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MOTIVES FOR PARTICIPATION IN TRIATHLONS AMONG MIDLIFE TO OLDER  
BLACK WOMEN: A MIXED METHOD STUDY

A dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy at Virginia Commonwealth University

by

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## Abstract

### MOTIVES FOR PARTICIPATION IN TRIATHLONS AMONG MIDLIFE TO OLDER BLACK WOMEN: A MIXED METHOD STUDY

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2016

Major Director: J. James Cotter, PhD  
Associate Professor, Department of Gerontology

**BACKGROUND:** Research has established the positive link between physical activity and its impact on health among adults. Generally, as people get older, they are less likely to be active. Black women comprise 13% of the women in the US but constitute 52% of women who are inactive. Existing articles on exercise motivation among Black women have generally assessed sedentary individuals. Little research has examined the motivations to exercise among physically active Black women.

**METHODS:** Guided by the regulators of the Self Determination Theory, the 56 item Motivations of Marathoners Scales for Triathletes (MOMS-T) was used to assess the motives of (N =121) midlife to older Black women (36+) and then transformed into a semi structured guide to interview (n =12) women to further understand their motives for participating in triathlons.

**RESULTS:** Univariate and two way analysis reveals age as a predictor for the four regulators (external, introjection, integration and intrinsic) but BMI and distance are not. Integration demonstrated the highest mean. Qualitative results indicated that construct of self competition and receiving medals are important aspects of participation but are not measured in the survey. A new scale, triathlete lifestyle, should be considered within the MOMS-T.

**CONCLUSION:** Findings were representative of the study population and comparable to previous studies. The survey transformation of the MOMS-T into an interview guide provided additional qualitative explanations of the survey answers demonstrating a secondary method of gathering data as important to provide further understanding about constructs not measured in the survey form of the MOMS-T.



## Chapter I

### Introduction

Research has established the positive link between physical activity and its impact on health among adults (Boyd, Weinmann & Yin, 2002; Bradshaw & Klein, 2007). Physical activity is defined as skeletal muscles producing bodily movement beyond resting into energy expenditure and can be categorized into levels of low, moderate, and high (Thompson et al., 2003; Buchholz & Artinian, 2009). National guidelines, set in 2008, recommended specific aerobic and muscle strengthening activities to improve health and fitness and to promote aerobic exercise: adults (18+) need at least 150 minutes of moderate-intensity aerobic activity every seven days, or 75 minutes of vigorous-intensity aerobic activity every week, or an equivalent combination of moderate- and vigorous-intensity aerobic activity; also, muscle strengthening activities that work all major muscle groups should be performed on 2 or more days a week (USDHHS, 2008).

These guidelines have remained through the Healthy People 2010 Objectives and are set for the Healthy People 2020 Objectives. Despite these recommendations, only 40.9% of Black adults met the recommended objective to engage in moderate intensity aerobic exercise in 2012 as compared to 53.5% of Whites or 64.3% of Native Hawaiian or other Pacific Islanders (USDHHS, 2014). In 2012, Blacks were the least active racial/ethnic group as Blacks are generally less active than Whites and overall, Black women are less active than Black men (USDHHS, 2014; Plescia, Herrick, & Chavis, 2008 ; Paschal, Lewis-Moss, Sly, & White, 2009). Generally, as people get older, they are less likely to be active. Whereas 50.9% of men and

women, those aged between 25 and 64 years of age, met aerobic physical activity guidelines in 2012, only 37.5% those aged 65 years or older met the guidelines (USDHHS, 2014). In contrast, by age >75 years, one in two Black women engage in no exercise (CDC, 2000).

Increasing the proportion of adults who engage regularly in aerobic exercise is a Healthy People 2020 goal (USDHHS, 2008). To promote aerobic exercise among inactive persons, the US Department of Health and Human Services has created the National Physical Activity Plan. The third strategy, under the societal sector of 'Parks, Recreation, Fitness and Sports', is to "use existing professional, amateur and college athletics and sports infrastructures and programs to enhance physical activity opportunities in communities," (USDHHS, 2010). It is through infrastructures like these that the delivery of interventions to inactive adults may promote individual motivation to exercise. Active groups within communities and across the nation like Black Girls Run! And Sisters Tri-ing, are examples of how the creation of new social norms and the continued promotion of exercise can benefit those with an interest in setting exercise goals, like completing marathons and triathlons (Yancey, Fielding, Flores, Sallis, McCarty & Breslow, 2007; Brown & Collins, 2009).

### **Problem Statement**

Black women comprise 13% of the women in the US but constitute 52% of women who are inactive (Banks-Wallace & Conn, 2002). The few existing articles on exercise motivation among Black women have generally assessed the motivation, or lack thereof, among sedentary individuals. Thus, there is relatively little research examining the motivations to exercise for Black women who are physically active (Kirchoff, Elliott, Schlichting & Chin, 2008; Landry & Soloman, 2004). Additionally, most literature related to exercise participation, in relation to triathlons, has been on Whites, with little inclusion of diversity. Further, the types of theories

supporting these types of studies have not indicated whether the types of motivations are extrinsic or intrinsic, leaving a gap in the literature as to how motives are related to the self-determination of participating in exercise or sporting activities.

## **Triathlons**

A triathlon is a continuous, sequential, multi-sport endurance event involving swimming, running, and cycling. Level of experience, distance of race, age, gender, and weight are all categories which allow for accessibility for different types of triathletes that may compete. (Plant, 1987). Those participants 40 years and older are considered ‘Master’ athletes.

Sanctioning bodies that represent the United States on national and international levels include the International Triathlon Union (ITU), The World Triathlon Corporation (WTC), and the USA Triathlon (USAT) (Lovett, 2011). Distances most often completed in the United States, include Sprint, Intermediate or Standard (Olympic distance), the Long Course (Half Ironman), and Ultra Distance (Ironman). In addition, there are triathlon – including Ultra-triathlons – distances for kids, and distances designated by other continents and countries (Lovett, 2011; Knechtle, Knechtle, & Lepers, 2010).

The modern sport began in San Diego, in 1974, when Jack Johnstone and Dan Shanahan thought to add a cycling stage to the existing biathlon events (swim and run) that were the norm in Southern California (Ehriz, 2004). At that time, triathlons were deemed as a professional sport only for financially secure, middle aged, White males. Now, as the fastest growing sport in the world, triathlons have crossed financial, social, and cultural lines. Its increase in popularity makes it an attractive sport for kids, elders, women, and a small number of ethnic minorities who compete for leisure or recreation, and at amateur and professional levels (Triathlon Participation, Growth Trends and Demographics, 2009; Lovett, 2011).

## **Theoretical Framework**

To advance knowledge of a theoretical framework to a more diverse population, this study used the Self Determination Theory as a foundation for the inquiry. The Self Determination Theory (SDT) is a theory of human motivation that Rich Ryan and Ed Deci developed which addresses issues such as personality development, self-regulation, psychological needs, life goals and aspirations, energy and vitality, and a host of other issues related to well-being and life domains (Deci & Ryan, 2008). The authors use this theory to examine how the processes and structures of rewards, directives, feedback, praise, and regard enhance or diminish self-motivation and outcomes (Deci & Ryan, 2008).

Motivation constructs are distinct within the SDT as being either autonomous or controlled. When people are autonomous, it is intrinsic motivation that encourages behavior change and increases self-endorsement for action. Controlled motives, however, are extrinsic but may also encourage behavior change due to the knowledge of rewards or punishments. Both types of motivations encourage behavior and are contrasts to amotivation or the lack of motivation (Deci & Ryan, 2008). Controlled motives are extrinsic and are associated with external, introjected or integrated motives. Autonomous motives, however, are explicitly intrinsic in their regulation and association. Other authors have previously used the SDT to understand sporting activities (Brummett, Babyak, Grønbaek, & Barefoot, 2011; Lamont & Kennelly, 2012). The researcher believed that using this theory for this study would aid in a fuller understanding of the motivations of Black midlife and older women triathletes.

## **Purpose of Study**

The purpose of this study was to examine the motivation on triathlon participation among mid-life and older Black women triathletes and to explore the extent to which the motives are

extrinsic or intrinsic, as characterized by SDT. The researcher used the Motivations of Marathoners Scale (designated as the Motivations of Marathoners Scale for Triathletes [MOMS-T] hereafter), which is a scale that other researchers previously used to investigate motives of marathoners and triathletes, to survey and collect quantitative data of how these triathletes are motivated. The researcher then incorporated face-to-face semi structured interviews, guided by the responses on the MOMS-T, to explore participants' thoughts of these motives. Thus, the researcher used a parallel mixed method approach in this study to acquire the quantitative and qualitative evidence, and the analysis they did identified whether the MOMS-T motivations, endorsed by participants, are extrinsic or intrinsic; and she would also be able to determine, through the study, if the MOMS-T motives are different among demographic subsets of the study population. This is important because understanding the differences of motives, between Black women, will also add to the knowledge of development for future exercise interventions for sedentary mid-life and older Black women with varying types of motivations.

### **Research Questions**

The overarching analysis of this exploratory study was driven by the following questions: What are the motives for midlife and older Black to participate in triathlons?; and are the nine scales identified through the Motivations of Marathoners Scale for Triathletes extrinsic or intrinsic, based on the proposed relationship with the Self Determination Theory? The researcher used this study to explore the relationship between key demographic variables, such as age, distance of triathlon, BMI and the type of motive.

### **Analytical Strategy**

This exploratory study used a mixed method approach to acquire evidence on the motivation to participate in triathlons. This study also explored the relationship between the MOMS and the

SDT among mid-life and older Black triathlete women. The rationale for the use of mixed methods is to answer research questions of how the triathletes are motivated and use the qualitative interviews to explain whether these motivations are extrinsic or intrinsic.

When qualitative and quantitative perspectives are combined, the methods overlap one another, creating a new relationship. Mixed methods, also known as the 'third path' (Teddlie & Tashakkori, 2009, p.4) has been defined as "research in which the investigator collects and analyzes data, integrates the findings and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry," (Tashakkori & Creswell, 2007b, p.4). Researchers have conducted both quantitative (Lovett, 2011) and qualitative (Lamont & Kennelly, 2012) studies on motivation to participate in triathlons. However, no authors have researched motivation for participation in triathlons using mixed methods.

### **Significance**

In order to improve low rates of physical activity among mid-life to older Black women, the proposed work provides an opportunity to further explore motivational factors of those who demonstrate consistent exercise rates (Walcott-McQuigg & Prohaska, 2001), in order to improve low rates of physical activity among mid-life to older Black women. To date, there has been one study on the barriers to participate in triathlons among the population, but no researchers that have researched motivation to participate in triathlons among Black women (Brown & Collins, 2009). Consistent exercise training (including swimming, cycling and running) is necessary to compete in a triathlon. The researcher's studying of this group, in particular, may help others in understanding what motives influence exercise patterns and maintenance. A better understanding of the regulated styles of motives in this study population may help to describe how motives

could encourage more women to participate in exercise and develop future effective exercise interventions for sedentary mid-life and older Black women.

