in providing effective obesity prevention and weight management (Puhl et al., 2010). Research acknowledges weight bias discrimination among a wide variety of professionals and students. Unfavorable attitudes about obese individuals have been reported in university level physical therapy, exercise science, dietetic, and nursing students (Bacon et al., 2001; Berryman et al., 2006; Chambliss et al., 2003; Fontana et al., 2013; Foster et al., 2003; Greenleaf & Weiler, 2005; Ponstein, 2012; Puhl et al., 2007; Puhl et al., 2014). Pre-professional students require a rich educational foundation to comprehend the complexity of obesity. Puhl & Heuer (2011) discuss that the role of curricula within exercise science programs should aim to reduce social acceptability of weight bias. Richardson (2015) suggests future studies should investigate exercise science students’ views towards obesity and weight loss surgery. Assessing students’ obesity views within the classroom may provide valuable needs assessment material to assist educators on critical issues to be threaded into pedagogy.

The wide-ranging research on potential vulnerabilities on the presence and dangers of weightism warrant additional investigation (Richardson, 2015). Nevertheless, not all areas of obesity-related bias has been fully examined. Athleticism has been associated with students’ studying exercise science (Chambliss, Finley & Blair, 2003) which may account for negative attitudes towards obesity, however, there are more
questions as to how these pre-professional students’ subjectivity aligns with weight management interventions available for treatment (O’Brien, Hunter & Banks, 2007). Understanding if undergraduate students, early in their educational journey, hold negative views related to people of size and obese treatments may be a powerful assessment tool to assist with awareness and social justice education. It is believed that academia leads to increase tolerance towards individuals (Lambert, Ventura, Hall, & Tolar, 2006). Raising awareness that all people should be treated equally does not condone the view that fat is good but recognizes the need for unbiased views of obesity. Significant research outlines potential dangers of excessive fat physiologically, especially with chronic diseases, but equal treatment of obese persons is important. Astin (1991, 1993) explains that a goal of higher education is to help shape individuals so that they become more tolerant and open- and civic-minded individuals.

Previous research contends that negative views of obesity are overwhelmingly prevalence. Astin (1977, 1991), argued that assessments used with university students should transcend measuring cognitive knowledge to include affective measures “of qualities such as empathy, concern for others, tolerance, and social responsibility” (p. 58). There were no studies found in the literature review that directly explored pre-professional exercise science students’ views towards obesity and obesity treatment during freshman level coursework. Investigating students’ views as a pre-assessment early on in the curriculum provides instructors a means to discover views and potentially identify where curricula should be tailored to meet students needs. Likert-style scale surveys have been commonly implemented as a method for both assessment of views and evaluation for program. Likert-style surveys are accustomed to criticism surrounding
validity, reliability, and large number of participants needed. Additionally, McKeown (2001) describes loss of meaning that occurs with central tendency of participants choosing average scores and he suggests Q methodology as a solution to this problem by postulating descriptive results for emerging perspectives. Due to these limitations with Likert-style research, to effectually explore and examine subjectivity and capturesnap shots of viewpoints, Q methodology is particularly adept at discovering operant views. Using Q methodology to investigate students’ views of obesity provides a mechanism to identify and categorize students’ attitudes, beliefs and viewpoints as a mode to evaluate learners. Q Methodology is a unique mixed methods approach (Newman & Ramlo, 2010) also referred to as ‘qualiquantology’ (Stenner & Stainton-Rogers, 2004), utilizing the combination of quantitative-qualitative approach to systematically study human subjectivity.

Q Methodology (Q) is an innovated method for gathering subjective viewpoints. Developed by William Stephenson in the 1930’s originally for psychology research, Q provides a conceptual framework for researching experiences, perspective and beliefs to explore both similarities and differences of opinions. Q is self-referential, revealing social perspectives and reduces the impact of researchers’ frame of reference (Newman & Ramlo, 2010). Q removes the need to test for validity and additional criterion to validate or invalidate viewpoints as participants simply express their views through the sorting process (Brown, 1980). The methodological process, for simplicity of explanation, of Q can be divided into three main phases: (a) development and selection of statements (Q sample) and (b) rank ordering the Q sample by a group of participants into a provided force-distribution grid (Q sort) and (c) analysis and interpretation of sorts. Q has been
used in research to explore diverse phenomenon within education, politics, environmental, medicine, psychology, sociology and polices as an effective means for discovery of perspectives. Brown, Durning & Selden (2008) explains that the “possibilities for application of Q are boundless wherever subjectivity is implicated” (p.627). Q has also been used as a valuable tool for evaluation. Q permits the ability to ascertain needs for program evaluation assessment, in attempt to improve program effectiveness (Ramlo, 2015b). This study aims to demonstrate the discovery and exploration of views towards obesity and weight loss treatment in conjunction with how Q methodology can be used as a needs assessment tool for pre-professional exercise science students’ comprehensive obesity education. The purpose of this study is to:

1. Develop a means for determining student views about obesity that can lead to best practices in an exercise science curriculum.
2. Describe what the various student views are at the beginning of their exercise coursework.

Research Questions & Hypotheses

A comprehensive and systematic evaluation of obesity literature, to date, has not focused on student views of obesity and weight management curricula. The researcher generated the following general and specific research hypotheses, below.

Research Question 1

How many unique views about obesity and weight management treatment exist among students enrolled in a freshman level exercise science course at a large public university?
General Research Hypothesis 1

More than one view of obesity and weight management treatment will emerge among students enrolled in a freshman level exercise science course at a large public university.

Specific Research Hypothesis 1a

More than one factor will emerge from the analyses of the Q sorts.

Research Question 2

What consensus views about obesity and weight management treatment exist among students enrolled in a freshman level exercise science course at a large public university?

General Research Hypothesis 2

The Q methodology results will reveal consensus among the views of obesity and weight management treatment.

Specific Research Hypothesis 2a

Q Methodology analyses will provide multiple consensus statements indicating themes of agreement across the unique views (as represented by Q factors).

Research Question 3

What differentiates the views of obesity and weight management among students enrolled in a freshman level course?

Specific Research Hypothesis 3

Distinguishing statements will describe how each view about obesity and weight management treatment is unique.

General Research Hypothesis 3a

The views of obesity and weight management treatment that will emerge will be unique.

General Research Hypothesis 3b
Students’ post-sort written comments will support the uniqueness of multiple views.

**Research Question 4**

Can the views that emerge provide a needs assessment that can lead to curricula improvements in an exercise science program?

**General Research Hypothesis 4**

The views that emerge within Q Methodology can be used as a needs assessment for improvements in in an academic exercise science program.

**Specific Research Hypothesis 4a**

Q methodology provides description of student views that can be used to customize curriculum for addressing students’ perceptions of obesity and weight management treatment within an exercise science program.

**Participants**

**Exercise science students (pre-professionals).** Exercise science is an academic discipline that is focused on the scientific study of human movement. The majority of exercise science (also referred to as Kinesiology) programs are offered as a bachelor in science, which encompasses diverse course work in biology, anatomy, psychology, and physics combined with general liberal arts coursework. Exercise science is a broad area of study with numerous subdisciplines: exercise physiology, biomechanics, motor learning, sports medicine, and sport psychology (Wuest & Fisette, 2015). Exercise science prepares students for wide ranging options upon completion of the bachelor degree, some move into careers such as personal training, fitness management, strength and condition, and coaching in workplace health promotion. Many use the undergraduate
program as a springboard to pursue graduate studies in such fields as physical therapy, exercise physiology, occupational therapy, medicine and chiropractic programs.

The Exercise science program is in the School of Sport Science & Wellness Education, which resides in the College of Health Professions at The University of Akron. The school offers four undergraduate degrees (Athletic Training, Exercise Science, Physical Education and Sport Studies) and three graduate degrees (Exercise Physiology, Physical Education and Sport Science/Coaching). Student enrollment Spring 2015 in the Exercise Science program had 323 undergraduate students, which comprised approximately 63% of the undergraduate students in the School of Sport Science & Wellness Education.

Preparing students to become exercise professionals as either a trainer, clinician, or coach requires diverse coursework. The exercise science curriculum involves 128 credit hours covering courses in anatomy, physiology, movement analysis, nutrition, health promotion, testing and prescription, gerontology, behavior modification, pathophysiology of chronic diseases, pharmacology and numerous other interdisciplinary sciences, management and business related coursework. It is important that students are proficient and knowledgeable to work with all ages and abilities across the lifespan. This is especially true with the prevalence of sedentary lifestyles causing preventable widespread chronic diseases.

The participants in this study consisted of undergraduate students enrolled in the Intro to Exercise Science course (5550 100) during spring semester. There were 25 participants total, 15 male, and 10 female. The ages of the participants ranged from 18 years to 23 years. Permission from the Institutional Review Board (Appendix A) of the
university was obtained and participants signed informed consent (Appendix B). Participation in the study was woven into the curriculum and points were assigned for completion of the survey and Q-sort (Appendix D). Confidentiality of participants and their responses were protected throughout the study.

**Sampling Procedures**

The research method for this study is Q Methodology, which will provide a comprehensive, empirical understanding of students’ subjective views about weight management and obesity as it relates to the studies of exercise science. Q methodology is a mixed method approach with interwoven qualitative and quantitative stages to empirically group people based on their similar views (Ramlo, 2015a). Q will be used pragmatically to answer important research questions through investigating students’ perspectives of obesity. A Q study begins with the identification of a topic of study and the development of the concourse. The concourse is an exhaustive collection of items of communication relative to the topic and sampled representatively (McKeown & Thomas, 1988). The samplings for this methodology are drawn from selected statements from the concourse; this subset of items is known as the Q-sample, which the participants will eventually sort. The statements chosen from the concourse for the Q-sample, should fit into equal themes using Fisher’s design principles (Brown, 1980). These themes encompass major content areas of the posed question. Using Fisher’s balance block design to produce a representative sample from the concourse provides the construction of the Q sample to be systematic. In Q methodological studies, the number of statements in the Q-sample represents the ‘sample size’, not the number of people in the study (Brown, 1980; McKeown & Thomas, 1988).
Participants in the study are called the P-set; they are chosen by the researcher based on criteria. Participants are not randomly selected; rather individuals are recruited, heterogeneously, whom possess knowledge or interest in the subjectivity being investigated (Brown, 1980). Rather than selecting participants on the basis of statistical power, the sample is driven by the research topic for purposeful individuals (Baker, Thompson & Mannion, 2006). It is important to clarify that in Q, the sample size is represented by the number of statements in the Q-sample, not the number of sorting participants.

All participants’ (P-set) respond to the same set of Q statements (sample size). Participants physically sort statements relative to each other, based upon their own view of the subject and rank-order the statements onto a grid. Q is used to identify both the distinctions and similarities between views.

Research Design

An ex post facto research design was used since there is no treatment involved in the study. This design was exploratory, which is an important aspect of Q methodology, and one that is qualitative in nature that provides the means for the development of theory. Theories that emerge may align with existing theories but other times they do not. The aim of this investigation was to explore students’ views of weight management and obesity at it relates to exercise science curriculum. This ex post facto design seeks to reveal subjective perspectives on students, in one class, in one particular time, concerning views about weight management and obesity related concepts. Q is considered an exploratory and mixed-method research with methodological underpinnings of philosophical, ontological, and epistemological framework providing more technical
aspects which craft operant subjectivity (Ramlo, 2015a; Stenner, 2009; Watts & Stenner, 2005). Q methodology provides a unique mixture of qualitative-quantitative continuum (Ridenour & Newman, 2008) cultivating theory and experimentation (Stephenson, 1953). Robust descriptive qualitative results in Q combined with numeric factor analysis permits the researcher to describe participants’ opinions through developing theory (Ramlo & Newman, 2010). Exploring epistemological frame of reference participants themselves consider connections between conceptual ideas during the Q sort. Watts (2009) states that the sorting process provides the researcher “an effective way to capture the reliability of human subjectivity both mathematically and experimentally” (p.31) that is used to help create theories (Ramlo & Newman, 2010). Q cannot prove hypotheses. However, Q cultivates context-rich results and theory (Ramlo & Newman, 2010) along with a sense of coherence to complex and socially contested research questions (Stainton Rogers, 1995).

Using Q methodology to investigate students’ views of obesity provides a mechanism to identify and categorize students’ attitudes, beliefs and viewpoints as a mode to evaluate learners. Q provides a means to determine a specific population’s subjective viewpoint(s) such herein a classroom of students’ views towards weight management, obesity and exercise. Shinebourne (2009, p. 94) explains, “Q method is considered particularly suitable for researching the range and diversity of subjective experiences, perspectives, and beliefs.” Eloquently stated by McKeown & Thomas (1988), “the purpose of is to study intensively the self-referent perspectives of particular individuals in order to understand the lawful nature of human behavior” (p. 36). This study used two instruments. The first was a Q-sample comprised of 44 statements and the
second was a demographic survey along with open-ended questions to gather supporting information from the participants post-sort.

**Developing the concourse**

The concourse is the term given to the overall communicability related to the topic, which is comprised of the collection of items or statements (Stephenson, 1980). These items are of utmost importance, containing observable domains of self-referent opinion that Brown (1980) states, “is more an art than a science” (p.186). Watts and Stenner (2012) claims, “a single theoretical definition is very hard to find” for concourse (p.34) and for many a difficult concept to understand. The overarching goal of the concourse is for the researcher to obtain freely expressed comments of common knowledge relating to the topic while retaining naturalness (Brown, 1980). From the concourse, self-referent statements concerned with opinion, representing the topic are chosen by the researcher and create the Q-sample.

In this study, the Q-sample was derived from a comprehensive and thorough concourse. The concourse, a collection of items consisting of statements related to obesity, was developed using an extensive review of obesity and weight management literature, content within the course, prior course evaluations, anecdote circles, and interviews. Concourse statements are based on opinion and were tailored to reflect specific issues of obesity stigmatization, weight management treatment and bariatric surgery. Generating statements is a meticulous process, careful and methodical review of thoughts and attitudes people feel toward the topic helps to provide appropriate statements. Factor analyses of the final Q sort data were represented by categories that statements within the concourse represent to account systematically for participant
subjectivity. Generating categories from the statements ensure that the final Q sample represents comprehensive aspects of the concourse. Q intentionally seeks patterns within individuals (case-wise) as opposed to simply across individuals (factor-wise sorting) (Brown, 1997).

The concourse is derived from extensive communications surrounding the topic. Brown (1993) states the concourse is where new meanings arise, bright ideas are hatched, and discoveries are made. It is important that communications in the concourse are illustrative of opinions surrounding the current topic. Despite the numerous avenues a concourse can be constructed, McKeown & Thomas (1988) describe the two most typical methods are literature (theoretical) and/or interviewing (naturalistic) along with recording communications. For this study, the concourse was developed using prior course evaluations, review of literature, and anecdote circles.