**Delimitations.** The following statements are delimitations to the study:

The study had a three month time line to collect data.

The quantitative data was collected via an internet based survey through Virginia Commonwealth University's RedCap system.

The qualitative data was collected through face to face interviews.

The sample for the study includes midlife and older Black women who are triathletes.

The study used the modified Motivation for Marathoners Scale (MOMS) with a triathlete population. This modified scale had been previously used in one other study (Lovett, 2011) and was denoted as the Motives for Triathletes Scale (MOMS-T).

**Assumptions.** The study has the following assumptions:

All participants are Black women who have participated in at least one triathlon between 2012 and 2014.

All participants would answer the questionnaire measure truthfully.

Maintenance of exercise has been accomplished by the participants following the triathlon season until the subsequent season.

### **Definitions of Terms**

**Triathlon:** a continuous, sequential, multi-sport endurance event involving swimming, running, and cycling (Plant, 1987).

**Physical activity:** skeletal muscles producing bodily movement beyond resting into energy expenditure and has been categorized as levels of intensity of low, moderate, and high (Thompson et al., 2003; Buchholz & Artinian, 2009, USDHHS, 2008).

Aerobic exercise: the subset of physical act characterized as moderate or vigorous intensity, repetitive, and purposeful, with an objective of physical fitness maintenance (Thompson et al., 2003, USDHHS, 2008).

Black: those who self-identify as being related to those of the African Diaspora or those who are descendants of Africans dispersed from the continent of Africa. An ethnically cohesive group of individuals, inclusive of those from Africa, the Caribbean, and in the Americas (Brown et al., 2013).

### **Organization of the Remaining Chapters**

The remainder of this dissertation is separated into two chapters, a reference list, and appendices in the following manner: Chapter Two presents a review of the related literature of studies on exercise and triathlon events with specific relation to age, distance of triathlons and Body Mass Index (BMI). Chapter Three delineates the research design, methodology, and mixed methods of the study. Chapter Four presents the analyses and results of the quantitative and qualitative data. Chapter Five concludes with a discussion of the analyses and results of the study. The reference list and appendices follow the chapters.



## Chapter II

### Review of the Literature

Health of the United States population continues to improve overall, although certain areas of wellness need improvement and groups continue to lag behind in markers of health. The prevalence of health disparities among minority populations related to conditions such as coronary heart disease, cancer, hypertension, and type two diabetes is an area needing further research on specific groups. Such conditions are among the leading causes of death among Black women (CDC, 2010). Exercise, especially aerobic exercise, has been shown to significantly improve health biomarkers. Compared to Whites, Black women, aged 45-54 are two to three times more likely to die of coronary heart disease and women aged 40-60 years are encouraged to exercise to prevent the onset of the disease (Evans, 2011). Increasing aerobic exercise among Black women is of particular importance since many conditions affecting middle-aged and older Black women are amenable to improvement through exercise. However, only one in two Black women engages in regular aerobic exercise (USDHHS, 2008; CDC, 2012).

The purpose of this chapter is to provide a literature review of Black women's participation rates in aerobic exercise, specifically in that of triathlons. The motivation required to engage in this extreme form of exercise may offer insights into motivational factors that could then be used to increase the involvement in exercise among other Black women. Due to limited research on Black female triathletes, the researcher extrapolated information from studies on exercise and triathlon events completed by others such, as White women. Unless otherwise noted, the

following studies report on White participants or have not otherwise identified Black participants within their study.

First, the researcher described data on the U.S. nation's health and the particular importance of exercise for Black women. The researcher then included, in this review, information pertaining to the barriers that Black women have experienced with attention to exercise and how weight affects exercise. Next, the researcher delineated an introduction to extreme exercises and triathlons, including Black women and older triathletes. Finally, the researcher discussed studies on the motivations of marathoners and triathletes. This section then places these motivational factors within the framework of Deci & Ryan's (2008) Self Determination Theory.

### **Health and Physical Activity**

Research has established a link between physical activity, and health among adults (Carter-Parker, Edwards, & McCleary-Jones, 2012). In the 1979 report on health promotion and disease prevention, Healthy People, the Surgeon General delineated the national health objectives which detailed steps towards the improvement of the health for all Americans (US Public Health Service, 1979; CDC, Early release, 2012). Since 1999, the Center for Disease Control and Prevention (CDC) has reported national data on the physical activity rates of Americans by means of general health and specialized health national surveys (CDC, Physical activity, 2012). Annual reporting on data collected from the general Behavioral Risk Factor Surveillance System (BRFSS) and National Health Interview Survey (NHIS) provided national information on the major behavioral health risk factors in order to meet the national health objectives as outlined by the Surgeon General (CDC, Physical activity, 2012).

National guidelines, set in 2008, recommended specific aerobic and muscle strengthening activities to improve health and fitness: adults (18+) need at least 150 minutes of moderate-

intensity aerobic activity every seven days, or 75 minutes of vigorous-intensity aerobic activity every week, or an equivalent combination of moderate- and vigorous-intensity aerobic activity (USDHHS, 2008). The NHIS and BRFSS reported that as of 2008 fewer than half of adults (45%) met the recommended time of physical activity (USDHHS, 2008) demonstrating most Americans are not physically active (CDC, Physical activity, 2012). Recent estimates from the first six months (January-June) of the 2012 NHIS reported that women (42.6%), when compared to men (52.1%), were less active and less likely to meet the 2008 federal physical activity guidelines (CDC, 2012; Paschal, Lewis-Moss, Sly, & White, 2009).

In 2008, the percentages were 46.9% and 52.6% respectively, for women and men, demonstrating a significant decrease in numbers among women. Additionally, with age, the percentage of both genders meeting the activity guidelines, decreased by age 65 to 43.1% in men and 32.2% in women (USDHHS, 2008) and in 2008, 57% percent of individuals aged 18-24 met these guidelines, while 51% those aged 25-64, and 44% of individuals 65-74 met the guidelines (CDC, 2012). Blacks were among the lowest of all age adjusted percentages of adults who met the guidelines at 40.4%; guideline adherence was 53.5% for Non-Hispanic Whites and 43.5 % for Hispanics (CDC, 2012). These data also demonstrate a health disparity for physical activity levels among Blacks, and that older Black women are a particularly important target subgroup.

Physical activity is skeletal muscles producing bodily movement beyond resting into energy expenditure and has been categorized into the levels of intensity of low, moderate, and high (Thompson, et al., 2003; Buchholz & Artinian, 2009, USDHHS, 2008). The CDC further defined activity in three ways: (1) active persons, who engage in moderate to high intense physical activity 30 minutes or more per day; (2) insufficient exercisers, who perform more than 10 minutes but less than 30 minutes per day of moderate to high intense physical activity; and, (3)

individuals who are inactive, or those who engage in less than 10 minutes total per week of moderate or vigorous-intensity activities (CDC, Physical activity, 2012). Active people were roughly twice as likely not to develop a disease when compared to persons who are insufficient exercisers (CDC, 2012). Even insufficient exercise of moderate-intensity aerobic activity equaling 60 minutes a week was good because it prevented people from being inactive (CDC, 2012). Despite the 2020 emphasis on the need to increase physical activity, Black women comprise 13% of the women in the U.S but constitute 52% of women who were inactive (Banks-Wallace & Conn, 2002).

**Exercise.** The intensity levels of physical activity can also be divided into four subsets: domestic, transportation, occupational, and leisurely, reflecting the purpose of the activity. An example of the subset of leisure physical activities which are moderate or high level “bodily movement produced by the contraction of skeletal muscle” (Thompson et al., 2014, p. 2) is displayed in Table 1. Exercise is a structured activity that is repetitive and purposeful, with the objective of maintaining or improving physical performance and/or health (Thompson et al., 2003, CDC, 2010). Either moderate or high levels of aerobic exercise performed on a regular basis can decrease the obesity rate, reduce the prevalence of health disparities, and has been associated with lower risk of death throughout the lifespan (Hill, Wyatt, Reed & Peters, 2003; Walcott-McQuigg & Prohaska, 2001).

To measure intensity, in exercise, researchers used the physiologic metabolic equivalent of task (MET) to describe expenditure of aerobic exercise. METs are expressed as the ratio of the rate of energy expended during aerobic exercise to the rate of energy expended at rest; one MET

Table 1

*Categories, Types, and Intensity Levels of Physical Activity*

Category	Type	Intensity
Domestic	Housework, yard work, chores	moderate
Transportation	Walking, biking, rollerblading	moderate
Occupational	Work related	varies
Leisurely	Sports , exercise, hobbies	moderate, high

Note. Adapted information from “Physical Activity: Surveillance Systems,” by the Centers for Disease Control and Prevention, 2012. Retrieved from <http://www.cdc.gov/physicalactivity/data/surveillance.html>.

is the rate of energy expenditure while at rest or sleeping (Ainsworth et al., 1993; Ainsworth et al., 2011). The formula for equating a MET is presented in Appendix A. To be sedentary is to be without any physical activity. The level of intensity is the measurement between moderate and high levels of aerobic exercise (USDHHS, 2010). Two minutes of moderate-intensity activity are equal to one minute of high-intensity activity. Or, in the case of exercise sessions, 60 minutes of moderate-intensity exercise is about the same as 30 minutes of high-intensity exercise. Intensity is further described as either absolute, which is the amount of energy expended per minute during exercise. It is also, relative, describing the effort required to perform the exercise where 0 is the lowest level (e.g. sitting) and 10 is the maximum (e.g. vigorous activity). The amount of energy expended is displayed in Table 2 (USDHHS, 2008).

Table 2

*Absolute and Relative Intensity of Energy*

Intensity Level	Energy expended	Level of effort required
Low	1.1 to 2.9 MET's	0-4
Moderate	3.0 to 5.9 MET's	5-6
High	6.0 or more MET's	7-10

Note. Adapted information from, “2008 Physical activity guidelines for Americans,” by the U.S. Department of Health and Human Services, 2008. Retrieved from <http://www.health.gov/paguidelines/guidelines/chapter4.aspx>.