**Anecdote circles.** Anecdote circles are described as a form of storytelling technique that can be very useful in qualitative research. Storytelling, an active collaboration between researcher and participants, is a form of narrative inquiry and a way of understanding experience (Clandinin & Rosiek, 2007). Callahan, Rixon, & Schenk (2006) describe anecdote circles as being different from focus groups, interviews and surveys in that they are not seeking to answer a specific question or test a hypothesis but explore themes. Interviews and surveys can often with pre-determined thoughts of what the investigator may want to hear rather than revealing values and beliefs. Anecdote circles encourage semi-controlled group based story-elicitation which have been used to overcome the limitations of traditional interview and survey approaches, conflict resolution, or difficult to evaluate projects in varying settings. Guidelines for effective participation are designed
using themes to facilitate participants to share their experiences. The facilitator holds a subtle profile, acting as a guide, not as a leader encouraging all members in the group to share experiences conducive to the question being asked (Callahan et al., 2006).

For this study, six anecdote circles, consisting of five students in each group, were conducted on 30 freshmen enrolled in the course Concepts in Health & Fitness. Additionally, senior level students enrolled in Cardiac Rehab Principles engaged in 5 groups, comprised of 4 students each. Exercise, weight loss, and body-size attitudes were the three broad themes to generate sharing stories. The anecdote circles were recorded, stories were not analyzed but the identification of macro patterns revealed students insights. These robust anecdote circles facilitated the development of a comprehensive concourse generated through exercise students’ storytelling.

Each anecdote circle group, in both courses, consisted of one student who was assigned the role as the facilitator. The facilitator in each group acted as the group leader and was chosen by the researcher based on the students ability to cultivate discussion, display leadership qualities and had the use of either a SmartPhone or tablet to record the groups discussion. One copy of the handout (Appendix C) was given to each facilitator. Groups sat in small circles inside the classroom and shared stories related the themes listed on the handout. The researcher listened to all the recorded discussions to identify ideas consisting of both similarities and differences throughout the groups. The overarching concepts from both sections of students denoted negative connotations towards people of size. These themes provided the students voices and key ideas from storytelling was used along with the review of literature and course evaluations to build the concourse for obesity and weight management concepts.
Literature review & course evaluations. A comprehensive review of literature assisted in the development of statements used in the concourse. Additionally, using prior course evaluations provided tangible communications of how students’ viewed the importance of exercise science concepts. The population of statements for this concourse was generated using self-referable communications of exercise science students. Anecdote circles, course evaluations and relevant literature review comprise what Stephenson (1986) described as empirically selected communications representing the conversational possibilities about the topic. McKeown & Thomas (1988) explain that statements can consist of more than just statements but also be comprised of pictures, sounds or other items but most importantly, the Q sample must consist of opinions not of facts. The concourse, collection of statements about the topic that captures a universe of communications relative to the topic, is then further subdivided into the Q sample (Brown, 1980; McKeown & Thomas, 1988; Ramlo, 2008, Newman & Ramlo, 2010, Ramlo, 2015a).

Selecting the Q Sample

According to Brown’s (1991) description of concourse theory, it is to reveal the inherent structure of a communicability surrounding any topic and from this, “new meanings arise, bright ideas are hatched and discoveries are made” (p.3) demonstrating the range of opinion from this raw materials. The Q sample is derived through the concourse. After reviewing opinions and statements in the concourse of this study, 44 carefully crafted statements were identified to represent eight major domains related to obesity (Attitudes, Management, Barriers, Surgical, Knowledge, Cause, Attributes, Personal) of students’ views towards weight management and obesity (appendix#) lists
the themes and statements of Q sample. Strauss & Corbin (1990) describe this process in relation to theme analysis. Fischer’s balance block, also referred to as structured design (Stephenson, 1953), is assembling functional categories/themes to provide comprehensive and balanced appropriateness and applicability to the Q sample (Brown et al. 1999; Stainton-Rogers 1995). The 44 statements fit into equal domains (themes) using Fischer’s design principle (Brown, 1980) encompassing major content areas of the posed question, obesity (Appendix E). Using Fischer’s balance block design to produce a representative sample from the concourse, the Q sample construction is systematic (Ward, 2009). Q does not use a priori to define terms but rather a posteriori that allows the participant to interpret the statements upon their own reference frame providing their own meaning to the statements.

Prior to this dissertation research, a pilot study was conducted. Further discussion of the pilot study is described near the end of this chapter. The pilot study was implemented to assist with examining possible statements. After reviewing the Q sample applied in the pilot study, statements were then modified for this current study therefore, encompassing a richer balance among the major domains (themes). A total of 44 statements were developed in the Q sample for this current study and these statements represent the “sample size.”

The Q sort

The Q sorting process is fundamental in Q methodology and is inherently subjective (Brown, 1980; McKeown & Thomas, 1988, Ramlo & Newman, 2010; Stephenson, 1953). The sorting process consists of participants judging each Q statement relative to others based upon their own construction, therefore providing their inner
subjective views. There is no right or wrong way for Q participants to sort statements. Participants interpret statements based upon their own views; this sorting process is self-referential and represents a communicative process (Brown, 1980, Ramlo & Newman, 2010; Stephenson, 1953).

The 44 statements in the Q sample were randomly assigned numbers (Appendix D). Each statement was typed with the assigned number, all statements were cut into strips and placed inside an envelope for each participant. The fixed quasi-normal distribution grid (Figure 2) was used by each participant to sort the statements ranked from +5 to -5 Most like my view to Most unlike my view (Brown, 1980). The Q sort is often considered the sorting process (Newman & Ramlo, 2010) which is inherently subjective because participants individually judge each Q sample statement relative to other statements placing them into the distribution grid (Brown, 1980; McKeown & Thomas, 1988; Newman & Ramlo, 2010). This ranking procedure, Q sorting, has been described by Brown (1980) as the technical means which data is obtained for factoring.

The Q sorting process has been the root of many faulty assumptions and criticisms (Brown, 1993; Ramlo 2015c). Many scholars have misjudged Q on the pretense that performing a Q-sort is Q methodology. This common misunderstanding occurs when there is an absence of consideration for the larger philosophical epistemological, ontological aspects of the whole methodology (Brown, 1980, 1993; McKeown & Thomas, 1988, Ramlo, 2008, 2015; Newman & Ramlo, 2010). A Q sort has been defined by many as a snapshot; Ramlo (2015a) describes it to be a person’s view after an individual has operated with the statements. Ramlo (2015a) explains that Q sort is self-reference; it cannot be right or wrong as is typical with scale responses. There is
no outside criterion for a person’s own point of view, validity is of no concern (Brown, 1980, 1993). Q sorts are analyzed and factors are naturalistic, they emerge from the data analysis as a function of the participants (Q sorters) themselves, therefore grounded and are inseparably tied to the concrete operations of the participants (Brown, 1980, 1993, 2008).

**Conditions of Instruction**

Administration of the Q-sort, to many, seems similar to Likert-scale surveys in that participants’ rate each statement on a distribution scale ranging from least like my view to most like my view. However, Q is unique from Likert-scale surveys in that it forces participants to physically place each statement relative to others into the normalized or Gaussian distribution based upon that participants’ opinion within a particular setting, this is known as the condition of instruction (Brown 1980, 1993; McKeown & Thomas, 1988, Ramlo 2008). The researcher articulates the set of instructions for sorting the statements. It is explained that the participants are to rank each statement, based upon their own views into three piles; most unlike my view, neutral about the statement, and most like my view. Using the distribution sheet provided by the researcher, the participants rank each statement from -5 to +5 position, ensuring that each number is only used once on the grid. Q sorts are guided by the participant’s own interpretation, based upon their own understanding and experiences providing self-reference interpretation which is inherently subjective. The Q sort cannot be right or wrong (Ramlo, 2015c) and it minimizes the impact of the researcher’s frame of reference (Stainton-Rogers, 1995) since the Q sort is not based on operational definitions and participants apply their personal physical ranking to the Q sample.
In addition to the Q-sort instrument, the participants completed the demographic survey on the same day as the Q-sort (Appendix #). This survey identified participants declared major, class rank, age, gender, and height and weight. Additional open-ended questions consisted of rationale to why they ranked statements most like and most unlike their view and feedback regarding their personal exercise regimen. The data from the survey outlines descriptive characteristics of the participants in the study helping to illuminate unique qualities of the learners.

Analysis and Interpretation of the Data

Q sorting process is only one component of Q Methodology. Brown (1980: 17) refers to the ranking procedure as the technical means whereby data are obtained for factoring. Once the Q sort has been completed, indicates only that a set of items have been distinguished or valued differentially by the participant who performed the sort according to their subjectivity (Nicolas, 2011). McKeown & Thomas (1988) state that the basic law of Q methodology is the “transformation of subjective events into operant factor structure” (as cited Stephenson, 1970-1980: 205). Q has been recognized as a holistic or gestalt procedure referring that it does not separate subject matter but indicate interconnected viewpoints of commonly highly complex and socially contested concepts and subject matter (Watts & Stenner, 2005). Exploring emerging factors is initially propelled by participants categorizing their viewpoints of items/statements.

Data analysis of the Q sorts involves correlation, factor analysis, and calculation of factor scores (Brown, 1980, 1986, 2008; McKeown & Thomas, 1988; Newman & Ramlo, 2010; Stephenson, 1953). Factor analysis is a sophisticated balance using both quantitative and qualitative process (Newman & Ramlo, 2010; Ramlo, 2015c). The
relationship of the Q sort provides intercorrelated and factor analyzed relationships among Q sorts (not the relationship with other items/statements).

**Statistical Software**

Software packages are available for Q methodological analysis. One of the most commonly used programs for Q analysis is PQMethod, version 2.11 (Schmolck, 2002). PQMethod facilitates data input, correlation by-person matrix, and factor extraction by principle components and Centroid rotation. Researchers have the ability to rotate factors based on theoretical considerations using hand rotation (Brown, 1980; 1986; Stephenson, 1953). This research study will use PQMethod. Correlation coefficients are simply factor loadings that correlate the participant with the factor (view) and the higher the factor loading, the more highly correlated the participant is with the factor (view) (Brown, 1980, 1993; McKeown & Thomas, 1988; Ramlo, 2008; Newman & Ramlo, 2010).

The first step in Q methodology factor analysis is the factor extraction, the software includes two choices for factor extraction: principle components and Centroid, the preferred choice of Centroid extraction, also known as data reduction is frequently used in Q (Newman & Ramlo, 2010; Ramlo, 2015c). The next step is to reveal the range of viewpoints that are favored by participants, with two choices available: Varimax and hand rotation.

Hand rotation provides the researcher theoretical discretion to rotate to find psychologically meaningful factors, which maximizes the amount of variance, explained by the extracted factors (Newman & Ramlo, 2010; Watts & Stenner, 2005). To help clarify terms, it is common in Q literature to use hand rotation, theoretical rotation or judgmental rotation interchangeably (Ramlo, 2016). McKeown & Thomas (1988) explain
that rotation effects a change in the vantage point from which data are viewed. Hand rotation does not change the data nor the relationships of the sorts but provides exploratory investigation of hypotheses (Brown, 1980, Newman & Ramlo, 2010). Hand rotation uses what Brown (1980) describes as abductive possibilities in the rotation process to disclose unanticipated relationships or discoveries; sometimes considered hunches (Newman & Ramlo 2010; Ramlo & Newman, 2010).

Flagging is the step that follows rotation, whereby the researcher individually selects participants who are represented by the factor through interpretation of factor loadings. A standard requirement is to select only those factors with an eigenvalue in excess of 1.00 (Brown, 1980; Watts & Stenner, 2005). Pre-flagging sorters is the process using statistical significance to determine Q sorts that load on a given factor, based on correlations (McKeown & Thomas, 1988). Factor loading in Q studies is represented in the PQMethod output file entitled ‘Correlations between factor scores’, which identifies how well the Q sort, correlates with the factor. The quantitative process of flagging generates additional output tables (factor scores, ranked ordered representative sort, distinguishing statements, and consensus statements) used by the researcher to assist with interpreting and qualitatively to provide description to the various views (Brown, 1980; McKeown & Thomas, 1988; Newman & Ramlo; 2010; Stenner & Stainton-Rogers, 2004).

**Factor Analysis**

Analyses of the Q sort involve correlation, factor analysis, factor loadings and the calculation of factor scores (Brown, 1980, 1986, 2008; McKeown & Thomas, 1988; Newman & Ramlo, 2010; Stephenson, 1953). Factor loadings determine the level of
correlation with the sorter and each factor. The higher the factor loading, the more highly the participant and factor correlated (Newman & Ramlo, 2010). Participants with similar views therefore, are highly correlated with the same factor. Factor scores are generated into tables called representative sorts.

McKeown & Thomas (1988) explains Stephenson’s factor theory:

Factor analysis is fundamental to Q methodology since it comprises the statistical means by which subjects are grouped—or, more accurately, group themselves—through the process of Q-sorting. One point should be clear: “Q-factor analysis” does not constitute a distinct set of statistical procedures for identifying like-minded persons (or similarly arranged Q-sorts) in the same sense…the factoring process are virtually identical to those followed in R-method applications. (p.49)

It has been common to compare Q methodology factor scores to factor loading typical in R methodology. Stephenson (1953) described the differences between R methodology and Q methodology in which, Q methodology explores aspects of human behavior focusing on subjectivity. R methodology is the data reduction technique that correlates items into factors and primarily focuses on what is objective (Brown, Durning, & Selden, 2008). Stephenson (1953) explained that Q is not simply a statistical technique (as cited in Ramlo, 2016) R methodology the data is objective, it groups items together into factors based on statistical reasoning whereas Q methodology is based on theoretical purposes of subjective measures solely provided by participant (Ramlo, 2015c). Subjectivity in Q is concerned with the research participant what is important to me. These subjective measures are made through active participation in the Q sort (Brown, 1980).

**Representative Sorts**

Representative sorts identify participants’ (also called sorters) with similar views, which are flagged and through data reduction depicted on the table to assist researcher with identifying perspectives. This representative sort is created by listing all statements,
Distinguishing and Consensus Statements

The analysis of the Q sorts is based upon the statistical calculations described by Brown (1980) that involves correlation, factor analysis, factor loading and the calculations of factor scores. There are several software programs available for data collection and analysis, PQMethod is one of the most common (McKeown & Thomas, 1988). PQMethod software offers two options for factor extraction and determines the standard error of difference for scores creating distinguishing statements and consensus statements (McKeown & Thomas, 1988). Q analyses’ using statistical software produces printout reports of tables illustrating the magnitude of both distinguishing and consensus statements tables and their determination is based upon tests of significance.

Distinguishing statements allow researcher to differentiate between factors. Factor scores are compared to determine which Q sample items are prominent, placed in distinctive locations on the opinion continuum. Distinguishing statements provide additional and insightful information for researcher to better reveal the epistemology of perspectives (Newman & Ramlo, 2010). Consensus statements provide insight for researcher to
interpret commonality among sorters views (Newman & Ramlo, 2010). Statistical analyses in Q methodology provides not only correlations among sorters views but also attributes for conceptual understanding of perspectives, both consensus and differing, within groups of participants (Newman & Ramlo, 2010).

**Factor Interpretation**

Interpretation begins after the array of factor scores and it is important to state that for Q interpretation that it is not concern with specific numerical values, but that Q methodology is concerned with importance to ‘me’ (Brown, 1980, 1993). The number of factors and personality of the factors are unknown prior to the Q sort and factors emerge from through data analysis. The process of emerging factors is a product of the participants (Q sorters) themselves and Brown (1980), describes that factors are naturalistic and simultaneously connected to participants subjectivity.

The participants, rather than the researcher, should be central in Q (Watts & Stenner, 2012). It is important for researchers to not assume or predefine meaning of items/statements in advance. Participants impose their own meanings onto items through the sorting process as Brown outlines “the supposed a priori meaning of the statements does not necessarily enter into the Q sorter’s considerations: participants inject statements with their own understanding” (Brown, 1997 p.11 fix cite from symposium).

Q is shifted from R methodological techniques and methods by malleability of how participants impress their own meanings and viewpoints (Watts & Stenner, 2012). Q sort captures a snapshot or impression that is analyzed after active sorting as Brown (1980) synthesizes: “attributed a posteriori through interpretation rather than through a priori postulation” (p.54). Data obtained in Q methodology is very different from
objective tests used within R methodology (Ramlo, 2015a). William Stephenson’s Q methodology facilitates the Q sort as a form of gestalt or holistic interpretation seeking the whole viewpoint and referred by Watts & Stenner (2012, p.149) as ‘methodological holism’. Therefore, clarifying that Q is unique and different from R methodology. It is common that participants participate in post-sort interviews or encouraged to provide additional feedback via written comments and this additional data is used to assist the researcher with interpretation.

**Validity & Reliability in Q Methodology**

In R methodology an essential concern focuses if a scale or instrument demonstrates both reliability and validity by adequately reflecting measurements both accurately and over time. Q methodology is not as concerned with validity and reliability. Q solely pursues participants operant subjectivities based on theoretical significance not statistical significance. As such, the ubiquitousness of subjectivity is not intended to be generalized to a larger population (Brown, 1980). Tests of validity and additional criterion used to validate or invalidate viewpoints are not of interest in the Q sorting process. Q methodology is comprised of Q sorting, the sorting process is holistically subjective which represents “my point of view” as explained by Brown (1991) “issues of validity consequently fade since there is no external criterion by which to appraise a person’s own perspective”. (p. 12). There are no right or wrong viewpoints. Q sorting removes this need since participants simply express their points of views, there is no outside criterion for a person’s own point of view (Brown, 1980). Q is interested in exploring perspectives of the set population not at generalizing perspectives to the larger population. In comparison to many types of qualitative research, rather than using a priori
to code data, participants themselves sort the statements, which emerge factors minimizing researcher bias. Q methodology is capable of delivering what it claims, capturing viewpoints or perspectives of participants from their own Q sorts, thus providing what R methodology refers to as validity (Watts & Stenner, 2012).

Brown (1980) provides an operational definition of reliability in Q to be the extent to which a person is consistent with himself, often referred to in Q as replicability. A participants’ response is reliable at one particular point in time then it would be expected to correlate with himself at a different point in time. When repeated administration of a Q sort is administered to a specific participant, the reliability is centralized to the participants’ viewpoint and not on the methods. Stephenson (1979) argued that validity/reliability should not be held relevant, or applicable, to Q. Brown (1980) discusses that reliabilities in Q can be found with the test-retest coefficient. Brown (1980) stated, “test-retest reliability of the Q sorts has been shown to be 0.80 or higher” (as cited in Ramlo, 2015a, p. 11 flipped). Q seeks to interpret points of view that may be generalized back to the phenomenon being studied rather than back to the population (Ward, 2009). Q confidentially demonstrates what it claims to deliver; exploratory methodology that objectively measures subjectivity. Replicability in Q, known as reliability in R, was explored by Thomas & Baas (1993), with regards to the emergence of similar factors when studies are repeated on similar groups of participants. They also discussed generalizability and uses of substantive inference, the ability to capture people’s viewpoints using factors of generalizations about how persons within a factor view a topic of investigation. It is important to stress that statistical reliability or the ability to generalize results is of a less concern in Q. Replicability using a well-structured
Q sample will reveal distinct viewpoints and therefore divulge operant subjectivities, which is the reputation of the strengths Q methodology provides.

Pilot Study

For ease of understanding this innovative mixed-method technique I will summarize this chapter briefly outlining a pilot study I conducted. Prior to conducting this dissertation research, this pilot study was implemented to explore the practicality of my interest of inquiry. The pilot study investigated views of Exercise Science students at a large Midwestern university who were enrolled in the course Exercise & Weight Control (Richardson et al., 2015). The purpose of the course was to prepare students to become valued members of the allied healthcare team in the treatment of obesity and weight management. Views of students’ towards the course curriculum were investigated using Q Methodology to objectively measure subjectivity.

Participants in the pilot study consisted of twenty-two (8 men and 14 women), junior- and senior-level exercise science students, mean age of 24.5 (+- 6.68 years), enrolled in the required course Exercise & Weight Control.

The concourse for the study was developed using an extensive review of obesity and weight management literature, content within the course curriculum, and prior course evaluations. Forty-four statements were selected from the concourse that were representative of the subjective communications on the topic which created the Q sample. The 44 statements fit into 7 themes using Fisher’s design principles (Brown, 1980): obesity attitudes, weight management, barriers to weight loss, pathophysiology of fat knowledge, causes of obesity, attributes to weight gain, and personal factors and individual responsibility.
The Q sort was administered and completed on the first and last days of the course for a pre- and postcourse comparison. Analysis of the students’ precourse Q sorts revealed all 22 exercise science students were represented by a single factor/perspective (“naïve learners”). Upon postcourse sort analysis of views, two factors/perspectives emerged (“assimilator learners” and “askew learners”).

Precourse sort factor 1: naïve learners represented student perceptions by a single view/factor, signifying unison among the students labeled as naïve learners. Overall, this view was characterized by a focus on exercise concepts versus a comprehensive therapeutic approach to managing obesity and weight loss. Students at the beginning of the course primarily valued the importance of diet and exercise in weight management typically found in exercise physiology textbooks. Students viewed obesity as being preventable and believed the most reasonable means to weight management were through caloric restriction and energy expenditure. Students were naïve to other clinical therapeutic interventions such as bariatric surgery.

Postcourse sort resulted in two views upon completion of the course. Postcourse factor 1: assimilator learners were represented by eight students who held a positive and conventional exercise physiologist view valuing the importance of multifactorial, evidenced-based, therapeutic approach to obesity and weight management. Assimilator learners views were reflective of course concepts recognizing the need for diet, exercise, obesity acceptance, and the need for social support with weight loss. Postcourse factor 2: askew learners were represented by six students who were in contrast to the assimilator learners. Factor 2 was identified as askew learners for perceptions that emerged as superficial, lacking empathy and a somewhat unrealistic expectation of weight loss.
Askew learners did not accept course concepts due to their focus on diet restrictions and energy expenditure and believing that obesity is completely preventable and perhaps easily controllable. These students identified with little change in their perceptions upon completion of the course. Askew learners placed a high emphasis on physical appearance, and narrowed and unbalanced focus on accepting causes and treatments for obesity. The remaining views, six students, aligned as mixed views on both factors upon postcourse, with one student not completing the postcourse Q sort.

In addition to identifying that learners held singular views at the beginning of the course that separated into two views upon completion, unexpected findings also emerged. Overall, students’ maintained a persistent unfavorable view of obesity surgical weight loss interventions throughout the course. Specifically, statement 5 and 43 were not well accepted by the group of exercise science students. Statement 5 (Bariatric surgery leads to long-term weight loss and weight maintenance) and statement 43 (Surgical bariatric interventions are the best methods for weight loss) emerged as two consensus statements with both groups of students placing these statements in their most unlike their views. Findings exposed students’ resistance to acceptance of bariatric surgical interventions revealing that these key variables should be addressed in curricula. As noted in the pilot study, acceptance of bariatric surgery needs further attention. The pilot study justifies the need for additional studies to use Q Methodology to investigate obesity views including additional statements regarding surgical interventions. Q Methodology as a needs assessment tool in education may assist with recognizing students’ subjectivity and bias. Assessing students at the beginning of the course empowers instructors with the ability to dynamically modify coursework to fit the needs of the learners (Richardson, 2015).
The exploratory findings of the pilot study warrant additional attention to investigate students’ views of obesity and treatment using a more robust concourse and Q-sample. Magnifying the pilot study in the dissertation will provide a means to understand first-year freshman students’ views of obesity and provide a lens uncovering needs assessment for differentiating student views.

Limitations

A potential weakness of Q is that it does not estimate population statistics; it reveals social perspectives on issues within a specific group (Brown, 1980). Q seeks to interpret points of view that may be generalized back to the phenomenon being studied rather than generalized to the population (Thomas & Baas, 1993). Thomas & Baas (1993) distinctly explain both generalizability and replicability with Q represents participants’ perspectives emerge and characteristics of relations between these factors is substantive inference about phenomena. Findings from Brown (1980) and Thomas & Baas (1993) found results of Q studies to be replicable. Brown (1991) pungently states: “issues of validity consequently fade since there is no external criterion by which to appraise a person’s own perspective” (p.12). Q methodology emerge factors, categories of operant subjectivity, through the systematic measure. Q seeks to determine types of people versus typical quantitative researchers concerned with quantity of people.

Summary

This chapter described an overview of the research design with general and specific research hypotheses both derived with logic and empirical findings. Due to the ability of Q methodology to intensively explore self-referent perspectives, the method
was chosen to examine students’ views of pertinent coursework topics related to obesity and weight management.
CHAPTER IV
RESULTS OF THE STUDY

“Only with the proper methodological principles can any problems be solved and any data safely brought into the scientific field.”
(Stephenson, 1953)

The purpose of this study was to explore subjectivity or views that students’ posses towards obesity and weight loss treatment options within an exercise science curriculum in conjunction with implementing Q methodology as a needs assessment tool to empirically describe the differing views. This chapter has been organized to explain the findings of the study, beginning with description of the research participants. The chapter will provide results of the analysis of the Q sorts and the testing of the specific research hypotheses.

Demographic Data for the Study

Participants for the study were recruited from an introductory exercise science course within a large Midwestern university. Exercise science is a four-year undergraduate Bachelor’s degree academic program that encompasses a wide variety of disciplines in preparation for employment in health & fitness industry, health-care, corporate, commercial and community settings or admission into graduate programs (CAAHEP, 2015). The course, Introduction to Exercise Science, is a single semester 15-
week curriculum required for students interested in pursuing admission to the degree
granting college within the university. The course provides an overview of fitness
professional career options, national certifications and professional organizations as a
foundation to assist students with choosing an academic major. The course is instructed
using a Graduate Assistant (GA) studying master level exercise physiology.

Spring semester 2016 enrollment for the Introduction to Exercise Science course
consisted of 24 undergraduate first-year exercise science students. The students were all
enrolled in the course to fulfill the required prerequisite for admission to the major and to
explore basic information surrounding the major. A total of 24 students and the one
instructor (GA) participated and submitted the Q-sort and survey, which equated to a
100% response rate. Of the 25 total participants, twenty-two (88%), claimed exercise
science as their intended major, one claimed electrical engineering, one sports
management and one graduate exercise physiology (GA). Twenty-four participants (96%)
were pursuing academic studies related to Sport Science and one student listed electrical
engineering. Fifteen (60%) participants were male and ten (40%) participants were
female. The ages of participants ranged from 18 years to 23 years, with a mean age of
19.12 years. Participant self recorded height and weight resulting in calculated BMI for
each participant. BMI classifications are defined as underweight <18.5 kg/m², normal
18.5-24.9 kg/m², overweight 25.0-29.9 kg/m², obesity class I 30.0-34.9 kg/m², obesity
class II 35.0-39.9 kg/m² and severe obesity class III 40.0+ kg/m² (Sturm, 2007). BMI
results for participants for the study ranged from 18.4 kg/m² (underweight) to 43.9 kg/m²
(obese), with a mean BMI of 25.47 kg/m² (overweight). A total of 3 students were
classified as obese and 1 student was underweight. Self-reported activity levels reveal 3+ days of exercise per week by all participants (100%).

Data Collection

Data collection occurred during the spring 2016 semester. All participants completed the Q Survey on First-year Intro to Exercise Science and a Q sort. Information from the Q Survey was used in conjunction with the Q sort process to provide a comprehensive understanding of participants’ views and background of exercise. This survey identified participants declared major, class rank, age, gender, and height and weight. Additional open-ended questions consisted of rationale to why they ranked statements most like and most unlike their view and feedback regarding their personal exercise regimen. The data from the survey outlines descriptive characteristics of the participants in the study helping to illuminate unique qualities of the learners. The Q sort process, as described by Brown (1980) seeks to explore subjectivity of participant views through both similarities and differences. Views that emerge from the Q sort process, along with self-report information from the Q survey, are used collectively by the researcher to provide additional descriptive characteristics of participants who load on a factor via factor analysis. The Q sort process allows for the exploration of participants’ subjective frame of reference and this insight provides the researcher the ability to cultivate context-rich results and theory (Ramlo & Newman, 2010).

Q sorting process is fundamental in Q methodology and is inherently subjective (Stephenson, 1953; Brown, 1980; McKeown & Thomas, 1988; Ramlo & Newman, 2010). The sorting process consists of participants judging each Q statement relative to others based upon their own construction, therefore providing their inner subjective
views. There is no right or wrong way for Q participants to sort statements. Participants interpret statements based upon their own views; this sorting process is self-referential and represents a communicative process (Brown, 1980, Newman & Ramlo, 2010; Ramlo & Newman, 2010; Stephenson, 1953). The Q sorting process is the technical means which data is obtained for factoring (Brown, 1980). The participants sorted the 44 statements. The sorting process began with pre-sorting where the participants placed the statements into three piles (most like my view, most unlike my view and neutral) (McKeown & Thomas, 1988). The three piles were then ranked ordered by each participant into the fixed quasi-normal distribution grid from +5, most like my view, to -5, most unlike my view. The sorting grid used in this study is shown in Figure 2 below.