**Exercise among aging Black women.** Exercise, in older adults, can lead to lower cholesterol, maintenance of muscle strength, a decrease in morbidity and mortality among athletes, when compared to sedentary peers (Hawkins, Wiswell & Marcell, 2003; Baker, Côté, & Deakin, 2006). Most literature on Black women and exercise focused on physiological benefits, consistently indicated that Black women (18+) have the highest rates of obesity and subsequent related health risks of disease when compared to larger non-minority groups (Fleury & Lee, 2006). In a study of 100 Black women, average age of 52, 20% indicated that they participate in vigorous activity 3-5 times per week. All 100 participants had hypertension and their average BMI was 34.63. The average BMI for adult women in the United States was 26.5(CDC, 2003). Results indicated that out of the 100 women only 12% bicycled, 5% did aerobic exercise and 1% swam over 150 minutes per week. However, the women utilized leisure walks as exercise the most. The researchers noted in the discussion that all women, regardless of age, should engage in regular exercise (Buchholz & Artinian, 2009).

Results of studies on Black women have indicated substantial benefits to regular aerobic exercise including the possible reduction of being diagnosed with diabetes (Plescia, Herrick, & Chavis, 2008) and of having high cholesterol levels (Cassetta, Boden-Albala, Sciacca, & Giardina, 2007). Physiologically, exercise also prevents and/or eases the discomfort of chronic, disabling conditions, by maintaining and/or improving stamina and muscle strength (Booth & Zwetsloot, 2010; Fieo, Watson, Deary & Starr, 2010). This, in turn, can reduce the risk of falling (Resnick, 2001; Tingjian, Wilber, Simmons & Wieckowski, 2009), prevent bone fractures (Borer, 2005), and in later years help in maintaining independence (Birmingham, 2008; Fieo, Watson, Deary, & Starr, 2010).

Researchers who did studies on breast cancer, the leading cause of cancer among women, have correlated its presence with a sedentary lifestyle during early adult years (Adams-Campbell, Rosenberg, Rao & Palmer, 2001). Others have also conducted studies which correlated breast cancer and a sedentary lifestyle among postmenopausal women (Sheppard et al., 2011) and for those who are sedentary over a lifetime (Bernstein et al., 2005). Black women, ages 44-70, were recruited to participate in a study which examined exercise participation between those diagnosed with breast cancer and those who had not (Sheppard et al., 2011). The researchers found that those who had not been previously diagnosed were less likely to get cancer if they had participated in vigorous activity for at least two or more hours per week.

Psychologically, exercise fosters improvements in mood and feelings of well-being by reducing symptoms of depression and anxiety (Windle, Hughes, Linck, Russell, & Woods, 2010; Choi & Kimbell, 2009; Song-Tee, Hasche & Bowland, 2009). Black women include 'mental health benefits' and 'feeling good' as benefits to exercise and strength training (Wilcox, Oberrecht, Bopp, Kammermann & McElmurray, 2005; Bopp et al., 2004). Socially, it can foster a sense of belonging and emotional connection of a community (Coulon, et al., 2012; Dionigi, 2007; Dionigi & Lyons, 2010, Peters, 2012).

**Barriers.** Despite the physiological and psychological positive effects of exercise, most Black women either having an insufficient amount of activity or are inactive due to sedentary lifestyles (CDC, 2012). Understanding the barriers to exercise in this group is a major topic of research. Additionally, potential solutions that contribute to reducing insufficient inactivity among midlife to older Black women have been the source of multiple studies. Well exposed barriers include time, energy and caregiving (Pekmezi et al., 2013). Other unique barriers that researchers have revealed regard body image, environment (i.e. safety while exercising),

commitments to the community through church, and the burden of styling hair after exercising (Pekmezi et al., 2013; Brown & Collins, 2009).

In an effort to reduce barriers to exercise among Black women, structured walking programs have been researched. Walking is an exercise most readily adopted by groups because of its accessibility and its perception as not being a form of exercise (Henderson, 2011). Ingram Wilbur, McDevitt, and Buchholz (2011) conducted qualitative post-intervention groups following a 12 month walking program among 33 midlife Black women, ages 44-69 years old. The participants mentioned family and work responsibilities and environmental concerns, including weather and neighborhood safety, as barriers to exercise. Participants suggested ongoing social support from groups and automated telephone support as potential enhancements for future programming.

Similarly, Williams, Bezner, Chesbro, and Leavitt (2006) found that at pre-intervention women identified family and work responsibilities (i.e. time) as barriers to walking for 30 minutes, 4 times a week. Of the 43 aging Black women in this study (aged 50-68), 45% agreed with the three separate barrier statements: (1) exercise is hard work, (2) exercise is fatiguing, and (3) exercise is tiring before and after the intervention (Williams et al., 2006). However, during the interviews at post intervention, participants who were able to break up their walking schedule to 10 minute walks during the day did not identify family environment or 'time' as a barrier to the activity. It was concluded that 10 minutes was small in comparison to other duties the women were required to complete during the day.

Other researchers have also explored a more in-depth understanding to environment as a barrier. Sanderson et al. (2003), for example, explored three types of environments – personal, social, and physical –to understand how environments affect physical activity frequency and to



plan interventions. They focused the on Black women residing in three rural counties in Alabama. The 567 telephone interviews respondents of the study expressed their dissatisfaction with environmental factors including the absence of sidewalks (80%), absence of places to exercise (77%), and poor street lighting (57%). These factors impeded their chance to be physically active. The authors believed that the intervention measures to most likely have an impact was adding a gym or recreational facility in the community or at worksites to increase exercise in rural communities (Sanderson et al., 2003).

Coulon et al. (2012) used an ecological framework and a social marketing intervention to target (1) access; (2) positive practice and perceptions of safety; and (3) motivation and social connectedness. They conducted their study on two community-based police-patrolled walking programs in South Carolinian Black based communities that used social marketing. Social marketing is the application of commercial marketing strategies to influence behavior change with the end goal of improving the welfare of people and society (CDC, 2008). The authors found that “Social marketing approaches have been linked to increased effectiveness of health promotion interventions” (Coulon et al., 2012, p.2315). In this study, social marketing had a positive effect on the number of walking participants and perceptions of the program. Despite challenges, like poor quality of sidewalks, it was determined that efforts to increase physical activity should be in more effective marketing with the goal of implementing interventions. Their research concluded that the grassroots approach of engaging neighborhoods to exercise together develops social cohesiveness, can increase positive perceptions of exercise, and may assist in the prevention of obesity of those underserved. (Coulon et al., 2012).

Heesch, Masse and Aday (2000) assessed the determinants of walking behavior and continuous walking among Black women. Social environmental factors of self-efficacy, support,

and social learning perceptions differed among sedentary Black women, with respect to two different types of walking programs (intermittent or continuous). Participants ranging from midlife to elder years (35 to 70 years of age), with 64% aged at midlife between 45 and 55 years of age, completed several questionnaires on perceptions, self-efficacy, outcome expectations and environmental factors in relation to the type of walking program they would prefer. Even though they believed there were greater benefits to participating in a continuous walking program, these participants preferred the intermittent walking program due to the favorable environmental factors and perceived higher self-efficacy.

Studies on barriers to weight loss among Black women often involve participants who are overweight. Several studies, however, have specifically targeted obese Black women. Lynch, Chang, Ford, and Ibrahim, (2007) described the barriers to weight loss among 41 obese (BMI >30 kg) Black female focus group participants. They identified a lack of time and resources on an individual level (e.g. difficulty assessing exercise equipment) and system level (e.g. restricted availability of exercise facilities), lack of intrinsic and extrinsic control and identifying with a larger body (due to family members or friends being obese) as possible reasons.

Rimmer, Hsieh, Graham, Gerber, and Gray-Stanley in 2010 conducted a pilot study examining how the elimination of barriers to physical activity can affect Black women with mobility disabilities. Thirty-three class I obese (mean BMI  $\geq$  49.1 kg), sedentary, Black women, were recruited to participate in a telephone based coaching intervention. At completion, the two barriers to exercise “don’t know where to exercise” and “don’t know how to exercise” were lowered. Although the intervention helped to increase structured exercise, however, other barriers, including pain, cost of programs, and lack of transportation and awareness of location of a facility, lack of energy were present at baseline and at the end of the program. Studies continue

to uncover barriers to exercise in an effort to improve programming and demonstrate the benefits of exercise and to increase the number of adults with an interest in improving their health (Lovett, 2011). The chances of being overweight or obese among Black women increase without successful programming (Minority Health, HHS, 2012).

**Weight.** The World Health Organization (WHO) defines overweight or obese as “abnormal or excessive fat accumulation that may impair health” (WHO, 2014, Obesity section, para.1). Body Mass Index (BMI) is a measurement of weight to height ratio used to classify weight categories among adults. It is calculated in metric as a person’s weight in kilograms (kg) divided by the square of height in meters (m<sup>2</sup>) or, in U.S., weight in pounds (lbs.) multiplied by 703 divided by the square of height in inches (in<sup>2</sup>).

Table 3, displays the most commonly used classifications and BMI numbers. Worldwide, those who are overweight have doubled since 1980, putting estimates of overweight adults (20+ years) in 2008 at 1.4 billion, with almost 200 million men and 300 million women obese (WHO, 2012). Americans, between ages 35 and 60 years old (i.e. middle age) are particularly at higher risk for developing obesity related chronic diseases (Goldberg & Busby-Whitehead, 2000; Carter-Parker et al., 2012). Due to the greater number of obese persons in the world, ‘class’ categories of weight have been added to include class I, class II and class II obesity (WHO, 2012).

In 2011, authors for an analysis from the NHANES reported that 78 million adults were considered obese in the United States (Ogden, Carroll, Kit & Flegal, 2012). Additionally, the 2011 BRFSS reported no state had a prevalence of obesity less than 20%. Those living in Southern regions are the heaviest (CDC, Early release, 2012), and the heaviest Americans have become even heavier in the past decade (Ogden et al., 2012). These authors consistently

Table 3

*BMI Classifications*

BMI	Classification
< 18.5	underweight
18.5–24.9	normal weight
25.0–29.9	overweight
BMI	Classification
30.0–34.9	class I obesity
35.0–39.9	class II obesity
≥ 40.0	class III obesity

Note. Adapted information from “Obesity and Overweight Fact Sheet,” by World Health Organization, 2012, Retrieved from <http://www.who.int/mediacentre/factsheets/fs311/en/index.html>.

indicated in their studies that Black women to have higher rates of obesity and subsequent related health risks of disease when compared to larger non-minority groups (Ogden et al., 2012).

In 2010, Blacks were 1.4 times as likely to be obese when compared to Non-Hispanic Whites and 4 out of 5 Black women are either overweight or obese (USDHHS, 2011). However, BMI does not take into account the differences that may make up one’s weight, including bone mass and muscle (Gallagher, Heymsfield, Heo, Jebb, Murgatroyd, & Sakamoto, 2000). Additionally, only one chart, which was developed from White men and women from the United States and Europe, is used (Jackson, Ellis, McFarlin, Sailors, & Bray, 2009) to determine the BMI of all individuals. Therefore, several studies have reported race/ethnic group bias when estimating body fat and BMI percentages (Deurenberg-Yap, 2000; Jackson et al., 2002).