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<th>Most LIKE my view</th>
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Figure 2. Q sort grid used in this study.
Analysis of the Data

Software packages are available for Q methodological analysis. One of the most commonly used programs for Q analysis is PQMethod, version 2.11 (Schmolck, 2002), which was used for this dissertation. Analyses of the Q sort involve correlation, factor analysis, factor loadings and the calculation of factor scores (Brown, 1980, 1986, 2008; McKeown & Thomas, 1988; Newman & Ramlo, 2010; Stephenson, 1953). PQMethod facilitates data input, correlation by-person matrix, and factor extraction by principle components and Centroid rotation. Researchers have the ability to rotate factors based on theoretical considerations using hand rotation (Brown, 1980; 1986; Stephenson, 1953). Factor loadings determine the level of correlation with the sorter and each factor. Correlation coefficients are simply factor loadings that correlate the participant with the factor (view) and the higher the factor loading, the more highly correlated the participant is with the factor (view) (Brown, 1980, 1993; McKeown & Thomas, 1988; Ramlo, 2008; Newman & Ramlo, 2010).

Data analysis begins with the researcher exploring emerging factors. Similar views are grouped regarding participants’ viewpoints, as expressed in their Q sorts, via factor analysis. The factors represent the differing viewpoints of the participants. Factor loadings determine which Q sort is associated with each factor (Brown, 1980), the higher the factor loading; the higher the sorter/participant correlates with the factor (Newman & Ramlo, 2010). Only those sorts represented by a factor are used within the analyses. Researchers have the ability to rotate factors based on theoretical considerations using hand rotation (Brown, 1980, 1986; Ramlo, 2016; Stephenson, 1953). Hand rotation allows the researcher a change in vantage point from where data are viewed (McKeown
& Thomas, 1988) and this process is based upon researchers insight or hunches described by Brown (1980) as abductory possibilities in the rotation process to disclose unanticipated discoveries or relationships. The focus of these explorations is to find the best theoretical significance, rather than statistical significance (Ramlo, 2016).

Under consultation with Dr. Ramlo, dissertation co-chair and methodologist, we explored numerous combinations to explore the practicality of the factors. We commissioned factor solutions with both two and three factors using different factor extractions and rotations methods. The best theoretical solution with the data contained two factors and utilized PCA extraction and Varimax rotation. The two factors were extracted from the data matrix, applying rotation assisted in the analysis process to sharpen the theoretical factor structure. The final choices for factor extraction and rotation provided more meaningful angle to view the factors, which supports Pierce’s theory of abduction (McKeown & Thomas, 1988) providing saliency within factor structure.

In Q methodology, the use of Centroid extraction in conjunction with theoretical considerations using hand rotation illustrates the qualitative aspect of the factor analytic process (Ramlo, 2015c). The analysis of factor descriptions is determined by only Q sorters who are flagged on a particular factor (McKeown & Thomas, 1988). We examined and evaluated the data, select sorters who were represented by a factor prior to the next stage of analysis. This flagging process indicates individuals who are represented by a factor, illustrated with Xs. Data analyses tables were developed statistically and generated using the software program and shown in the file output data titled ‘Factor Matrix with an X Indicating a Defining Sort’. The two factor matrix shown
in Table 1 is the result of PCA extraction and Varimax rotation, depicting the two distinct factors that emerged. Only those defining sorts were used to create tables to interpret and describe factors from the data. The analytic stage of inquiry and exploration facilitates the development of subjective theories.

Table 1.
Factor Matrix with X Indicating a Defining Sort.

<table>
<thead>
<tr>
<th>QSORT</th>
<th>FACTOR 1</th>
<th>FACTOR 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A</td>
<td>0.6368X</td>
<td>0.4858</td>
</tr>
<tr>
<td>2 B</td>
<td>0.6267X</td>
<td>0.35</td>
</tr>
<tr>
<td>3 C</td>
<td>0.19</td>
<td>0.8213X</td>
</tr>
<tr>
<td>4 D</td>
<td>0.7646X</td>
<td>0.31</td>
</tr>
<tr>
<td>5 E</td>
<td>0.4999X</td>
<td>0.14</td>
</tr>
<tr>
<td>6 F</td>
<td>0.4219X</td>
<td>0.33</td>
</tr>
<tr>
<td>7 G</td>
<td>0.6562X</td>
<td>0.3192</td>
</tr>
<tr>
<td>8 H</td>
<td>0.3755</td>
<td>0.4760X</td>
</tr>
<tr>
<td>9 I</td>
<td>0.4471</td>
<td>0.7143X</td>
</tr>
<tr>
<td>10 J</td>
<td>0.7332X</td>
<td>0.1727</td>
</tr>
<tr>
<td>11 K</td>
<td>0.3625</td>
<td>0.6349X</td>
</tr>
<tr>
<td>12 L</td>
<td>0.7950X</td>
<td>-0.0643</td>
</tr>
<tr>
<td>13 M</td>
<td>0.2528</td>
<td>0.8012X</td>
</tr>
<tr>
<td>14 N</td>
<td>0.6150X</td>
<td>0.2751</td>
</tr>
<tr>
<td>15 O</td>
<td>0.5323X</td>
<td>0.4738</td>
</tr>
<tr>
<td>16 P</td>
<td>0.5319X</td>
<td>0.3383</td>
</tr>
<tr>
<td>17 Q</td>
<td>0.6042X</td>
<td>0.06</td>
</tr>
<tr>
<td>18 R</td>
<td>0.2728</td>
<td>0.5045X</td>
</tr>
<tr>
<td>19 S</td>
<td>0.6661X</td>
<td>-0.0201</td>
</tr>
<tr>
<td>20 T</td>
<td>0.7272X</td>
<td>0.3294</td>
</tr>
</tbody>
</table>
Table 1. (continued)

<table>
<thead>
<tr>
<th>QSORT</th>
<th>FACTOR 1</th>
<th>FACTOR 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 U</td>
<td>0.5904X</td>
<td>0.2464</td>
</tr>
<tr>
<td>22 V</td>
<td>0.6582X</td>
<td>0.2767</td>
</tr>
<tr>
<td>23 W</td>
<td>0.5265X</td>
<td>0.3922</td>
</tr>
<tr>
<td>24 X</td>
<td>0.4957</td>
<td>0.4379X</td>
</tr>
<tr>
<td>25 Y</td>
<td>0.6471X</td>
<td>0.3057</td>
</tr>
</tbody>
</table>

*The researcher flagged (X) these participants on the factor based upon responses to survey and post-sort Q survey questions

Results

After calculating factor scores, two additional tables were developed for analysis: consensus and distinguishing factor statements. These two tables allowed the researcher to explore similarities and differences between factors (Brown, 1980; McKeown & Thomas, 1988; Newman & Ramlo, 2010). Distinguishing and consensus statements were calculated using statistical significance related to the grid positions (z-scores) of each statement for each factor. Distinguishing statements were generated with statements that were most dissimilar among the factors and consensus statements are those statements that are mutually common among the factors. Table 2 below itemizes factor scores for each statement with distinguishing statements for each factor marked bold with an asterisk (*) and consensus statements marked with a plus (+).
Table 2
Factor Q-Sort Values for Each Statement

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Factor</th>
<th>Arrays</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+</td>
<td>Bariatric surgery leads to long term weight loss and maintenance.</td>
<td>-4</td>
<td>-3</td>
</tr>
<tr>
<td>2+</td>
<td>Everyone has control over their weight.</td>
<td>-1</td>
<td>0</td>
</tr>
<tr>
<td>3+</td>
<td>I think this class will not provide any additional information for me that I do not already know.</td>
<td>-5</td>
<td>-3</td>
</tr>
<tr>
<td>4+</td>
<td>I feel disinterested learning about something that does not apply to me personally.</td>
<td>-4</td>
<td>-5</td>
</tr>
<tr>
<td>5*</td>
<td>I feel that by decreasing food consumption of calories and portions that weight loss will occur.</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>6*</td>
<td>I feel that obese individuals are lazy.</td>
<td>-3</td>
<td>-1</td>
</tr>
<tr>
<td>7+</td>
<td>I feel that obesity is often used as an excuse to not exercise</td>
<td>0</td>
<td>-1</td>
</tr>
<tr>
<td>8*</td>
<td>I understand that obesity is a complex multifactorial disease.</td>
<td>1</td>
<td>-2</td>
</tr>
<tr>
<td>9**</td>
<td>Obese clients will probably dropout of weight loss programs.</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>10</td>
<td>Obesity surgery should only be used as a last resort.</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>11*</td>
<td>The high cost of healthy food is a primary cause of obesity</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>12</td>
<td>Behavior change is very difficult with humans.</td>
<td>3</td>
<td>-1</td>
</tr>
</tbody>
</table>
Table 2. (continued)

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Factor Arrays</th>
</tr>
</thead>
<tbody>
<tr>
<td>13+</td>
<td>Exercising and eating healthy is very important personally to me.</td>
<td>4 3</td>
</tr>
<tr>
<td>14</td>
<td>I believe it is important to accept people of all sizes.</td>
<td>4 1</td>
</tr>
<tr>
<td>15</td>
<td>I feel obesity is a person’s choice.</td>
<td>-3 0</td>
</tr>
<tr>
<td>16</td>
<td>I feel that diet and exercise is the correct way to lose weight.</td>
<td>5 3</td>
</tr>
<tr>
<td>17+</td>
<td>I feel that obese individuals are strong willed and determined people.</td>
<td>-4 -4</td>
</tr>
<tr>
<td></td>
<td>I feel uncomfortable around obese people.</td>
<td>-4 -5</td>
</tr>
<tr>
<td>19+</td>
<td>Increasing energy expenditure through movement and exercise is important to loss weight.</td>
<td>4 3</td>
</tr>
<tr>
<td>20+</td>
<td>Obese people are commonly from lower socioeconomic levels and therefore cannot afford memberships to workout facilities.</td>
<td>-3 -3</td>
</tr>
<tr>
<td>21</td>
<td>Physical appearance is very important to me.</td>
<td>4 2</td>
</tr>
<tr>
<td>22+</td>
<td>There is a minimum amount of minutes per week of physical activity which is important for weight maintenance.</td>
<td>-1 1</td>
</tr>
<tr>
<td>23+</td>
<td>Daily physical activity is important for everyone regardless of age or health status</td>
<td>5 4</td>
</tr>
<tr>
<td>24+</td>
<td>Genetics is the cause for obesity.</td>
<td>-2 -2</td>
</tr>
<tr>
<td>25+</td>
<td>I believe surgery is a healthy way to lose weight.</td>
<td>-5 -5</td>
</tr>
</tbody>
</table>
Table 2. (continued)

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Factor Arrays</th>
</tr>
</thead>
<tbody>
<tr>
<td>26*</td>
<td>I feel obesity is a preventable condition.</td>
<td>2 5</td>
</tr>
<tr>
<td>27*</td>
<td>I feel that individuals who are obese lack information on the importance of daily physical activity.</td>
<td>0 4</td>
</tr>
<tr>
<td>28*</td>
<td>I feel that obesity is higher among low socioeconomic class</td>
<td>1 -3</td>
</tr>
<tr>
<td>29+</td>
<td>I have difficulty feeling empathy (compassion) towards individuals who are obese.</td>
<td>0 -1</td>
</tr>
<tr>
<td>30</td>
<td>It is easy for the general public to be judgmental towards obese individuals</td>
<td>5 3</td>
</tr>
<tr>
<td>31+</td>
<td>Obese people have higher rates of low self-esteem and therefore do not adhere to regular exercise.</td>
<td>3 2</td>
</tr>
<tr>
<td>32</td>
<td>Successful weight loss requires social support (family or peers).</td>
<td>5 1</td>
</tr>
<tr>
<td>33+</td>
<td>Weight gain is rarely caused by lack of willpower or dedication</td>
<td>-5 -4</td>
</tr>
<tr>
<td>34*</td>
<td>Attitudes towards obesity are formed through media.</td>
<td>2 0</td>
</tr>
<tr>
<td>35*</td>
<td>Decreasing food consumption (energy intake) is important to minimize weight gain</td>
<td>2 -2</td>
</tr>
<tr>
<td>36*</td>
<td>I am interested in learning about the causes and treatments of obesity</td>
<td>1 4</td>
</tr>
<tr>
<td>37*</td>
<td>I feel competent in my skills to provide weight loss assistance to those who are overweight or obese.</td>
<td>0 5</td>
</tr>
<tr>
<td>38*</td>
<td>I feel obesity surgery is an easy way out.</td>
<td>-2 2</td>
</tr>
</tbody>
</table>
Table 2. (continued)

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Factor Arrays</th>
</tr>
</thead>
<tbody>
<tr>
<td>39*</td>
<td>I feel that media’s advertising of fast food is a main cause for the national statistics on the high rates of obesity.</td>
<td>-2 5</td>
</tr>
<tr>
<td>40+</td>
<td>I feel that obesity is higher among people who receive education less than a college</td>
<td>-3 -4</td>
</tr>
<tr>
<td>41*</td>
<td>I think I will be working with obese individuals in the future.</td>
<td>-1 5</td>
</tr>
<tr>
<td>42*</td>
<td>Lack of will power is a primary cause of weight gain.</td>
<td>1 4</td>
</tr>
<tr>
<td>43+</td>
<td>Obese people ignore significant medical problems caused by obesity.</td>
<td>3 2</td>
</tr>
<tr>
<td>44+</td>
<td>Surgical weight loss surgery is the best method for weight loss.</td>
<td>-5 -5</td>
</tr>
</tbody>
</table>

Note. Distinguishing statements for each factor marked bold with an asterisk (*) and consensus statements marked with a plus (+).

To aid the reader with interpretation of each factor, a table of distinguishing statements for each factor will be discussed in the analysis later in the chapter.

The representative sort illustrates sorters views that align with a particular factor array. Statements ranked as most like my view and least like my view in the representative sort provide a strong starting point for the researcher to begin describing the view represented by that factor. The consensus and distinguishing statements are then used to further enlighten similarities and differences between the factors. It is recommended that post-sort interviews be conducted to gather additional perspectives from each participant. Information from the participant can explain why the sort was
arranged and other pertinent details to assist providing meaning to the factors. Webler et al. (2009) describe the importance of using comments from sorters to interpret the factors and begin to draft social narratives. Post-sort comments often contain key elements confirming and providing insight to build theory reflecting factor’s meanings. For this study, the researcher asked post-sort survey questions permitting participants to self-report their decision making process. The questions on the post-sort Q survey were:

1. Tell us why you selected the four statements you placed under +5 (most like my view).
2. Tell us why you selected the four statements you placed under -5 (most unlike my view).
3. Please describe your decision making process during the sort. Did you gain insight about your views as you sorted the statements? If so, please describe.
4. A. Tell us how often you engage in regular physical activity.
   B. Briefly outline your activity program.

Responses to these post-sort survey questions helped guide the factor analysis as well as interpret the factors. Sorters responses assisted to clarify the different views (factors).

Interpretation of the Two Perspectives / Factors

In this study, the researcher asked participants in the Introduction to Exercise Science course to sort 44 statements based upon their own personal views of obesity and weight management. The analysis resulted in two factors being represented. There were 25 total Q sorts, 18 were represented on Factor 1 which the researcher labeled “The Beautiful Self” and 7 were represented on Factor 2 “Emerging Clinicians”.

Factor 1 (The Beautiful Self) are students who value the importance of exercise, diet and healthy behaviors, view looking good as a priority and support that obesity bias is prevalent. Table 3 and Table 4 respectively contain the top 8 most-like and most-unlike
statements for each factor. The two statements that help clearly define this factor are statement 13 (Exercising and eating healthy is very important personally to me) and statement 21 (Physical appearance is very important to me). Both of these statements reveal that students value their own physical self-image as being essential. Post-sort Q survey questions further support this observation by the written comment participant A provided to post-sort question 1(Why did you select the four statements you placed under +5 (most like my view?)?): “Exercise and diet is important to me and it is what keeps me energized throughout the day” and “Diet and exercise is a safe and fulfilling way to lose weight”. Participant A’s top four selected statements were: 13 (Exercising and eating healthy is very important personally to me), 26 (I feel obesity is a preventable condition), 23 (Daily physical activity is important for everyone regardless of age or health status) and 16 (I feel that diet and exercise is the correct way to lose weight). Participant O further supported this theme with post-sort feedback stating, “I am a self marketed personal trainer and fitness model and physical appearance is very important to me.” All 18 participants that loaded on Factor 1 indicated that diet and exercise is essential to their own self-care and way of life.
Table 3.

Eight Most-Like My View Statements for Factor 1 “The Beautiful Self”

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Grid Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>I feel that diet and exercise is the correct way to lose weight.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Daily physical activity is important for everyone regardless of age or health status.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>It is easy for the general public to be judgmental towards obese individuals (family or peers).</td>
<td>5</td>
</tr>
<tr>
<td>30</td>
<td>Successful weight loss requires social support (family or peers).</td>
<td>5</td>
</tr>
<tr>
<td>32</td>
<td>Exercising and eating healthy is very important personally to me.</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>Physical appearance is very important to me</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Increasing energy expenditure through movement and exercise is important to loss weight.</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>I believe it is important to accept people of all sizes.</td>
<td>4</td>
</tr>
</tbody>
</table>

“The Beautiful Self” group also shared bias views of obesity by ranking statement 30 (It is easy for the general public to be judgmental towards obese individuals) in the +5 most like my view. Statements appearing in the eight most unlike my view (Table 4) provide a lens to this groups anti-fat views with the agreement of statement 33 (Weight gain is rarely caused by lack of will power or dedication) placed in the -5 most unlike my view, revealing negative stereotypical attitudes of obesity. Additionally, statement 17 (I feel that obese individuals are strong willed and determined people) in position -4 most unlike my view supports the stigmatization of weight gain and obesity.
Table 4.
Eight Most-Unlike My View Statements for Factor 1 “The Beautiful Self”

<table>
<thead>
<tr>
<th>No .</th>
<th>Statement</th>
<th>Grid Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>I feel that obese individuals are lazy.</td>
<td>-4</td>
</tr>
<tr>
<td>17</td>
<td>I feel that obese individuals are strong willed and determined people Bariatric surgery leads to long-term weight loss and maintenance.</td>
<td>-4</td>
</tr>
<tr>
<td>1</td>
<td>I feel uncomfortable around obese people.</td>
<td>-4</td>
</tr>
<tr>
<td>18</td>
<td>I feel disinterested learning about something that does not apply to me personally</td>
<td>-4</td>
</tr>
<tr>
<td>33</td>
<td>Weight gain is rarely caused by lack of willpower or dedication.</td>
<td>-5</td>
</tr>
<tr>
<td>4</td>
<td>I am think this class will not provide any additional information for me that I do not already know</td>
<td>-5</td>
</tr>
<tr>
<td>44</td>
<td>Surgical weight loss surgery is the best method for weight loss.</td>
<td>-5</td>
</tr>
</tbody>
</table>

The distinguishing statements for Factor 1 (Table 5) indicate that these students tend to be very rigid in their view of weight loss as indicated by statement 12 (Behavior change is very difficult with humans), statement 32 (Successful weight loss requires social support), and statement 16 (I feel that diet and exercise is the correct way to lose weight). The common theme among these students is that physical appearance is important and without social support and will power, diet and exercise adherence will suffer. Statements ranked as neutral by Factor 1 further support this group of students’ urgencies related to obesity and weight management. Neutral statement 8 (I understand that obesity is a complex multifactorial disease), statement 36 (I am interested in learning
about the causes and treatment of obesity) and statement 37 (I feel competent in my skills
to provide weight assistance to whose who are overweight and obesity) very clearly help
to paint a clear picture of students who are not as interested in pursuing obesity care.

This is supported by participant T post-sort feedback “Without support, they could give
in to temptation” and participant S “I have pretty set values and opinions of obesity”.

Table 5.

Distinguishing Statements for Factor 1 “The Beautiful Self” and Factor 2 “Emerging Clinicians”

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Rank Score Factor 1</th>
<th>Rank Score Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>I feel that diet and exercise is the correct way to lose weight.</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>30</td>
<td>It is easy for the general public to be judgmental towards obese individuals. Successful weight loss requires social support (family or peer)</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>21</td>
<td>Physical appearance is very important to me.</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>I believe it is important to accept people of all sizes.</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Behavior change is very difficult with humans.</td>
<td>3</td>
<td>-1</td>
</tr>
<tr>
<td>10</td>
<td>Obesity surgery should only be used as a last resort.</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>I feel obesity is a preventable condition.</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Decreasing food consumption (energy intake) is important to minimize weight gain.</td>
<td>2</td>
<td>-2</td>
</tr>
<tr>
<td>35</td>
<td>Attitudes towards obesity are formed through media.</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I feel that by decreasing food consumption of calories and portions that weight loss will occur.</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 5 (continued)

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Rank Score Factor 1</th>
<th>Rank Score Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>I understand that obesity is a complex multifactorial disease</td>
<td>1</td>
<td>-2</td>
</tr>
<tr>
<td>36</td>
<td>I am interested in learning about the causes and treatments of obesity.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>42</td>
<td>Lack of will power is a primary cause of weight gain.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>28</td>
<td>I feel that obesity is higher among low socioeconomic class.</td>
<td>1</td>
<td>-3</td>
</tr>
<tr>
<td>27</td>
<td>I feel that individuals who are obese lack information on the importance of daily physical activity.</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>37</td>
<td>I feel competent in my skills to provide weight loss assistance to those who are overweight or obese.</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>Obese clients will probably dropout of weight loss programs.</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td>41</td>
<td>I think I will be working with obese individuals in the future.</td>
<td>-1</td>
<td>5</td>
</tr>
<tr>
<td>38</td>
<td>I feel obesity surgery is an easy way out.</td>
<td>-2</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>I feel that media’s advertising of fast food is a main cause for the national statistics on the high rates of obesity.</td>
<td>-2</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>The high cost of healthy food is a primary cause of obesity.</td>
<td>-2</td>
<td>-4</td>
</tr>
<tr>
<td>15</td>
<td>I feel obesity is a person’s choice.</td>
<td>-3</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>I feel that obese individuals are lazy.</td>
<td>-3</td>
<td>-1</td>
</tr>
</tbody>
</table>
Factor 2 represented seven of the twenty-five respondents; the researcher named this factor “Emerging Clinicians”. Table 6 and Table 7 contain the eight most-like and most-unlike statements for this factor, respectively. Table 5 contains the distinguishing statements for this factor. These students view obesity and weight management as something they can conquer as indicated by statement 26 (I feel obesity is a preventable condition) in position +5 and statement 27 (I feel that individuals who are obese lack information on the importance of daily physical activity) in position +4 in Table 6. The statements in the most like my view represent a confident view that these students will be clinicians who strive to assist and help conquer obesity.

“Emerging Clinicians” most unlike my view statements strengthen the theme that these students strive to want to offer assistance. Statement 18 (I feel uncomfortable around obese people), statement 4 (I feel disinterested learning about something that does not apply to me personally) and 3 (I think this class will not provide any additional information for me that I do not already know) indicates both there innate confidence and drive to continue learning.

The participants who loaded on Factor 2 express wanting to learn more about obesity and foresee themselves working to provide weight loss assistance in the future. Distinguishing statements (Table 5) and the eight most like my view (Table 6) support this view. Participant R reported “I want to be a trainer, so I will definitely work with obese people”. Participant R ranked statement 18 (I feel uncomfortable around obese people) and statement 29 (I have difficulty feeling empathy (compassion) towards individuals who are obese) in the most unlike my view -5 position therefore, characterizing his strong desire and preparedness to both nurture, educate and provide
assistance to the obese. Participant M expressed “People fail to lose weight because they lack the knowledge of proper diet and physical activity. Everyone can lose weight, it just takes knowledge and consistency” and that the Q sort process “gave me a deeper thought for what I want to do in the future as a personal trainer as I will probably work with obese individuals.” The combination of the consensus, distinguishing statements and post-sort Q survey feedback validate that students who loaded on Factor 2 demonstrate self-efficacy to help and nurture others. Not only do these students have a strong desire to see themselves in a “helping career” but also have “mothering” views offering to teach and guide knowledge to those with less education and will power. This factor labeled “Emerging Clinicians” are those who want to assist with making a difference. Emerging Clinicians view that obesity is preventable. With the correct tools, knowledge can be strengthened and changes with weight loss can happen.

Table 6.
Eight Most-Like My View Statements for Factor 2 “Emerging Clinician”

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Grid Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>I feel that media’s advertising of fast food is a main cause for the national statistics on the high rates of obesity.</td>
<td>5</td>
</tr>
<tr>
<td>41</td>
<td>I think I will be working with obese individuals in the future</td>
<td>5</td>
</tr>
<tr>
<td>26</td>
<td>I feel obesity is a preventable condition</td>
<td>5</td>
</tr>
<tr>
<td>37</td>
<td>I feel competent in my skills to provide weight loss assistance to those who are overweight or obese.</td>
<td>5</td>
</tr>
<tr>
<td>42</td>
<td>Lack of will power is a primary cause of weight gain</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 6. continued

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Grid Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>I feel that individuals who are obese lack information on the importance of daily physical activity.</td>
<td>4</td>
</tr>
<tr>
<td>36</td>
<td>I am interested in learning about the causes and treatments of obesity.</td>
<td>4</td>
</tr>
<tr>
<td>23</td>
<td>Daily physical activity is important for everyone regardless of age or health status.</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 7.

Eight Most-Unlike My View Statements for Factor 2 “Emerging Clinician”

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Grid Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>I am think this class will not provide any additional information for me that I do not already know</td>
<td>-4</td>
</tr>
<tr>
<td>17</td>
<td>I feel that obese individuals are strong willed and determined people.</td>
<td>-4</td>
</tr>
<tr>
<td>11</td>
<td>The high cost of healthy food is a primary cause of obesity</td>
<td>-4</td>
</tr>
<tr>
<td>33</td>
<td>Weight gain is rarely caused by lack of willpower or dedication.</td>
<td>-4</td>
</tr>
<tr>
<td>40</td>
<td>I feel that obesity is higher among people who receive education less than a college</td>
<td>-5</td>
</tr>
<tr>
<td>18</td>
<td>I feel uncomfortable around obese people</td>
<td>-5</td>
</tr>
<tr>
<td>4</td>
<td>I feel disinterested learning about something that does not apply to me personally</td>
<td>-5</td>
</tr>
<tr>
<td>44</td>
<td>Surgical weight loss surgery is the best method for weight loss.</td>
<td>-5</td>
</tr>
</tbody>
</table>
The final determining tool in the Q methodology analysis is perspective found in the consensus statements. Consensus statements (Table 8) provide similarities between factors that postulate theory and strengthen the identity of commonality for the researcher to uncover social narratives. This dissertation reveals area of consensus shared by both “The Beautiful Self” and “Emerging Clinicians” views.

Neutral statements such as statement 22 (There is a minimum amount of minutes per week of physical activity important for weight maintenance), statement 29 (I have difficulty feeling empathy (compassion) towards individuals who are obese), and statement 2 (Everyone has control over their weight) consist of concepts that are included in exercise science curriculum found in higher university level courses. The current students taking their first exercise science class placed these statements as neutral due to their inexperience in obesity coursework. Statement 3 (I think this class will not provide any additional information for me that I do not already know) and statement 4 (I feel disinterested learning about something that does not apply to me personally) postulates insight that participants are willing to learn and explore this new field.

Surgical options for weight loss uncovered consensus with both groups. The alignments of views towards obesity surgery are parallel. Students feel that exercise remains the best avenue for weight lost as depicted by statement 19 (Increasing energy expenditure through movement and exercise is important to loss weight), statement 23 (Daily physical activity is important for everyone regardless of age or health status) both suggesting that diet and exercise should always be first in conjunction to their personal exercise views, statement 13 (Exercising and eating healthy is very important personally to me). The Q sort reveals that students do not view obesity weight loss surgery as a
viable option. Statements such as 25 (I believe surgery is a healthy way to lose weight), statement 44 (Surgical weight loss surgery is the best method for weight loss), statement 1 (Bariatric surgery leads to long-term weight loss and maintenance) and statement 25 (I believe surgery is a healthy way to lose weight) received most unlike my view. Much of the commonality between Factors revealed in the Consensus statements solidify areas of gaps in students understanding of the pathophysiology of obesity.

Table 8.