The paradox of being an overweight or obese (defined by the BMI) person, but engaging in physical activity (defined by the CDC) has been more recently defined as “metabolically healthy” (Ortega et al., 2013, p. 391). If, aside from weight, one has adequate levels of good cholesterol, low triglycerides and low blood pressure (Ortega et al., 2013) one is considered ‘metabolically healthy’. Ortega et al. studied individuals who had better fitness than the

metabolically abnormally obese and have a lower risk for morbidity and mortality. Although the physical aspects of being 'metabolically healthy' have not been explored among Black women, related studies that are sociologically based have repeatedly identified Black women as underestimating their body weight (Mama, Quill, Fernandez-Esquer, Reece-Smith, Banda & Lee, 2011).

**Extreme exercise.** Beyond those who do the recommended moderate levels of aerobic exercise are those who exercise to the extreme. Extreme exercisers are those who choose to exercise for an extended period of time, usually for the purpose of competing in sporting events that go beyond traditional distances (Krouse, Ransdell, Lucas, & Prichard, 2011). The greatest cardiovascular benefit from exercise is performed by those achieving an excess of 42 METS per week; triathletes indicate their exercise regimens are in excess of 300 METS or 20 hours (Tanasescu et al., 2002, La Gerche & Prior, 2007).

Examples of extreme exercisers are those who participate in ultra runs, century bicycle rides, and triathlons. Races for ultrarunners (called ultramarathons) exceed the 42 km (26.2 mi.) marathon course, with the most common distances at 50 km (31 mi.), 80 km (50 mi.), 100 km (62.137 mi.), 160 km (100 mi.) and 320 km (200 mi.). Most races are often completed through cross country or held on an off road location (Krouse et al., 2011). Additionally, there are races that are timed events that run for 24 hours and multiday races that may be 1000 miles or longer (Doppelmayr & Moolkenthin, 2004); the rough courses of such races, with challenging terrain and elevation changes, are often extenuated by inclement weather (Krouse et al., 2011; Doppelmayr & Moolkenthin, 2004). To the researcher's knowledge, no research has been published on the different lengths of bicycle rides, but the generally accepted distance of 100 miles (a century) is augmented by rides that vary between 25 miles (quarter century) to 200 miles

(double century) and some are completed in certain times as depicted in Table 4 (Wikipedia, 2012).

Table 4

*Century Ride Table*

Name	Distance	Time
Quarter Century	40 km/25 mi	3 hrs
Half Century	80 km/50 mi	6 hrs
Century	160.9 km/100 mi	12 hrs
Double Century	320 km/200 mi	24 hrs

Note. Adapted from “Century Ride,” by Wikipedia, 2011, Retrieved from [http://en.wikipedia.org/wiki/Century\\_ride](http://en.wikipedia.org/wiki/Century_ride).

**Triathlons**

A triathlon is a continuous, sequential, multi-sport endurance event consisting of swimming, running, and cycling, it may vary by order of competency and distance. Racers are designated as either amateur or professional categories. Amateurs, including those at the collegiate level, are the majority of triathletes and are placed in ‘age groups’ for the opportunity to compete against others who are in the same age range and gender (Plant, 1987). Heavier amateur athletes also may compete against others closer to their own weight. USA Triathlon rules declare races may designate men over 220 lbs. (Clydesdales) and women over 165 lbs. (Athenas) to compete against others in their weight standard.

Professionals also compete in age groups. However, they are most often chosen from sanctioning bodies to represent the United States on national and international levels. Weight is often a challenge to speed; therefore, professionals are most often average to light weight, with low levels of body fat, and possessing a physique conducive to an optimal power to weight ratio (Sleivert & Rowlands, 1996).

As Table 5 depicts, distances most often completed in the United States, include Sprint, Intermediate or Standard (Olympic distance), the Long Course (Half Ironman), Ultra Distance

Table 5

*Triathlon Types and Distances*

Type	Swim Distance	Cycle Distance	Run Distance
Sprint	750 km/0.5 mi	20 km/12.5 mi	5 km/3.1 mi
Olympic	1.5 km/0.9 mi	40 km/24.9 mi	10 km/6.2 mi
Half	1.9 km/1.2 mi	90 km/55.9 mi	21.1 km/13 mi
Ironman			
Ironman	3.8 km/2.4 mi	180 km/111.8 mi	42.2 km/26.2 mi

Note. Adapted from "Participation and performance trends in ultra-triathlons from 1985 to 2009," by B. Knechtle, P. Knechtle, and R. Lepers, 2010, *Scandinavian Journal of Medicine and Science in Sports*, 21, p. 82.

(Ironman). In addition, there are shorter distances for children and triathlons longer than the Ultra Distance, which have been designated as Ultra-triathlons. Other continents and countries, including Europe, Australia and New Zealand, may designate different distances for formal events (Lovett, 2011; Knechtle, Knechtle, & Lepers, 2010).

Several organizations serve as the governing body for triathlon events. The International Triathlon Union (ITU) serves as the international governing body of the sport and supports triathletes vying for the Olympics. The World Triathlon Corporation (WTC) hosts triathlon events, including the 5150 series, an Olympic distance triathlon series, the Ironman World Championship, and the USA Triathlon (USAT). USAT is the sanctioning authority for triathlon focused events including races, programs, camps, and clinics (Lovett, 2011). Participants of triathlons are either members of the above organizations or are required to purchase a 'day' membership to participate in the competitions.

**Triathletes.** Studies of participants in triathlons have most often included those who are European American males due to their greater of participation in the sport. Since 2000, however, the female USAT membership has grown from 27% of the total number of the annual members to more than 38% at the end of 2011 (USAT, 2011) leading to an increase in the number of studies involving women who compete. Factors leading to this growth are society's acceptance

of “active” women, women feeling more comfortable living an active lifestyle, the growth of women’s-only events like the Danskin and Trek Triathlon Series, and races focusing on charity involvement and fundraising (USAT, 2011).

In 1993, there were 15,937 registered members of USAT. The average age of these members was 38 years old, with 62% married, 21% single, and 11% in a relationship; 6% were either separated, divorced or widowed (Tribe Group, 2009). Substantial growth has increased the number to 122,943 members in 2008. According to another source, the Sporting Sports Goods Manufacturing Association (2011), an estimated 2.3 million individuals competed in a triathlon in 2010. In 2012, there were 176,458 members of USAT (USAT, 2012). Using the percentage of Blacks from the 2009 Tribe Group study (0.5%) would indicate that there are about 880 Black triathletes, with an estimated 334 female Black triathletes.

Researchers have reported social, psychological, and physical reasons for participating in triathlons. Some of their recent studies reporting on social motivators have indicated a ‘sense of belonging’ among event participants (Cronan & Scott, 2008) and this concept was discussed as an important aspect to implementation of exercise initiatives (McCarville, 2007), for between group comparisons, triathletes are likely to train with others significantly more than runners, suggesting a stronger social component to the triathlon subculture (Virnig & McLeod, 1996).

Researchers have also long considered positive psychological health as necessary for successful extreme level sport participation (Bell & Howe, 1988). Literature on the psychological aspects of participation in triathlons has transformed through years. Bridel (2010) noted that those who participated in triathlons did so because they were lonely, bored and frustrated. However, recent literature demonstrates an increase of self esteem and self-efficacy as psychological reasons for amputee women to participate (Baczurik, 2012). Further, Cronan and



Scott (2008) suggested that there was a transformative effect of women participating in a triathlon training program who moved from struggling with their body image to recognizing the strength they embodied.

The ability to participate is a physical aspect; however, some women have not been deterred by disability. Furst, Ferrand and Megginson (1993) reported physical benefits for amputees and those following spinal cord injury associated with participating in triathlons. In the 1993 study, health concerns ranked lowest (18%) for primary influence to exercise regularly, post-rehabilitation. However, 31% of disabled athletes stated health concerns as their primary influence for training and 27% demonstrated intrinsic motivation as a strong influence.

***Black triathletes.*** In 1987, after spending years as a triathlete, Alvin Hartley wanted to encourage other minorities to be involved in the sport. He founded Tri-Masters International to encourage other minorities to train and participate in triathlons in the United States and other countries. After pioneering the first Black and Hispanic Triathlon Club in America, he met Bernard Lyles, another Black man who experienced the same challenges (the sport included those only white, middle aged, financially secure men). Lyles founded the Tri-Masters Group of Chicago. Since 1990, the group has been nationally known for training at risk youth for triathlons ([tri-masters.org/history](http://tri-masters.org/history)).

Similar stories of being the only Black at a triathlon have prompted women to form minority based groups. In 2001, Joyce La Boo and five women formed a team and registered to participate in a triathlon in Washington D.C. Eleven years later, the group has grown into a Christian based group, Soul Sistas, and has expanded and continues to schedule their triathlon workouts after work and on weekends (Stephanie La Boo, personal communication, July 18, 2012). Michelle Grade formed the organization R.Y.P.E. (Realizing Your Potential Everyday) as she wanted

other minority women to share the same overwhelming feeling she had after completing her first triathlon in 2003. R.Y.P.E. is a network of minority women dedicated to living a healthy lifestyle and since its inception, women have joined this Miami based group that enjoys destination triathlons ([www.rurype.com](http://www.rurype.com)). In 2006, Ayana Ball-Griffie founded the Sisters Tri-ing Health and Fitness Group, Inc. in Colorado. It was developed to provide resources to support women of color to be healthy. The group believes that one of the major barriers to staying fit is motivation and has found that training with others who are supportive can help reach fitness goals. There are now over 75 members in the group of 5 city chapters across 4 states ([www.sisterstriing.com](http://www.sisterstriing.com)).

The only known researchers to explore Black triathletes (Brown & Collins, 2009) sought to understand the barriers experienced by the women while participating in a triathlon program. One of the program goals for members (N = 25) was to complete a sprint distance triathlon during the 9 month program. Eleven participants completed the triathlon. Three participants chose to compete as a relay team, placing third in a race. The other 11 members choose to complete other athletic events including a half-marathon and a 150 mile cycling competition. Despite the accomplishments, the participants noted in their completed questionnaires they still had barriers while preparing for competitions. As with studies on barriers to exercise among those with sedentary lifestyles, the most commonly reported barriers to participation in the program workouts were lack of time, feeling too tired, and cost. The barriers for participation in the competitions varied and included busy work schedule and difficulty attending scheduled group exercise activities as they occurred on Sundays, a day that several participants reserved for worship and family (Brown & Collins, 2009).