Consensus Statements Common among Factors

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Factor 1 Grid Position</th>
<th>Factor 2 Grid Position</th>
<th>General description of Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>Bariatric surgery leads to long-term weight loss and maintenance.</td>
<td>-4</td>
<td>-3</td>
<td>unlike</td>
</tr>
<tr>
<td>2*</td>
<td>Everyone has control over their weight</td>
<td>-1</td>
<td>0</td>
<td>neutral</td>
</tr>
<tr>
<td>3*</td>
<td>I think this class will not provide any additional information for me that I do not already know.</td>
<td>-5</td>
<td>-3</td>
<td>unlike</td>
</tr>
<tr>
<td></td>
<td>I feel disinterested learning about something that does not apply to me personally</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4*</td>
<td></td>
<td>-4</td>
<td>-5</td>
<td>unlike</td>
</tr>
<tr>
<td>7*</td>
<td>I feel that obesity is often used as an excuse to not exercise</td>
<td>0</td>
<td>-1</td>
<td>neutral</td>
</tr>
<tr>
<td>9</td>
<td>Obese clients will probably dropout of weight loss programs</td>
<td>-1</td>
<td>-2</td>
<td>unlike</td>
</tr>
<tr>
<td>13*</td>
<td>Exercising and eating healthy is very important personally to me</td>
<td>4</td>
<td>3</td>
<td>like</td>
</tr>
<tr>
<td></td>
<td>I feel that obese individuals are strong willed and determined people</td>
<td>-4</td>
<td>-4</td>
<td>unlike</td>
</tr>
<tr>
<td>18*</td>
<td>I feel uncomfortable around obese people</td>
<td>-4</td>
<td>-5</td>
<td>unlike</td>
</tr>
</tbody>
</table>
Increasing energy expenditure through movement and exercise is important to loss weight. Obese people are commonly from lower socioeconomic levels and therefore cannot afford memberships to workout facilities. There is a minimum amount of minutes per week of physical activity which is important for weight maintenance. Daily physical activity is important for everyone regardless of age or health status. Genetics is the cause for obesity. I believe surgery is a healthy way to lose weight. I have difficulty feeling empathy (compassion) towards individuals who are obese. Obese people have higher rates of low self-esteem and therefore do not adhere to regular exercise. Weight gain is rarely caused by lack of willpower or dedication. I feel that obesity is higher among people who receive education less than a college. Obese people ignore significant medical problems caused by obesity. Surgical weight loss surgery is the best method for weight loss.

The first research hypothesis stated that, “More than one view of obesity and weight management will emerge among students enrolled in a freshman level exercise science course at a large public university.” Two factors, or viewpoints about obesity and weight management, existed in the freshman level course as a result of analyzing the Q sorts. Factor 1 or what the researcher named “The Beautiful Self”. The students who
loaded on this factor are those who value the importance of exercise personally and view looking good as a priority. Factor 2 or what the researcher named “Emerging Clinicians” are students who foresee themselves in the future working with obesity. These two distinct views support the first specific research hypothesis, “more than one factor will emerge from the analyses of the Q sorts”, represent the variety of viewpoints students embrace towards obesity. These views were further supported by post-sort questions.

The second research hypothesis stated, “The Q methodology results will reveal consensus among the views of obesity and weight management.” Shared views between the two groups existed. Table 8 provides support that students hold both similar “like my views” and “unlike my views”. Students agree that exercise and diet are important for weight lost (statements 13 and 19). Both groups of students exhibit negative attitudes believing that obese individuals are not strong willed or determine (statement 17 and 33). Consensus among all students reveals unsupportive views of obesity/bariatric surgery as a mechanism for weight lost (statement 1, 25, 44). Consensus statements represent comparable opinions of obesity and weight management that students embrace. Out of a total 44 statements, 21 statements reveal varying consensus (Table 8) supporting the second specific research hypothesis, “Q Methodology analyses will provide multiple consensus statements indicating themes of agreement across the unique views (as represented by Q factors).

The third research hypothesis stated that, “distinguishing statements will describe how each view about obesity and weight management is unique”. Differences between the two factors are listed in Table 5 and clearly provide support that students’ views are unique. Factor 1 “The Beautiful Self” students support a personal philosophy that an
active lifestyle, good nutrition, and physical attributes are essential. “The Beautiful Self” students appear to be very rigid in their epistemological view of weight loss. Factor 1 views are unique as indicated by firm view that behavior change is very difficult (statement 12), expressing that the correct way to lose weight is achieved with using diet and exercise (statement 16), successful weight loss requires assistance (statement 32), stating poor interest in learning about the causes and treatments of obesity (statement 36), and expressing poor desire to work with obese clients (statement 41), along with recognizing poor competency in their own skills to help others with weight loss (statement 37). Factor 2 “Emerging Clinicians” are reinforced with the same statements holding opposing views. These students are very interested in learning about obesity (statement 36), have a strong desire to work with obese clients (statement 41) and students are confident in their own skills to assist others with weight loss (statement 37). “Emerging Clinicians” are not as rigid in their views of diet and exercise, behavior change being difficult, and need for support from others. However, Factor 2 is also unique that these students feel obese clients lack information on the importance of exercise (statement 27) and lack willpower (statement 42) representing that this view has the drive and ambition to become clinicians interested in assisting future clients.

Distinguishing statements substantiate the differences between the two views and provide support to the uniqueness of each factor. Differences between the views were further supported by post-sort questions. Post-sort survey for Factor 1 students’ revealed adherence to their own individual regular exercise programs and two students on this factor identified as not only regularly exercising, but also as collegiate athletes. Furthermore, Factor 1 Subject ‘J’ explained that after completing the Q-sort he realized
that his believes of obesity may be tougher (stringent) than others’ views and subject ‘T’ expressed that he had never thought of his own obesity views prior to completing the Q-sort. Factor 2 comments from subject ‘M’ explained that losing weight takes knowledge and consistency and numerous students on this factor aspire to be a personal trainer or physical therapist. The post-sort survey aligned with how students viewed statements and loaded onto either “The Beautiful Self” and “Emerging Clinician” while providing support for the uniqueness between the views.

The final research hypothesis stated, “The views that emerge within Q Methodology can be used as a needs assessment for improvements in an academic exercise science program”. The analysis of the Q-sort provided robust identification of students’ views of obesity and weight management. The data analysis specified both similarities and differences among the students’ thereby enabling the researcher to ascertain areas of the Q sample with which students most align themselves. Establishing major views of students’ subjectivity to obesity may enlighten the instructor regarding concepts of the curriculum requiring supplementary or additional discussion. The results of factor analysis and the Q-sort support the specific hypothesis that these descriptions of students’ views can be used to customize curriculum for addressing students’ perceptions of obesity and weight management within an exercise science program.
Summary

The participants in this study were all enrolled in a freshman level introduction to exercise science course. The course is designed and required for students’ pursuing the Bachelor of Exercise Science and the curriculum discusses the many career options. There were twenty 24 student participants and one Graduate Assistant Instructor who completed the Q sorts and survey. A total of 25 sorts were completed by the participants and collected for analysis. The Q sorts revealed two factors or views of students’ opinions of obesity and weight management treatments. The factors were named by the researcher “The Beautiful Self” and “Emerging Clinician”. These factor names were crafted using the analysis of the most-like, least-like, distinguishing statements, consensus states and responses to the post-survey.

“The Beautiful Self” factor 1 students were very strong-will compliant exercisers who valued the importance of their own physical physique and good diet regime and do not foresee themselves working with the obese population. Factor 1 can be viewed as egocentric and self-regarding in terms of their beliefs of obesity. “Emerging Clinicians” factor 2 students are competent in their ability and desire to teach, educate and provide the needed tools to assist obese clients. Factor 2 students can be viewed as mothering teachers interested in assisting with obesity prevention and treatment.
CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

“It’s not what you look at that matters, it’s what you see.”
~Henry David Thoreau

Restatements of the problem, procedures, and specific research hypotheses begin the chapter. Conclusions are drawn from the Chapter IV analyses and findings regarding the two factors that emerged are discussed. The implications followed by the suggested future research are also contained in this chapter.

Summary of the study

The academic preparation of exercise science seeks to prepare pre-professionals (students) for work in the health and fitness industry evaluating and assessing clients, modifying negative health habits, and promoting positive lifestyle behaviors for both healthy and high risk clients. Incorporating obesity and the many dimensions of the disease are essential to the undergraduate exercise science curricula (Lubrano et al. 2010). Despite advancing treatment options available for obesity and weight management, obesity discrimination is pervasive and weightism has negative implications on patient care as weight stigma impedes on the implementation of effective efforts to prevent obesity (Puhl & Heuer, 2010). A curriculum that fosters non-judgmental, individualized, and patient focused communication may help to avoid
negative obese bias that can be detrimental to obese clients motivation and commitment (Fismer et al., 2012). Identifying and addressing unfavorable negative attitudes at the pre-professional (student) level of training is an important mechanism for strengthening healthcare providers views of obesity (Teal et al., 2012, Wolf et al., 2010). Negative obese attitudes cause disparities and improvement in obesity treatment will progress as weight bias among healthcare providers decreases facilitating obese persons receive more equitable treatment (Puhl & Heuer, 2011).

Assessing prejudicial views such as weightism can prove difficult due to evaluating consciously held views, relying on self-report and may be subject to socially desirable responses from participants (Bento, White & Zacur, 2012; Puhl, Luedicke & Grilo, 2014; Teachman & Brownell, 2001). Understanding and evaluating students’ views towards obesity course content during freshman-level coursework may enable educators to thread awareness and exposure of weightism early and continuously throughout the undergraduate exercise science program. Exercise professionals play a vital role in interdisciplinary healthcare teams with obese clients. Exploring and evaluating discriminatory views of obesity should be encouraged and supported for students to recognize their own anti-fat bias (Wolf, 2010).

Despite the current research on weightism documented in healthcare settings, education and places of employment, identifying bias can be difficult (Bento et al., 2012). Assessing and uncovering sensitive opinions of obesity using Q methodology provides researches the ability to identify diverse opinions within a group and the number of individuals who hold those views (McKeown & Thomas, 1988; Stephenson, 1953). After obese views have been identified using Q methodology, the views provide specific
information about learners and assess areas in the curriculum for modifications and adaptations to better meet exercise science students’ needs. Exploring and uncovering students’ views of obesity can be sensitive yet, imperative for classroom transformation (Greenleaf & Weiller, 2005).

Statement of the problem

Despite the increasing prevalence of obesity, negative societal attitudes have not attenuated (Puhl & Heuer, 2008). It has been well documented over the past two decades that people of size are targets of discrimination. Obesity discrimination is pervasive throughout society and has been called the last acceptable form of prejudice (Chambliss et al, 2003, Puhl et al, 2001). With the escalating trend of obesity and vast documentation of weightism, future exercise science professionals will treat and assist many patients of size. Understanding and evaluating students’ views towards obesity during undergraduate studies may provide valuable needs assessments material to assist educators on critical issues to be laced into pedagogy.

It is believed that academia leads to increase in tolerance towards individuals (Lambert et al., 2006). Puhl & Heuer (2011) support that the role of curricula within exercise science programs should aim to reduce social acceptability of weight bias. However, unfavorable attitudes about obesity have been documented among a variety of university and professional health-care providers (Greenleaf & Weiler, 2005; Ponstein, 2012; Puhl et al., 2014). Uncovering students’ views using Q methodology provides a mechanism to identify and categorize students’ beliefs and viewpoints as a mode to evaluate learners. Q has also been used as a valuable tool to ascertain needs for program evaluation assessment, in attempt to improve program effectiveness.
The Research Hypotheses

This study aims to demonstrate the discovery and exploration of views towards obesity and weight loss treatment in conjunction with how Q methodology can be used as a needs assessment tool for pre-professional exercise science students’ comprehensive obesity education. The purpose of this study was to:

1. Develop a means for determining student views about obesity that can lead to best practices in an exercise science curriculum.

2. Describe what the various student views are at the beginning of their exercise science coursework.

**General Research Hypothesis 1**

The first research hypothesis stated that, “More than one view of obesity and weight management will emerge among students enrolled in a freshman level exercise science course at a large public university.” Two factors, or viewpoints about obesity and weight management, existed in the freshman level course as a result of analyzing the Q sorts. Factor 1 or what the researcher named “The Beautiful Self” and factor 2 “Emerging Clinician”.

**General Research Hypothesis 2**

The second research hypothesis stated, “The Q methodology results will reveal consensus among the views of obesity and weight management.” Shared views between the two groups existed. Both groups of students exhibit negative attitudes believing that obese individuals are not strong willed or determined (statement 17 and 33). Consensus among all students reveals unsupportive views of obesity/bariatric surgery as a
mechanism for weight lost (statement 1, 25, 44). Consensus statements represent comparable opinions of obesity and weight management that students embrace.

**General Research Hypothesis 3**

The third research hypothesis stated that, “distinguishing statements will describe how each view about obesity and weight management is unique”. Factor 1 “The Beautiful Self” students support a personal philosophy that an active lifestyle, good nutrition, and physical attributes are essential. “The Beautiful Self” students appear to be very rigid in their epistemological view of weight loss. Factor 2 “Emerging Clinicians” are reinforced with the same statements holding opposing views. “Emerging Clinicians” are not as rigid in their views of diet and exercise, behavior change being difficult, and need for support from others.

**General Research Hypothesis 4**

The final research hypothesis stated, “The views that emerge within Q Methodology can be used as a needs assessment for improvements in an academic exercise science program”. The analysis of the Q-sort provided robust identification of students’ views of obesity and weight management. The analysis specified both similarities and differences among the students’ enabling the researcher to ascertain areas of the Q sample with which students most align themselves.

**Support of the findings**

Freshman students enrolled in an Introduction to Exercise Science course revealed two distinct perspectives of obesity and weight management. Exploring students’ views using Q methodology provided a versatile technique, which assessed students’ views and provided insight for program assessment. Kern (2009) supports that health professions
develop an interactive process to improve educational experiences beginning with needs assessment. Utilizing Q methodology as a needs assessment tool aligns with Kerns step #1 by identifying students’ views of obesity and step #2 targeting similarities and differences among perspectives. The use of Q in this study also provided the means to assess students’ opinion or subjectivity uncovering fat bias, which Marcum (2009) believes can be very difficult to measure. Needs assessment literature review, discussed in chapter 2, along with the challenging role of identifying and recognizing discriminatory weightism was captured with the implementation of Q methodology.

The findings in this dissertation surfaced two distinct views providing clear coherence to students’ perspectives of obesity generated through their Q sorts. Students who loaded onto Factor #1 “The Beautiful Self”, associated very similar with Chambliss (2004) description of typical exercise science students who hold keen interests in athleticism. Chambliss explains that students studying the field of exercise science often do so because of their interests in health and physical activity, which may contribute to their unacceptable view of obesity from the emphasis on obesity prevention. “The Beautiful Self” students narrow lens of body image reveal negative stigmatization towards obesity while valuing exercise and their own ideal body image. Students who loaded onto Factor #2 “Emerging Clinicians” express a personal desire to assist and work with the obese population. “Emerging Clinicians” support the writings by Greenleaf & Weiller (2005) belief that the challenging task of promoting healthy lifestyles is the role of physical educators to work towards weight management strategies. Both views that emerged contain essential findings of students’ views to aid educators with curricula needs assessment.
Qualitative feedback in the post-Q sort survey validates Puhl et al. (2014) suggestion that identification of negative weight-related stigmas by students and professionals may benefit from awareness of personal bias. Students stated that after completing the Q sort, sorting and reflecting upon the statements, facilitated personal contemplation of their own views towards obesity, and addressing the need to be more attentive of their obese views. Responses in the post-sort Q survey substantiate Puhl et al. (2014) suggestion for students’ to identify their own weight-related stigmas. Other researchers (Teal et al., 2012; Wolf et al., 2010) also note the important mechanism to have pre-professional (students) both identify and address unfavorable negative attitudes as a means to strengthen healthcare providers views of obesity. Additionally, needs assessment research has been noted to enhance our educational mission directly by strengthening the teaching-learning process and indirectly by informing or enlightening details about program specifics that are least effective (Astin, 2012). Q methodology has illustrated in this dissertation the ability of this mixed-method to perform a needs assessment of learners recognizing the attentiveness the subjective process of analysis reveals (Benesch, 1996).

Conclusion

This part of the chapter discusses the conclusions drawn from the results in chapter IV, as pertaining to general and specific research questions. Results for this data incorporates the collaborative analysis from both the Q sorts and the post-sort survey.
Research Questions

Research hypotheses and questions have been clearly justified throughout the dissertation. The following highlights findings for each research question.

Research Question 1

How many unique views about obesity and weight management exist among students enrolled in a freshman level exercise science course at a large public university?

The analysis of data resulted in two factors/views being represented among students in the freshman level exercise science course. There were 25 total Q sorts, 18 were represented on Factor 1 which the researcher labeled “The Beautiful Self” and 7 were represented on Factor 2 “The Emerging Clinicians”.

Research Question 2

What consensus about obesity and weight management exist among the views of students enrolled in a freshman level exercise science course at a large public university?

Consensus for both groups of students disclosed negative attitudes towards obesity surgery. Both “The Beautiful Self” and “Emerging Clinician” view surgery as an unhealthy option for weight loss and not the best method for long-term maintenance. Students also rank exercise as the best avenue for weight loss. Agreed consensus towards bariatric surgery among students is contradictory to current weight loss literature. Despite the high failure rates of medical obesity treatments (behavioral, dietary, physical activity and pharmacotherapy), the usage of bariatric surgery has grown (Ekkekakis et al., 2006). Bariatric surgery is an effective treatment for morbid obesity (Eldar et al., 2011) and the most commonly performed procedures are RYGB and sleeve gastrectomy (Buchwald & Oien, 2013; Burke & Jing Wang, 2011; Eldar et al, 2011; Reedy, 2009).
Additionally, both groups held consensus with neutral to my view for statements related to material than is commonly instructed in higher level university coursework such as the minimum amount of minutes of physical activity per week needed for weight management, the ability to feel empathy and compassion for obese individuals and statement that everyone has control over their weight. Students agreed that the course would provide new information and they were interested in learning postulates students curiosity towards obesity and weight management. Much of the commonality between Factors revealed among the Consensus statements (Table 8) solidify areas of gaps in students understanding of the pathophysiology of obesity.

Research Question 3
What differentiates the views of obesity and weight management among students enrolled in a freshman level course?

Statistical analyses in Q methodology provides not only correlations among sorters views but also attributes for conceptual understanding of perspectives, both consensus and differing, within groups of participants (Newman & Ramlo, 2010). Distinguishing statements allow researcher to differentiate between factors and provide additional and insightful information for researcher to better reveal the epistemology of perspectives (Newman & Ramlo, 2010).

The distinguishing statements for Factor 1 (Table 5) indicate that these students tend to be very rigid in their view of weight loss indicated by statement 12 (Behavior change is very difficult with humans), statement 32 (Successful weight loss requires social support), and statement 16 (I feel that diet and exercise is the correct way to lose weight). The common theme among these students is that physical appearance is
important and without social support and will power, diet and exercise adherence will suffer. Neutral statements (8, 36 & 37) clearly paint a clear picture of students who are not as interested in pursuing obesity care. This is supported by participant T post-sort feedback “Without support, they could give in to temptation” and participant S “I have pretty set values and opinions of obesity”.

Factor 2 represented seven of the twenty-five respondents; the researcher named this factor “Emerging Clinicians”. These students view obesity and weight management as something they can conquer as indicated by statement 26 (I feel obesity is a preventable condition) in position +5 and statement 27 (I feel that individuals who are obese lack information on the importance of daily physical activity) in position +4 in Table 6. The statements in the most like my view represent a confident view that these students will be clinicians who strive to assist and help conquer obesity. The participants who loaded on Factor 2 tend to hold student values wanting to learn more about obesity and who foresee themselves working to provide weight loss assistance in the future. Distinguishing statements (Table 5) and the eight most like my view (Table 6) supports this view. Neutral ranking statement 6 (I feel that obese individuals are lazy) and statement 15 (I feel obesity is a person’s choice) further emphasize that this group of students’ are supportive and empathic.

Research Question 4

Can the student views that emerge about obesity and weight management provide a needs assessment that can lead to curricula improvements in an exercise science program?

Understanding and evaluating students’ views toward course content material at the beginning of the course reveals to be a powerful assessment tool to assist with
program evaluation. The role of curricula within exercise science programs should aim to reduce social acceptability of weight bias (Puhl & Heuer, 2011). Uncovering students’ views of obesity can be sensitive yet, imperative (Greenleaf & Weiller, 2005). Kern (2009) supports that academic health professions conduct needs assessment targeting specific needs of its learners using a dynamic and interactive process. Q methodology provided this ability with the systematic integration of subjectivity illuminating two groups of beliefs among students’ and therefore, uncovering social perspectives identifying both similarities and differences of needs assessment in the freshman level exercise science course. The two views in this group of students identify opinions that Ottenritter (2004) describe as essential to addressing obesity awareness. Ottenritter supports the notion that evolving curriculum will forge attitudes and ideas, which will shape obesity views.

These views, “The Beautiful Self” and “Emerging Clinicians”, identify students’ understanding of obesity content as a needs assessment for educators. Designing and revamping curriculum to meet the needs of the students’ views is the process for continual improvement in educational experiences (Kern, 2009). Recognizing weight discrimination is both a social injustice and public health issue. Astin (1993, 2012) emphasizes that higher education helps to shape individuals to become more tolerant and open- and civic-minded individuals. Creating transformative learning environments minimize obesity bias and is a crucial role for educators (Rukavina & Li, 2007). Q methodology has been shown to be particularly adept at discovering operant views. Both factors that emerged represent distinct perspectives and substantiate Q as an ideal means to categorize and evaluate learners within an academic setting.
Implications

This section contains the implications of the research. The literature review led to several questions addressed by this study. With the increasing prevalence of obesity and weight discrimination, Morrison et al., (2009) summarized numerous scales and instruments that have been used to evaluate weightism but caution has been advised due to psychometric properties. Furthermore, Paluck & Green (2009) also support the need for more rigorous research methods to seek understanding and remedy the social problems associated with prejudice. Supported by Danielsdottir et al., (2010) declaring that there is a shortage of published studies employing theoretical and methodological approaches. Therefore, commissioning the qualiquantology approach of Q, rooted in theoretical and philosophical context, provides an empirical means to access social phenomena of obesity bias while concurrently evaluating curricula needs assessment.

This study provides a beginning to understanding the complexity of evaluating obesity bias within an exercise science curriculum as a mode for appraising needs assessment. Understanding students’ views of obesity early within the academic program will help educators identify barriers and bias that could hinder the cultivation of open-minded exercise professionals. Once biased views are identified, obesity awareness and sensitivity can be threaded into curriculum taking steps to reduce the social acceptability of weight bias and improve the pedagogy of obesity and weight management education.

This unique study proposes the ability to evaluate students’ views through a different lens than prior studies. Previous weightism studies were limited in scope, using narrow populations and instruments that did not discuss the role of exercise science pre-professionals. This study was different in that it:
1. examined pre-professional (students’) views of obesity, specifically in a freshman level exercise science course

2. explored specifics of each view and provided theory to support the views (Daníelsdóttir et al., 2010)

3. investigated the use of program assessment using students’ views as a mode of needs assessment (Kern, 2009)

4. identified similarities and differences of participants opinions of obesity (Richardson, 2015)

5. provided a process to capture the delicate subjectivity of weight-based prejudice (Puhl et al., 2014)

Thus, this study provides an in depth aspect regarding not only how students feel towards obesity but also the value of a needs assessment to increase bias awareness within curriculum strategies.

Further interpretation of descriptive results provides a rich understanding between the factors using both consensus and distinguishing statements (Table 9.). The similarities between the two factors postulates theory and strengthen the identity of common threads enabling social narratives. Consensus statements in this study align with Puhl (2007, 2009) revealing negative stigma that surfaces from students’ awareness of their obese views. Students’ views regarding surgical options for weight loss may stem from students lack of comprehension of obesity pathophysiology (Richardson, 2015). It is possible that similarities that emerged with consensus statements represents area of curricula content that contains gaps or poor comprehension by students requiring additional education. Distinguishing statements further identified differences between the two student views.
Further Interpretation of views

**Consensus**
- Diet and exercise - importance
- Patients of size have lower self-esteem
- Obese are not strong willed or determined
- Surgery is not a healthy way to lose weight
- Surgical interventions are not viewed as ideal methods

**Distinguishing**
- Factor 1
  - Rigid view that weight loss is difficult
  - Correct mode to lose weight is diet & exercise
  - Physical appearance importance
- Factor 2
  - Obesity is preventable
  - Interested in learning more
  - Education is needed to help

This study indicates the pervasiveness of weightism among pre-professional exercise science students and the importance of obesity awareness for both educators and students. Both groups of students identified in this study must be cognizant of their role within future allied health fields to be instrumental in facilitating and mentoring healthy lifestyles without negative obese stigmas. Exercise science curricula must cultivate interests and experiences for students’ to create social change and reform.

The two factors, or groups of students, in this study demonstrate a heterogeneous collection of pre-professional perspectives. It is important to recognize that the findings were not homogenous and similar, yet provide important differences in students’ views. Thereby ascertaining typologies that enable the educator to recognize areas within the course that may need to be strengthened or elaborated using transformation within current pedagogy. It would also be noteworthy to explore if this heterogeneous group of pre-
professionals identify with similar typologies upon completion and graduation of the exercise science program in comparison to these rigid freshman obese views.

The findings of students’ views of obesity and weight management within this investigation provide very helpful information on learners’ perspectives (or typologies).

Based on the findings of this study, the following implications are offered:

1. Students hold varying views of obesity and both views share similar negative bias. Negative views of bariatric surgery may produce future clinicians, who are not supportive of patients’ options for surgery as a means to strive for healthier lifestyles.

2. In this study, findings report negative views of willpower and motivation among the obese population.

3. Are similar shared negative views present in other pre-professional students studying other health related fields in academia?

4. Faculty educators in exercise science programs may hold similar views of obesity while preferring to emphasize exercise and diet regimes, an evaluation of faculty views would be beneficial to identify if typologies of factors exist.

5. Many students studying exercise science enjoy physical activity themselves and therefore, view exercise as the best choice for obesity treatment.

Suggested Further Research

A variety of additional, unanswered questions arose while conducting this study. For instance, if the Q sort and post-sort survey were conducted at multiple universities, would there have been more and/or different factors? Generalizability is not the same for Q as in other quantitative research (Ramlo, 2016), however studies that include multiple universities with undergraduate exercise science programs may result in a richer understanding of future allied health care providers views of obesity. Further, a study that focuses more on the acceptance of surgical interventions as a method for obesity treatment may prove insightful. Emphasizing the investigation of students’ views in
support of obese clients choice for obesity treatment may lead to a more detailed analysis of ways to encourage exercise professionals to be compassionate and supportive of patients’ choices. A more intimate dialogue between numerous exercise science program educators and researchers may also lead to additional statements or insights relating to the views of obesity and weight management issues. In other words, a Q sort targeting additional questions from this study may lead to new insights. Including statements related to curriculum and obesity treatment regimes and students’ views might result in further clarification of the factors/views. Also, exploring how educators/instructors view the same topic in comparison to students may also surface fruitful information on obesity acceptance. Additionally, studies to determine attitudes and views towards obesity and obesity curriculum may provide the greatest impact on raising awareness for how to educate and prepare pre-professionals to become open-minded clinicians. A study can be conducted using the same Q sample on undergraduate health professions, such as nursing, dietetics, social work, speech pathologists and allied health, to explore students’ views of obesity in relation to exercise science students. Comparing pre-professional health care providers views may raise critical issues since the team approach to weight loss is commonly commissioned. Obese views among healthcare provider teams working with obese clients may have a strong impact on changing adherence and success rates of obesity. Finally, contemplating the benefits of adding obesity content into core required college diversity courses focused on racism, ageism, sexism, and others could result in awareness of body size issues for all university students, regardless of college major thereby, potentially impacting the wider student body. The results of this study are powerful, findings are not only applicable to exercise science or health-related
professions but everyone. Considering the entire university student body, engineering, political science, arts and others may benefit from weightism and obesity awareness. Overall, the ability to discover future areas for expanding weightism inquiry is powerful and extensively underexplored.

My personal reflection on this exploration of weightism presents many complexities that were identified both in the review of published literature and experienced during this dissertation. Uncovering fat bias proves to be very sensitive and difficult to identify (Marcum, 2009) yet the findings emerged in this study provide tangible evidence that educators must be mindful of their learners. Using a Q-sort on the first day of the course was well received by students and provided a rich snapshot of students perspectives. The post-sort survey enabled students’ time for reflective thought and personal feedback that is uncommon at the beginning of the semester. Moving forward, I am eager to begin each new semester with a brief exploration of student’s views. This dissertation has surfaced the importance of understanding the human experience of education and as an educator unpeeling students perspectives. However, changes that I will consider for future assessments is the wording of some statements to help with clarity for students, such as statements #3, 4, 33. It may also be essential to consider the main themes that were used in creating the statements from the concourse (attitudes, management, barriers, knowledge, cause, attributes, personal, surgical) and adjust statements to focus on view of genetics and surgery. Cultivating rich theory from students’ social narratives may begin to help develop avenues to reduce social acceptability of weight bias.
I also firmly believe, and have personally witnessed, detrimental affects of the fat shaming. Barriers for many people to succeed with healthy behaviors can be damaged by stigma and discrimination. The key to obesity prevention programs may lie with changing the social acceptability of weight stigma. One small step in the right direction is to thread weightism into university coursework. Time for personal contemplation of students’ own unique views, providing time to reflect more attentively on obese views may begin to reduce negative barriers promoting more efficient dialogue for clients to seek and adhere to healthy living. I look forward to magnifying obesity sensitivity research and raising awareness surrounding the dangers of inequities caused from adversity towards people of size. Exploring operant subjectivity on this under-examined and important topic has the potential to influence obesity treatment. As explained throughout my theoretical perspective, “Despite being only one person on this adventure, the potential impact for social change and acceptance of all can only begin when vigorous typologies have been explored”.