Motivation for participating in a minority based triathlon program was reported by Brown and Collins (2009). 'Improving health and fitness' 84% (n=21), was the top motivational

response for participation in events sponsored by the triathlon group. Twelve (48%) participants also felt that participation would improve their psychological health and they were motivated by the group to prepare for a triathlon. Yet, ‘encouragement from friends’ was one of the lowest non-prompted responses at 28% (n=7).

**Master triathletes.** Master triathletes are identified as participants aged 40 years and older. Although the average age of triathletes was 38 in 2009, over half of the total members (52%) were between the ages 35-64 in 2011 (Tribe Group, 2009). In 2013, that age percentage rose to 62% percent for a total of 85,014 people (USAT, 2013).

Triathlons have been identified as a “lifespan” sport (Baker et al., 2006) and their cognitive and motor skill studies suggested that athletic performance can be maintained at high levels through advancing age (Baker et al., 2006). Triathletes expressed physical health benefits, including the desire to lose weight (Cronon & Scott, 2008; Lamont & Kennelly, 2012, Dietrich, 2012). However, in one study, participants in their 30’s displayed more concern with their weight loss than Master athletes (Lovett, 2011). Increasing strength and improving coordination were also reasons for participation (Bolster, 1999). Authors recommended resistance exercise, a key part of triathlon training, to increase strength to minimize degenerative muscular function associated with aging (Peterson & Gordon, 2011), which can occur as early as 50, and can accelerate as one ages (Beenakker et al., 2010).

Participation in the lifespan sport contains risks, as older athletes are subject to more injury (Morley, 2000). Dallam, Jonas, and Miller (2005) noted in their study that some common medical problems experienced due to triathlon participation include: muscle cramping, heat illness, musculoskeletal injuries and trauma, gastrointestinal problems as well as post-race bacterial infection, and psychological exhaustion. Triathletes often have larger hearts than non-

athletes; the left ventricular mass is greater and they have a high prevalence of left atrial dilatation (La Gerche & Prior, 2007). Authors have suggested that these characteristics may lead to adverse cardiac effects including ventricular arrhythmias (irregular heartbeats) and swimming induced pulmonary edema (blockage of an artery in the lungs) (La Gerche & Prior, 2007; Classens et al., 1999; Miller, Calder-Becker, & Modave, 2010).

Reduced strength is a risk factor to falling, a major health problem among the aged, especially those 65 and older (Pereira, Vogelaere, & Baptista, 2008). However, a physical motive to exercise sustained for decades by master athletes is its protection against loss of motor skills in later life (Mosole et al., 2014). Additionally, strength training can promote muscle function at least up to 70 years of age before aging athletes experience significant loss (Hawkins, Wiswell & Marcell, 2003). Aging persons who compete in extreme sporting events, like triathlons, may delay the onset of performance decline (Baker et al., 2006). Gallmann, Knechtle, Rüst, Rosemann, and Lepers (2014) found, in a recent study, that age and physical maturity of the top ten women Ironman triathletes was greater and had increased in the past three decades, thus defying previous thoughts on limits of the peak performance age in women triathletes.

De Franco, Meurer, and Benedetti (2013) reported in another study on senior triathletes' motivations to compete a triathlon. This qualitative semi-structured study collected information from participants of the Ironman Brazil in 2009. The 17 men and 1 woman ages between 60 and 66 were most motivated by the fun and pleasures experienced while racing. Furthermore, completing a triathlon was challenging and provided a type of competition most persons of that age would not experience. The participants were also motivated by their ability to improve health.

Social motives, including environments, foster competence in skill and an alliance with others can enhance intrinsic motivation, leading to the repeated behavior pattern of participation (Dietrich, 2012). Research into motives of participation indicates that women triathletes place more importance to social support than men in general (Hendy & Boyer, 1993) and elite women triathletes indicate the importance of support from spouses and family members as key to continuing participation (Cronan & Scott, 2008; Waddel-Smith, 2010). While Master triathletes demonstrated an understanding that social activity is key to wellness in aging (Dionigi, 2010), women (ages 30+) who regularly competed with successful outcomes downplay the importance of social support in their success in comparison to psychological and physical aspects (Hendy & Boyer, 1993). However, these varying results between women of differing ages gives rise to questions of whether motivations for participation do change throughout an athlete's lifespan.

### **Motivation**

Motivation is a factor that is both a facilitator and barrier to exercise. The major modern theory of human motivation was conceptualized by Abraham Maslow in 1943 (Huitt, 2007). For the purposes of this research, motivation is simply defined as the “direction and intensity of one's effort,” (Weinberg & Gould, 2011, p.51) that is initiated within a person to direct and sustain actions leading toward a goal (Weinber & Gould, 2011). Social cognitive models, including the Theory of Reasoned Action and Theory of Planned Behavior, have been used to predict intentions and behavior for exercise (Drayton-Brooks & White, 2004). The Self Determination Theory is a psycho-social model which supports understanding individuals' motivation to exercise (Deci & Ryan, 2008). However, it is motivation that drives intentions and behavior as Furst, Ferrand, and Megginson (1993) previously demonstrated through their research which they conducted on disabled athletes. Further studies to understand Black women's motivation for

exercising may provide a glimpse into the potential motivation for their participation in triathlons.

**Black women and motivation.** Pregnant Black women have been motivated to exercise for personal health reasons (Goodrich, Creeger, Wilcox & Liu, 2013), but they perceived difficulty to stay self-motivated postpartum (Setse et al., 2008). Researchers have studied the perception of women's ability to lose weight and then maintain weight loss among overweight and obese women (James, Pobee, Oxidine, & Brown, 2012; Rimmer et al., 2010), yet, cultural ideas which do not closely identify with the majority culture, (e.g. less social pressure to be thin) have been known to effect body image perception, reduce motivation to lose weight, and contribute to the acceptance of a heavier body size among Black women (Russell & Cox, 2003; Thomas, Moseley, Stallings, Nicholas-English, & Wagner, 2008; Young, Gittelsohn, Charleston, Felix-Aaron, & Appel, 2001).

Some Black women view motivation as an internal facilitator to exercise. This form of intrinsic motivation has been demonstrated to be a significant influence for exercise, while extrinsic motivation, in the form of coercion from significant others, has not (Landry & Solmon, 2004). When autonomy and self-regulation are influential they lead to commitment, a subtheme to motivation (Landry & Solmon, 2004). Commitment in women, who have previously experienced negative effects of leading a sedentary lifestyle (e.g. overweight, unable to fit in one's clothing) have said they resume exercise because, "My waist bands were starting to roll...I didn't want to buy new clothes, (Young et al., 2001). They also state they "never want to see that [200 lbs.] again. So that's my motivation..." also, "...I'm determined...I think we have to be consistent when we exercise," (Nies, Vollman & Cook, 1999, p.27).

Additionally, women who have been diagnosed with diseases may find the motivation to exercise to help maintain their health status or prevent it from becoming worse. In the study by Yuen, Holthaus, Kamen, Sword, and Breland (2011), sedentary Black women, with systemic lupus erythematosus completed semi-structured interviews following a 10 week home based WiiFit exercise program, reflecting on their motivation for exercising. Themes included: enjoyment, health benefits, and sense of accomplishment, convenience, and personalized instruction. Researchers provided preliminary evidence that the WiiFit health video game motivates this population to exercise leading to reduced body weight, waist circumference, and anxiety (Yuen et al., 2011). The home exercise program, Wii Fit, may serve as a viable alternative to exercising for a population of those less motivated to exercise.

**Motivation and triathlons.** Several researchers studied understanding exercise and motivation to participate in triathlons has been studied. Lamont and Kennelly (2012) completed a qualitative exploration on intrinsic and extrinsic motives, among amateur triathletes. The researchers conducted semi-structured in depth interviews with 21 triathletes aged 26 to 59. The researchers, also triathletes, used purposive sampling by contacting the triathletes through their existing Australian triathlete networks. The researchers concluded the themes of competence and enjoyment as intrinsic motivators and the 7 themes of well-being, ego involvement, external rewards, sociability, self-transformation, enduring commitment and consolidation as extrinsic motivators by interpreting data and using the Self-Determination Theory (SDT) theoretical lens. They derived these major themes from answers participants in the study provided which were then consolidated into 29 sub-themes based off key words spoken during interviews.

Lamont and Kennelly's 2012 results support the general trend of motives for participation in sport and exercise as an extrinsic quality (Ryan & Deci, 2007) . Unlike the study completed by

Lovett (2011), the participants in the Lamont and Kennelly (2012) study found well being to be significant. Well-being, which included healthy aging, was believed by many interviewees to be achievable because of the training and competing. Triathlon training was viewed as a catalyst to maintain health and functionality as they age. As one interviewee stated: “I want longevity...I want to be able to do swimming, biking, or triathlon to a small degree for another 10, 15 years,” (Lamont & Kennelly, 2012, p. 246).

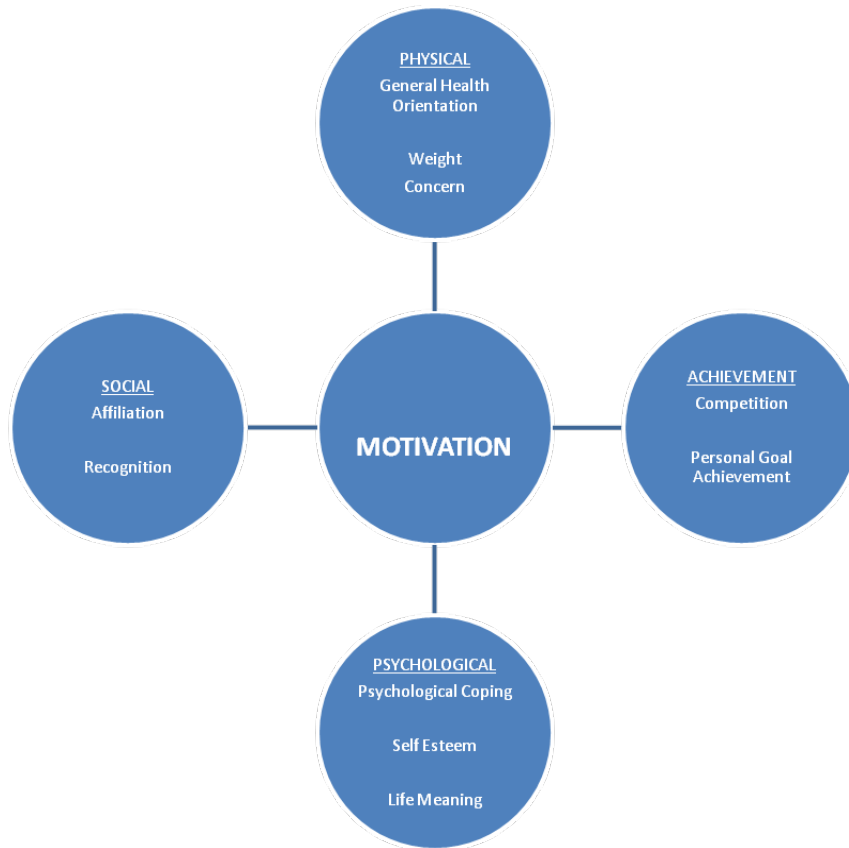
Other sub-themes within well being have prompted participants to begin training and continue competing (Lamont & Kennelly, 2012). Discarding unhealthy habits, such as overeating, smoking, drinking, and drug use have led to living a healthy lifestyle for some triathletes (Lamont & Kennelly, 2012). However, studies have also demonstrated that other triathletes do not necessarily discard unhealthy eating habits, regardless of their choice to participate in triathlons (Virnig & McLeod, 1996). Using the Eating Attitudes Test (EAT-26), Virnig and McLeod, (1996) examined socio-cultural factors in the development and maintenance of eating habits among 53 triathletes. Results indicated that women tended to have more disordered eating patterns than men; however, these patterns were not risk behaviors of eating behaviors such as bulimia or anorexia (Virnig & McLeod, 1996).