Summary

Chapter V began with a summary of the purpose and restatement of the problem. The Q sort process revealed 2 Factors on the views of students in a freshman exercise science course regarding obesity and weight management: Factor 1 “The Beautiful Self” or those who value the importance of exercise, diet and healthy behaviors, value looking good as a priority and support that obesity bias is prevalent; and, Factor 2 “Emerging Clinician” or those who seek to conquer obesity and weight management in the future, students’ striving to become clinicians. The results of this study exposed students unique views revealing areas in exercise science curricula content that need to better meet the
needs of preprofessional preparation for obesity and weight management. Future research should include interviews with additional exercise science students at more than one university. Facilitating classroom discussions surrounding obesity, and implementing experiential learning within the community with people of size may help to determine if students in the field respond positively to working with and training obese clients.

This study is an excellent example of the benefits of using a mixed-method tool as a means to address needs assessment within undergraduate curricula while formulating the existence of anti-fat views. Overall, findings from this work support the role educators have with cultivating transformative learning environments to minimize obesity bias (Rukavina & Li, 2007).
REFERENCES


APPENDICES
APPENDIX A

IRB APPROVAL LETTER

Date: December 2, 2015

To: Laura Richardson,
   Sport Science and Wellness Education

From: Sharon McWhorter, IRB Administrator

Approval Date: December 1, 2015

Thank you for submitting your IRB Application for review. Your protocol represents minimal risk to subjects and matches the following federal category for exemption:

☑ Exemption 2 – Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior.

☐ Exemption 1 – Research conducted in established or commonly accepted educational settings, involving normal educational practices.

☐ Exemption 2 – Research involving the use of educational tests, survey procedures, interview procedures, or observation of public behavior except under category 2, but subjects are elected or appointed public officials or candidates for public office.

☐ Exemption 4 – Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens.

☐ Exemption 5 – Research and documentation projects conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine public programs or benefits.

☐ Exemption 6 – Taste and food quality evaluation and consumer acceptance studies.

Annual continuation applications are not required for exempt projects. If you make changes to the study’s design or procedures that increase the risk to subjects or include activities that do not fall within the approved exemption category, please contact the IRB to discuss whether or not a new application must be submitted. Any such changes or modifications must be reviewed and approved by the IRB prior to implementation.

Please retain this letter for your files. This office will hold your exemption application for a period of three years from the approval date. If you wish to continue this protocol beyond this period, you will need to submit another Exemption Request. If the research is being conducted for a master’s thesis or doctoral dissertation, the student must file a copy of this letter with the thesis or dissertation.

☑ Approved consent form/s enclosed
INFORMED CONSENT FORM

Title of Study: An exploration of university exercise science students' views of obesity using Q methodology

Introduction: You are invited to participate in a research project being conducted by Laura Richardson, MS, Visiting Instructor for the Exercise Science Program in the School of Sport Science and Wellness Education and doctoral candidate at The University of Akron.

Purpose: The purpose of this study is to explore student views of course material during Intro to Exercise Science course.

Procedure: If you volunteer for this study, you will be asked to complete a Q-sort (survey) at a time mutually agreed upon by the participant (you) and the researcher during the beginning of Spring 2016 semester. During the Q-sort, you will be given 44 statements about the topic of exercise. You will be asked to rank order the statements according to their representation of being most like or most unlike your views. After performing the Q-sort, students will answer a few questions regarding the sorting process. Specific written and verbal instructions will be provided and participants will have an opportunity ask questions. The Q-sort will take approximately 30 minutes to complete.

Risk and Discomfort: There are no anticipated risks or discomforts expected by participating in this study.
Benefits: There are no anticipated benefits to you as the participant.
Payments for Participation: There will be no payment for participation.

Right to refuse or withdraw: You may withdraw from the study at any time. There is no penalty if you decide to withdraw.

Confidential Data Collection: The data collected in this study will be coded. Data will be password protected and stored/accessed electronically only by the study investigators. Any hardcopy form of data such as measurement print-outs will be stored in a locked cabinet in InfoCision Stadium, 326. Only the investigator has access to this information.

Confidentiality of records: Your records will be password protected and stored / accessed electronically only by the study investigators. Any hardcopy form of your records will be stored in a locked cabinet in InfoCision Stadium, 326. Only the study investigators have access to this information. If you agree to have your information used as part of the research data, you will be asked to sign this informed consent document.

Who to contact with questions: If you have any questions at any time, you may contact Laura Richardson 330-972-4751 or laura2@uakron.edu

This study has been reviewed and approved by The University of Akron Institutional Review Board (IRB). If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666.

I have read the information provided above and all of my questions have been answered. I voluntarily agree to participate in this study. I will receive a copy of this consent form for my records.

Participant Signature: __________________________
Date: __________________________

Witness: __________________________
Date: __________________________

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APPENDIX C

ANECDOTE CIRCLE HANDOUT

Anecdote circles prompts

“Not opinions rather looking for examples”

Concepts of Health & Fitness Fall 2014/Cardiac Rehab Summer 2015

Group facilitator/Recorder Name: __________

Names of other students in the group: __________________________________________

This is a very important role in anecdote circles
Goal is for you to pose questions that will generate storytelling.
All members of the group share stories not tell stories.
Less concerned with opinions and judgments.

Facilitator should intervene when hearing opinions and ask the person for an example or experience. Could you give me an example of that?
What experience are you drawing on?
Tell us more.

Please record the entire session. Recordings of group discussion will use either
SmartPhone or tablet. At the end of the session, recording will be emailed to instructor.
All group members must share stories for each theme that is posed. Ideally, dialogue
between group members is encouraged and should provide additional story sharing.

Use the prompts listed (bullets) once all members have shared initial story, prompts will open up the conversation for richer descriptions.

The final recorded files must be emailed to: laura2@uakron.edu
1. Warm-up: **introductions** (time limit 5 minutes)

Share one memory of college that makes you laugh, cry or embarrassed.

- Recall who you were with.
- Share how others responded to your situation.

2. Theme: **Exercise** (minimum time for storytelling is 15 minutes)

Think back to a time when you have discussed the importance of exercise.

- Describe who you were talking with and their response to being active.
- Describe if their response was positive or negative about exercise
- Discuss how the media portrays exercise.
3. Theme: **Weight lost** (minimum time for storytelling is 15 minutes)

Think about a recent interaction you had with someone who wanted to lose weight.

- Describe their attitude towards weight loss.
- Describe their mechanism/or way they choose to lose weight

5. Theme: **Treatment** (minimum time for storytelling is 15 minutes)

Think about the word **Bariatric Surgery** (Weight loss surgery) and describe the image you have of the procedure.

- Describe the typical patient who would require this procedure
- Explain how you imagine their personality to be, temperament, education, occupation....
- Describe your feelings about people choosing this procedure. If you know someone who has undergone the surgery explain what lead to his or her decision.
APPENDIX D

Q-SORT AND POST-SORT SURVEY

Q “Survey” on Students’ views of obesity in first-year Intro to Exercise Science course

Thank you for taking the time to help us better understand the views related to this topic. Please follow the instructions below. If you have a question, just ask!

Instructions:

1. You are going to consider each statement in the envelope relative to how you view obesity and weight management.
2. Remove the piece of paper from the attached envelope. Each of the 44 pieces of paper contains one statement.
3. Read each statement and then, BASED ON YOUR VIEWS OF OBESITY and WEIGHT MANAGEMENT, place each statement into one of three piles while attempting to make these piles of equal size (about 14 statements in each pile) HERE:

<table>
<thead>
<tr>
<th>MOST LIKE</th>
<th>Neutral</th>
<th>MOST UNLIKE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Now, take your MOST LIKE pile and distribute it on the distribution sheet (next page) putting your TOP FOUR MOST LIKE statements in the +5 column. Repeat this for your MOST UNLIKE pile, putting your BOTTOM FOUR MOST UNLIKE statements in the -5 column. Repeat this back and forth between piles (filling +4, then -4, +3, then -3, etc) until you get to the neutral pile. Continue the same pattern with the neutral pile until you have completed the grid.
5. Distribute and re-distribute statements until you are satisfied.
6. Each square on the grid should have only one statement number, each number is used only once.
7. Write the statement number in their appropriate location on the grid on the distribution sheet.
8. Finally, answer all the questions underneath the grid.

Please complete the information below as well:

Gender: ___________ Height: ___________ Weight: ___________ BMI: ___________

College credits completed: ___________ College rank: (ie. Freshman) ___________

Intended college major: ______________________________________________________

Each box must contain ONE (1) statement number, each number must only be used once

Sort based on YOUR view/perspective of obesity and weight management

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q “Survey” on Exercise Science students’ views of obesity

*Please answer the following questions regarding your sort.*
1. Tell us why you selected the four statements you placed under +5 (most like my view).

2. Tell us why you selected the four statements you placed under -5 (most unlike my view).

3. Please describe your decision making process during the sort. Did you gain insight about your views as you sorted the statements? If so, please describe.
4. Tell us how often you engage in regular physical activity.

4a. Briefly outline your activity program.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is easy for the general public to be judgmental towards obese individuals.</td>
<td>Attitudes</td>
</tr>
<tr>
<td>I feel obesity is a person’s choice.</td>
<td>Attitudes</td>
</tr>
<tr>
<td>Attitudes towards obesity are formed through media.</td>
<td>Attitudes</td>
</tr>
<tr>
<td>I feel uncomfortable learning about something that does not apply to me personally.</td>
<td>Attitudes</td>
</tr>
<tr>
<td>I believe it is important to accept people of all sizes.</td>
<td>Attitudes</td>
</tr>
<tr>
<td>Everyone has control over their weight.</td>
<td>Attitudes</td>
</tr>
<tr>
<td>I feel that by decreasing food consumption of calories and portions that weight loss will occur.</td>
<td>Management</td>
</tr>
<tr>
<td>Surgical weight loss surgery is the best method for weight loss.</td>
<td>Management</td>
</tr>
<tr>
<td>Increasing energy expenditure through movement and exercise is important to loss weight.</td>
<td>Management</td>
</tr>
<tr>
<td>Decreasing food consumption (energy intake) is important to minimize weight gain.</td>
<td>Management</td>
</tr>
<tr>
<td>A minimum of 300 minutes or more a week of physical activity is important for weight maintenance.</td>
<td>Management</td>
</tr>
<tr>
<td>Obese clients will probably dropout of weight loss programs.</td>
<td>Barriers</td>
</tr>
<tr>
<td>Behavior change is very difficult with humans.</td>
<td>Barriers</td>
</tr>
<tr>
<td>Obese people ignore significant medical problems caused by obesity.</td>
<td>Barriers</td>
</tr>
<tr>
<td></td>
<td>Statement</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>15</td>
<td>Successful weight loss requires social support (family or peers).</td>
</tr>
<tr>
<td>16</td>
<td>Obese people have higher rates of low self-esteem and therefore do not adhere to regular exercise.</td>
</tr>
<tr>
<td>17</td>
<td>Obese people are commonly from lower socioeconomic levels and therefore cannot afford memberships to workout facilities.</td>
</tr>
<tr>
<td>18</td>
<td>Daily physical activity is important for everyone regardless of age or health status.</td>
</tr>
<tr>
<td>19</td>
<td>I feel obesity is a preventable condition.</td>
</tr>
<tr>
<td>20</td>
<td>I feel that obesity is higher among low socioeconomic class.</td>
</tr>
<tr>
<td>21</td>
<td>I feel that obesity is higher among people who receive education less than a college.</td>
</tr>
<tr>
<td>22</td>
<td>I understand that obesity is a complex multifactorial disease.</td>
</tr>
<tr>
<td>23</td>
<td>Lack of will power is a primary cause of weight gain.</td>
</tr>
<tr>
<td>24</td>
<td>The high cost of healthy food is a primary cause of obesity.</td>
</tr>
<tr>
<td>25</td>
<td>I feel that media’s advertising of fast food is a main cause for the national statistics on the high rates of obesity.</td>
</tr>
<tr>
<td>26</td>
<td>Genetics is the cause for obesity.</td>
</tr>
<tr>
<td>27</td>
<td>I feel that obese individuals are lazy.</td>
</tr>
<tr>
<td>28</td>
<td>I feel that individuals who are obese lack information on the importance of daily physical activity.</td>
</tr>
<tr>
<td>29</td>
<td>Weight gain is rarely caused by lack of willpower or dedication.</td>
</tr>
<tr>
<td>30</td>
<td>I feel that obese individuals are strong willed and determined people.</td>
</tr>
<tr>
<td>31</td>
<td>I feel that obesity is often used as an excuse to not exercise.</td>
</tr>
<tr>
<td>32</td>
<td>Physical appearance is very important to me.</td>
</tr>
<tr>
<td>No.</td>
<td>Statement</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>33</td>
<td>I think I will be working with obese individuals in the future.</td>
</tr>
<tr>
<td>34</td>
<td>I am interested in learning about the causes and treatments of obesity.</td>
</tr>
<tr>
<td>35</td>
<td>I am worried that this class will not provide any additional information for me, that I do not already know.</td>
</tr>
<tr>
<td>36</td>
<td>I feel competent in my skills to provide weight loss assistance to those who are overweight or obese.</td>
</tr>
<tr>
<td>37</td>
<td>I have difficulty feeling empathy (compassions) towards individuals who are obese.</td>
</tr>
<tr>
<td>38</td>
<td>Exercising and eating healthy is very important personally to me.</td>
</tr>
<tr>
<td>39</td>
<td>I feel uncomfortable around obese people.</td>
</tr>
<tr>
<td>40</td>
<td>Bariatric surgery leads to long term weight loss and maintenance.</td>
</tr>
<tr>
<td>41</td>
<td>I believe surgery is a healthy way to lose weight.</td>
</tr>
<tr>
<td>42</td>
<td>I feel obesity surgery is an easy way out.</td>
</tr>
<tr>
<td>43</td>
<td>I feel that diet and exercise is the correct way to lose weight.</td>
</tr>
<tr>
<td>44</td>
<td>Obesity surgery should only be used as a last resort.</td>
</tr>
</tbody>
</table>