Stress relief, another subtheme of wellbeing, is another indicated reason for women to participate in triathlons (Lamont & Kennelly, 2012; Hammermeister & Burton, 2004). Self reports of lowered levels of stress, due to triathlon training, have been reported among men and women (Lamont & Kennelly, 2012). The difference between men and women triathletes and their coping mechanisms of stress were studied using the Lazarus cognitive motivational model (Hammermeister & Burton, 2004). The sample of 153 male and 31 female triathletes was used to understand levels of anxiety and threat, perceived controls, and perceived coping. Multivariate



analysis of covariance results indicated no gender differences in competitive anxiety but no significant effects for danger on perceived threat. However, perceived control and coping were significant. In coping, “females used suppression of competing activities and association support, dissociation, instrumental social support, and venting emotions more than did males,” (Hammermeister & Burton, 2004, p. 158). Hammermeister and Burton (1995) examined differences in anxiety between Ironman triathletes and other endurance athletes who competed in half-Ironmans, marathons, half-marathons, and cyclists who raced in distances ranging from 25 to 66 miles. This study exemplified the importance of understanding another facet of motivation and reasoning for triathletes to participate in the sport.

**Motivations of Marathoners Scale.** Another measure used to understand varying motives and underlying themes for participating in sporting events and activities is the Motivations of Marathoners Scale (MOMS). The researcher used the complete framework of the MOMS in this study to understand four overarching motivational measures (Masters, Ogles, & Jolton, 1993) and nine scales that have been identified as a valid for understanding the motivations of triathletes (Lovett, 2011). As Figure 1 presents, the four motivational categories are: physical health, social motives, achievement motives and psychological motives, and the scales are general health orientation, weight control, affiliation, recognition, competition, personal goal achievement, psychological coping, self esteem, and life meaning (Masters, Ogles, & Jolton, 1993). The physical health motives are defined by the general motives, exemplified by health or prolonging life. There are also the weight concern motives to be leaner or reduce weight



*Figure 1. Motivations of Marathoners Model.*

(Masters, Ogles & Jolton, 1993). The social motive of affiliation is demonstrated by group identity or the desire to socialize with others (Masters, Ogles & Jolton). Recognition is motivated by the desire to earn respect or to make family or friends proud of the accomplishment of completing a triathlon. This recognition is linked to achievement, in which competition with others or personal competition with oneself is identified (Masters, Ogles & Jolton). Finally, the psychological motive is either to cope from daily life (including worries) or to improve mood, self esteem, and life meaning (Masters, Ogles, & Jolton, 1993). A full table of the motivational measures (categories), their nine scales, and definitions are presented in Appendix B.

The idea for the instrument development occurred after doctoral student (at the time) and runner, Kevin Masters, found interest in understanding the motives of runners who ran marathons on a weekly basis (K. Masters, personal communication, December 5, 2012). He found problems with research on marathoners. For example, sometimes researchers did not use participants who were running marathons (Masters & Lambert, 1989) and there were gaps in the open-ended question format when used with small sample sizes (Masters, Ogles, & Jolton, 1993). Masters, Ogles & Jolton (1993) completed several preliminary studies after compiling previously completed qualitative and quantitative assessments and identifying nine reoccurring themes. The result was the 56-item MOMS, with 4 motivational measures (i.e. categories) and nine scales (Masters, Ogles & Jolton, 1993).

The researchers first used the scale to differentiate motives based on experience, or time in the sport among marathoners (Masters & Ogles, 1995). Their results demonstrated that those with the most experience adopted an identity as a marathon runner and were motivated by social and competitive reinforcements, whereas mid-level experienced marathoners were motivated by personal performance. However, first time participants were not motivated by the possibility of accepting a marathon identity.

Other studies have analyzed motivation data examining the differences by gender. Ogles, Masters and Richardson (1995) found that more females identify as recreational runners and significantly endorse the health motive weight concern, the social motive of affiliation and all three psychological motives: self esteem, psychological coping, and life meaning as significant.

In another study, older and younger runners pre-registered for four separate marathons were contacted to complete the MOMS (Ogles & Masters, 2000). The researchers separated the participants by age to include those who were 50+ (n = 104) and between the ages of 20-28 (n=

110). Univariate analysis revealed that older runners were more motivated to participate in marathons for the purpose to develop and maintain health, including concerns of weight  $F(1,209) = 6.25, p < .01$  and life meaning  $F(1,208) = 6.19, p < .0$  demonstrating that older runners were more motivated by health aspects of developing or maintaining fitness levels. Both age groups endorsed competition; however, it was not as important as life meaning and affiliation among the older runners (Ogles & Masters, 2000).

Prior to 2007, the MOMS had only been completed by race finishers. Havenar and Lochbaum (2007) used the model to compare training and race motives of first time completers and drop outs to those who did not complete training or a race ( $N=106$ ). The attrition rate of this study was at 70% ( $n= 75$ ), which is the norm of the general population. Finishers ( $n=31$ ) of the training and race did not rate any of the MOMS scales higher than the non-finishers but the non-finishers rated health orientation, weight, and the social motive and recognition significantly higher as motivators, as compared to the finishers.

Using the same framework, Doppelmayr and Molkenhain (2004) investigated motivational differences between marathon runners, ultramarathoners and adventure ultramarathoners. Any standard foot race beyond the marathon distance of 26.2 miles is defined as an ultramarathon. Descriptive differences between ultramarathons and adventure ultramarathons are locale of the race. Ultramarathon routes consist of paved roads and marked trails, whereas adventure ultramarathons cover several days and run through natural terrain, like deserts and mountains (Lovett, 2011). Workouts for both may vary, but could include training 20 hours per week, exceeding the recommended 1.5 hours for adults (Krouse, 2009).

In this study (Doppelmayr and Molkenhain, 2004), participants wrote their specific reasons for participating in their respective race categories. The researchers then assigned answers based

on the MOMS. Four motives that are not identified within the MOMS, but were in this study included adventure, nature, fun, and sensation. Results indicated that marathoners valued competition motives more than nature (e.g. I love the desert) and life meaning (i.e. make life more purposeful) motives (Doppelmayer & Molkenhain, 2004). In another study, the two most endorsed motives for participation in ultrarunning were achievement and health while social recognition and affiliation were not (Krouse, 2009).

Prior to its use for triathletes and runners, LaChausse (2006) used the MOMS framework to understand the motives between 1,239 male and female competitive, non-competitive and leisure cyclists. LaChausse (2006) found that women rated weight, self esteem, and affiliation as reasons for cycling. Goal achievement and personal recognition were demonstrated by competitive cyclists, more so than non-competitive cyclists, who were more concerned with weight gain/loss (LaChausse, 2006). The results among the competitive cyclists were unexpected due to the team camaraderie and individual sport of cycling among competitive cyclists (LaChausse, 2006).

***MOMS and triathletes.*** The first known study in literature to use the MOMS with triathletes was completed by Croft, Gray & Duncan (2007) who studied elite and non-elite triathletes registered with Triathlon Australia. They used a modified version of the MOMS, but they did not present it within the paper. The governing body of Australia, much like the USAT, requires participants in triathlons to be members of the organization or pay a fee to participate in a triathlon (Triathlon Australia, 2012). For this study, 34 participants (25 = males, 9 = females) of a triathlon club completed a modified version of the MOMS. One-way analysis of variance (ANOVA) results indicated life meaning to be the only significant variable between the elite and non-elite triathletes,  $F=4.395$ ,  $p < .05$ . The elite participants felt as though they had more life

purpose for competing in triathlons. This study served as an introductory platform for the next study that Lovett (2011) completed.

Lovett (2011) utilized a modified version of the MOMS to understand specific motives for consumption of products and participation in triathlons. Two of the statements added the words 'run, bike and swim' to represent the exercises completed by triathletes. Additionally, the phrase 'participate in triathlons' replaced the words 'run' and 'triathlete' replaced the word 'runner'. The purpose of Lovett's study was to research on variation based on gender, level of activity, and previous experience. Level of activity was a self measurement of whether the athletes were competitive or non-competitive. This study was more rigorous than that of Croft, Gray and Duncan (2007) with 165 triathletes (male = 98, female = 67) from two sprint triathlons in Texas and one in Florida.

Lovett found that females had greater personal goal achievement, affiliation and life meaning scores than males. In addition, those participants in their 20's had greater affiliation and competition scores than triathletes in their 30's. No significance was found in gender for self esteem between those who were in their 20's, 30's and 50+. However, women 40+ demonstrated significance in self esteem endorsing it as a strong motive for participation, leading to the discussion of whether self esteem levels are "increasingly attached to body image," (Lovett, 2011, p.80) as women age.

There were not any significant main effects on psychological coping or triathletes' recognition. Additionally, interaction of gender, by the independent variables age, level of activity and level of experience indicated no significant interactions with general health orientation (e.g. improve health, prolong life). However, level of experience was statistically significant for weight concern. Additionally, first time triathletes had lower scores in weight

concern than those who had completed between one to five triathlons. As demonstrated in this study, and qualitatively by others (Lamont & Kennelly, 2012), observations of motives for participation, in sport and exercise, have indicated the general trend of extrinsically motivated individuals (Ryan & Deci, 2007).

The triathlon sport has demonstrated its uniqueness for understanding participation among different groups. It is becoming an acceptable ‘lifespan sport’, but due to limitations on information on older triathletes, understanding motives for participation among different categories of people, including Black women and older women, is warranted (Baker et al., 2006). Researchers’ current studies have found value in the relationship between physical and psychological health, well-being, and motivation and triathlete participation (Lamont & Kennelly, 2012; Lovett, 2011). However, the variables physical and psychological health, and well-being have also been noted as insufficient for predicting continuous exercise participation since about 50% or more of women who begin supervised exercise programs drop out within 3 months (Kiovula, 1999).

Studies that have included Black triathletes have had an insufficient sample size (Lovett, 2011); therefore, this proposed study fills in gaps of understanding the relationship between the motives of a group not previously explored. The four motivational measures have been identified in other research on Black women. Older adults who have stronger social network ties have predicted better health and resources exchanged within a physically active social environment have been associated with positive health (Moren-Cross & Lin, 2006; Brown & Collins, 2009). Black women have spoken of enjoying competition and the togetherness of exercise (D’Alonzo & Fischetti, 2008; Peters, 2012).

The MOMS, as a model, assisted in obtaining the knowledge of availability, accessibility, and success of those who participate in extreme exercise sports like triathlons. Participation by those in triathlon groups would further knowledge of aerobic exercise infrastructures. The results of understanding the physical health, social achievement and psychological motives may lead to more Black women participating in the activity sport and provide insight on motivation for general exercise among aging Black women.

### **Self Determination Theory**

Motivation to exercise and understanding cultural constructs can draw from an array of theoretical perspectives from many disciplines. The Self Determination Theory (SDT) is a theory of human motivation that addresses issues such as personality development, self-regulation, psychological needs, life goals and aspirations, energy and vitality, and a host of other issues related to well-being and life domains (Deci & Ryan, 2008). The functional principle of having the ability to motivate a variety of actions, that will encourage personal growth, has been most applied to sport, education, and health care (Brummett et al., 2011; Deci & Ryan, 2008). Built upon experimentally tested constructs and principles at micro and macro levels, the SDT examines how the processes and structures of rewards, directives, feedback, praise, and regard, enhance or diminish self-motivation and outcomes. The SDT helps in understanding how an individual determines their behaviour and can be described as a way to understand personal choice, as opposed to outside influence (Deci & Ryan, 1995).

A subtheory of SDT, Organismic Integration Theory (OIT), views the socio-contextual processes that serve as barriers or facilitators in behavior regulation (Wilson, Sabiston, Mack, & Blanchard, 2012). A central assumption of OIT is that motivation can measure self-determination of behavioral regulation along a continuum ranging from controlled to autonomous (Wilson,

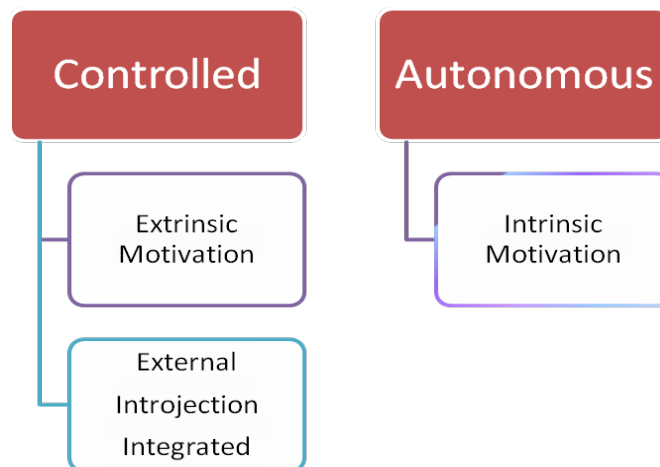


Sabiston, Mack, & Blanchard, 2012). Autonomous motivation occurs when goals for change are identified and regulation is brought into congruence with the person's values and perceptions. This construct of motivation is prompted by open curiosity and when people are autonomous they are more likely to engage in learning, thus encouraging behavior change and self-regulation of the behavior because of personal enjoyment (Ryan & Deci, 2000). However, for a health behavior change to be a lifestyle change, or produce long-term success, an athlete must internalize the responsibility for change (Deci & Ryan, 2000; Deci & Ryan, 2008). The less autonomous the motive, the more SDT predicts poor engagement and successful change (Deci & Ryan, 2008).

The opposite of autonomy is motivation that is controlled. Controlled motivation is not forced change but rather motivation experienced through external functions. This external motivation may be socially, culturally, or physically based. External contingencies are present through rewards or punishments and occur when people initiate change because of 'should', guilts, or seeking social approval, therefore pressuring themselves to change. (Ryan & Deci, 2000; Deci & Ryan, 2008).

There is a continuum of motivational regulators that stimulate behaviour as humans interact with their environment (Deci & Ryan, 2000) and this is recognized in the SDT. The differentiated regulators of motivation indicate that the type or quality of one's motivation is more important than the quantity of motivation for predicting health and well-being (Deci & Ryan, 2008). The researcher focused this study on two of the three regulatory styles: extrinsic and intrinsic. Amotivation was not included because the population of inquiry is unlikely to be under or not motivated.

The intrinsic regulatory style is also the associated regulatory style and is described through interest, enjoyment and inherent satisfaction of participation (Deci & Ryan, 2008). The extrinsic regulatory style consists of four associated styles including: external, introjection, identification and integrated. The researcher focused this study on three of the four styles including external, introjection, and integrated. They are identified by their descriptive traits of associated processes of rewards or punishments and due to compliance, ego involvement and a synthesis of self, respectively. Since those who have participated in triathlons are perceived to have some sort of motivation, the researcher did not explore amotivation in this study. Figure 2 presents a model of the constructs and regulators proposed for this study.



*Figure 2.* Self Determination Theory Model of Motive Types and Associated Styles.

Adapted from “Intrinsic and extrinsic motivations: Classic definitions and new directions” by R.M. Ryan and E.L. Deci, 2000, *Contemporary Educational Psychology*, 25, 54-67.

doi:10:1006/ceps1999/1020.

Previous studies by Deci and Ryan (2000), Moren-Cross and Lin (2006), Brown and Collins (2009), and Lovett (2011), have concluded differences between extrinsic and intrinsic motives

among exercisers and athletes. What was not explored in these studies are regulatory styles and how these may determine whether motivation is extrinsic or intrinsic. The MOMS scales, with the regulatory style descriptors, allow the researcher to hypothesize how these scales and styles may correlate. Conclusions from the previous studies serve as a base for creating hypotheses. The hypotheses to be tested to understand the relationship between motivation and age, distances, and estimated BMI of the study are:

H<sub>1</sub>: The overall scores of extrinsic motivation will be lower among the oldest group of triathletes.

H<sub>1a</sub>: The overall scores of intrinsic motives will be higher among the oldest group.

H<sub>2</sub>: The overall scores of extrinsic motivation will be higher the greater the distance.

H<sub>2a</sub>: The overall score of intrinsic motives will be lower with greater distances.

H<sub>3</sub>: The overall score of extrinsic motives will not be significant with BMI.

H<sub>3a</sub>: The overall score of intrinsic motives will not be significant with BMI.

**SDT and aging.** Understanding the motives for aging adults to exercise is important since degenerative processes can affect the aging process and create a barrier to exercise (Martin and Hellström, 2012). However, there is limited literature on the usage of the SDT to assess these motives among aging adults in exercise and competitive sports (Solberg, Hopkins, Ommudsen, & Halvari, 2012; DePero, Amici, Benvenuit, Minganti, Capranica et al., 2009). Lübcke, Martin, and Hellström (2012) explored the motives for older adults, ages 65-81, to start and continue exercising at a senior gym. The results of the interviews indicated that the motives for starting an exercise program and continuing said program changed character. Referencing the Self Determination Theory (SDT), the researchers noted that participants felt their motivation was initially driven by their competence to develop routines, autonomy to control their lives and

relatedness with others in the gym, due to age and function, therefore feeling more comfortable. Continuance of exercising was based on participants' thoughts of preventative health benefits, social interaction, time availability, and easy access.

In another study, a 16 week randomized trial investigated the health benefits and well being (i.e. autonomy) in 138 older adults (M= 74.2 years, SD = 4.5; 68% female). Participants were guided by instructors to exercise three times per week for 13 weeks performing endurance (e.g. Nordic walking), functional (e.g. stair climbing) and strength training (e.g. leg squats). Three weeks following the trial, participants completed surveys which resulted in understanding that all three types of training were beneficial short term. However, only endurance training had long term effects on exercise in older adults (Solberg et al., 2012). Similarly to the Lübcke et al. (2012) study, Solberg et al. (2012) found that well being was most effected through social relatedness, which changed substantially with strength training.

**SDT and triathletes.** The Self Determination Theory (SDT) has also been used to find the value in the relationship between physical and psychological health, well-being, and motivation and triathlete participation. The quantitative study by Lovett (2011) identified varied reasons among physical, social, achievement and psychological variables to help explain why people choose to participate in triathlons. Additionally, Lamont and Kennelly (2012) designed their qualitative study on triathletes through the SDT theoretical lens. The Basic Needs Theory was used in semi-structured interviews with elite female triathletes for understanding motivational factors associated with longevity in sports.

The approach of this study is based on the constructs of the SDT (Waddel-Smith, 2010). Previous studies have demonstrated support of exercise in relation to the scale descriptions of the SDT. Under general health orientation, Janssen, Carson, Lee, Katzmarzyk and Blair (2013)

found that five and a half potential years of life can be gained among non-Hispanic Black women due to physical activity. Additionally, walking and vigorous exercise are associated with substantial reductions in the incidence of cardiovascular disease in postmenopausal women (Manson et al., 2002). Also, Black women have spoken of their enjoyment of competition and togetherness of exercise (D'Alonzo & Fischetti, 2008; Peters, 2012).

One researcher indicated that the variables within physical and psychological health have been described as insufficient for predicting continuous exercise participation since about 50% or more of women who begin supervised exercise programs drop out within 3 months (Kiovula, 1999). Effective interventions to motivate older adults to exercise consistently are needed. Individual approaches have been effective in studies that have provided telephone calls, alone, and with motivational sessions and advice from medical personnel (Bennett & Winters-Stone, 2011). However, having stronger social network ties have predicted better health among older adults and resources exchanged within a physically active social environment have been associated with positive health (Moren-Cross & Lin, 2006; Brown & Collins, 2009).

**SDT and MOMS.** Basing from autonomous and controlled motivation, this study sought to identify the motivational relationship between the nine MOMS scales and age, triathlon distance and BMI. This study also aimed to identify the links of the nine MOMS scales to the SDT to understand how they are either extrinsically or intrinsically regulated. The current MOMS can only identify how much motivation is determined by the scales. However, even within the measures (physical health, social, achievement, psychological health), there are proposed differences between the regulated styles of the scales. Although Deci & Ryan (2000) interpreted enjoyment of participating in sports as intrinsic and Solberg and Halvari (2009) interpreted competition as an extrinsic motive, this model proposes that the regulated styles of motivation,

for the nine scales of the MOMS, have not been identified. Without understanding the type of motivation and how it is regulated the researcher could not fully explore the relationship between the scales and motivation.

The researcher, in this study, proposed a link between the MOMS scales and the regulated styles of the SDT to identify how the motives are regulated. She first reviewed conclusions from the qualitative study by Lamont and Kennelly (2012) to match associated processes within the SDT with scales within the MOMS. Then the researcher matched and interpreted key words which describe the associated processes and the scales. For example, under the SDT regulated style, external motives are processed extrinsically either through external rewards, punishments, or through compliance. One of the MOMS scales hypothesized to be linked to external motives is weight control. Weight control is described within the SDT as having motives to look leaner, control weight, or reduce weight. The rationale for this scale being external was the association of key words producing an external-type of reward. The researcher interpreted 'look' and 'reduce' as visual rewards and 'control' was completed through compliance.

There are noted differences between what Lamont and Kennelly (2012) concluded and what the researcher hypothesized for this study. This is due to the regulatory styles that are in the SDT, which were not included in the analysis of the Lamont and Kennelly study. While they believed the social motives to be intrinsic, the SDT separates social motives into two scales: affiliation and recognition. Per the matched definitions, affiliation is perceived as intrinsically motivated and regulated; however, recognition is extrinsic because of its introjection regulatory style. See Appendix C for a complete hypothesized relationship between the scales of the MOMS, the SDT and the associated styles.

Figure 3 depicts an integrative model that ties the Self Determination Theory and the Motivation for Marathoners Scale. The top portrait describes the controlled motivators while the

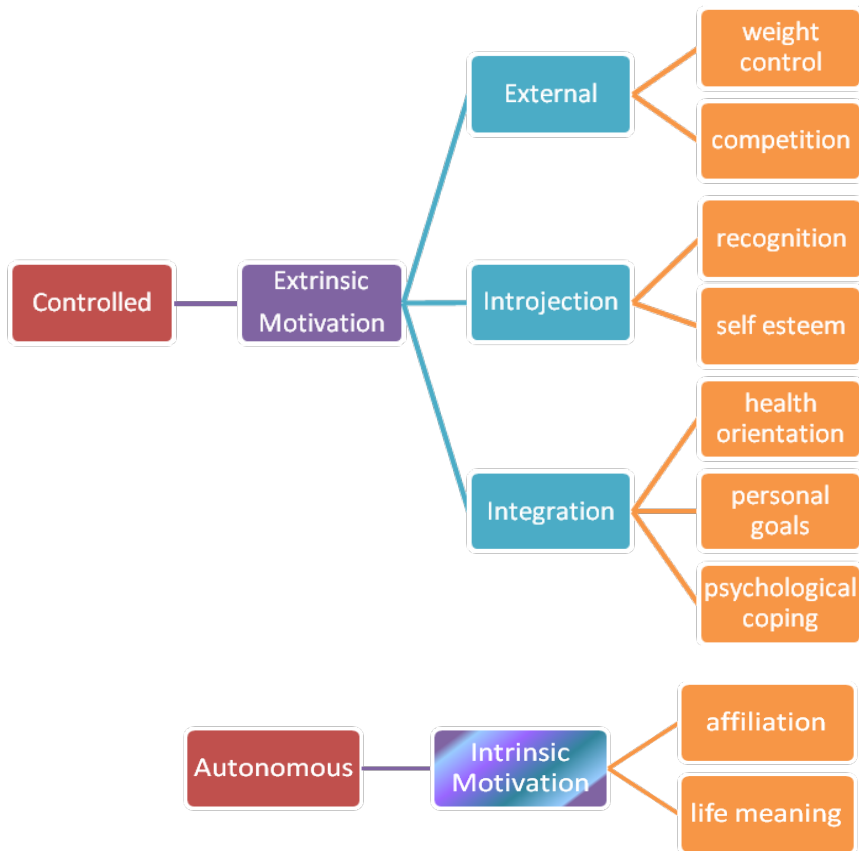


Figure 3. Self Determination Theory and Motive Relationship.

bottom describes the autonomous motivators. In each of the separate tiers, the constructs (red), type of motivation (purple), regulatory styles (turquoise) are presented first. Then each of the scales of the MOMS and their proposed links to the SDT are to the right (orange) of the model.

The researcher has hypothesized all of the placements of the scales under associated styles based on the descriptions from the MOMS and the SDT. The main hypothesis related to the SDT and motive relationships are:

H4: The SDT scales weight control and competition are externally styled.

H<sub>5</sub>: The SDT scales recognition and self esteem are styled through introjection.

H<sub>6</sub>: The SDT scales health orientation, personal goals and psychological coping are styled through integration.

H<sub>7</sub>: The SDT scales affiliation and life meaning are styled intrinsically.

## **Conclusion**

The researcher was the first to explore motivation of participation in triathlons, among mid life and older Black women. There have been many studies which have explored exercise and barriers to exercise among Black women. Although studies to exercise among Black women have had varied results, including the health, social and psychological benefits to regular exercise, barriers to exercise have had a significant effect on the number of Black women who are overweight and/or obese.

The researcher explored the extent to which motives of Black women triathletes are extrinsic or intrinsic. There have been previous studies which have concluded differences between types of motives being either extrinsic or intrinsic. Basing their definitions on Deci & Ryan (2000), Lamont and Kennelly (2012) interviewed amateur triathletes and identified two intrinsic (competence and enjoyment) and seven extrinsic (well being, ego involvement, external rewards, sociability, self-transformation, enduring commitment and consolidation) motives. Lovett (2011) modified the MOMS for triathletes, to understand their physical health, social, achievement, and psychological motives for participating in sprint triathlons. However, the MOMS-T has not been used to understand its relation to motivation of being either intrinsic or extrinsic. Additionally, mid-life to older Black triathletes of different competing distances, and varying weight categories have not been explored in a mixed method study.



Participating in triathlons can be intimidating to some women. Obtaining the knowledge of availability, accessibility, and motives of current Black women participants may encourage those who are sedentary to exercise. Knowledge of these motives, to aerobic exercise infrastructures, like triathlon programs, may also encourage more activity in the sport by Black women. The following chapter expounds on the proposed methods.

## Chapter III

### Methods and Methodology

The objective of this study was to better understand the motivation among mid-life and older Black women pertaining to their participation in triathlons. Identified barriers to exercise, including time and energy, and the high obesity rate among the population, correlated with only 50% of Black women participating in regular aerobic exercise (Fleury & Lee, 1996; CDC, 2012). A number of Black women, who are triathletes, represented the other 50% of Black women, who participated in some form of aerobic exercise. And as the number of midlife to older triathletes increases, so should researcher's inquiry into understanding why people choose to participate in this extreme lifespan sport (Baker et al., 2006).

The Self Determination Theory (SDT) guided the study's aims, in order to determine types of motives among midlife and older Black women. Overall, SDT addresses human motivation to understand whether issues of health and well being are extrinsic or intrinsic (Deci & Ryan, 2008). Previous researchers who studied triathletes have used the SDT to understand motivation (Lamont & Kennelly, 2012); however, none have used an instrument, specific to triathletes, to identify whether the SDT motive scales are extrinsic or intrinsic (Deci & Ryan, 2008). The researcher explored the nine MOMS scales within physical health, social, achievement, and psychological types of motives to identify whether they are associated with the SDT styles external, introjected, integrated or intrinsic. Identifying the SDT associated styles of the MOMS

motive scales may be helpful in improving the desire for general exercise among midlife and older Black women.

Chapter Three begins with an introduction to mixed methods and follows with descriptions of the methods of the proposed study, including: (a) research design; (b) methodology; (c) methods; (d) procedures; and (e) data analysis. The parallel design employed for this study is mixed quantitatively and qualitatively to assess motives for participation in triathlons among mid-life and older Black women. A modified instrument, the Motivations of Marathoners Scales for Triathletes (MOMS-T), was used to assess the quantitative data. A newly developed, semi-structured interview protocol, based on the nine scales nested within the MOMS-T, guided the qualitative data collection. The procedures, including recruitment, occurred electronically through familiar triathlete networks of the researcher. Data collection and analysis was conducted by means of mixed methods. Quantitative and qualitative analyses were conducted separately until timing of comparison analysis, known as meta-inference, occurred between the two data.

**Mixed methods.** Mixed methods research had a formative period of creation in the late 1970's and has formally emerged in the past 10-15 years (Creswell & Plano-Clark, 2011; Tashakkori, Teddlie, & Sines, 2012). It has been widely employed among researchers interested in studying social and behavioral patterns because of its advantage of simultaneously answering exploratory and confirmatory questions (Teddlie & Tashakkori, 2009). When qualitative and quantitative perspectives are combined, the methods overlap one another, creating a new relationship. Researchers have conducted studies on motivation to participate in triathlons both quantitatively (Lovett, 2011) and qualitatively (Lamont & Kennelly, 2012). However, no study has researched motivation for participation using mixed methodology. The MOMS-T, in its

quantitative form, provides an understanding of how triathletes are motivated. The researcher was further able to answer questions as to why midlife and older Black women are motivated to participate in triathlons by adding the qualitative component to the MOMS-T, in the form of this study's semi-structured interviews. This integration of both methods provided a greater understanding of motivation among participants.

### **Research Design**

This parallel design acquired empirical evidence on the motivation to participate in triathlons by using the quantitative MOMS-T survey and the qualitatively developed MOMS-T semi-structured interview questions among mid-life and older Black triathlete women. The parallel design is complementary, and the two fundamental languages of communication, words and numbers, are both represented (Polit & Beck, 2008), allowing for the quantitative and qualitative research to occur simultaneously or with some time lapse (Creswell & Plano-Clark, 2007). The quantitative portion has a non-experimental correlational design (Polit & Beck, 2008) to describe the relationships between the independent variables, age, triathlon distances, and BMI and the nine dependent variables: general health orientation, weight control, affiliation, recognition, competition, personal goal achievement, psychological coping, self esteem, and life meaning of motivation. The qualitative portion of this study is designed, through phenomenology, to focus on these same relationships through human experience, for the production of descriptive and narrative data (Rolfe, 2006, Creswell & Plano-Clark, 2007). The inferences of the quantitative and qualitative data collection was combined for analysis (called meta-analysis), and the researcher was subsequently interpreted the conclusions (Polit & Beck, 2008; Teddlie & Tashakkori, 2009). Although only a one time observation, validity may have been enhanced because other types of data supported the study design (Polit & Beck, 2008, Creswell & Plano-

Clark, 2007). Using a parallel design in this study provided the researcher with quantitative evidence to understanding the motivations of triathletes and qualitative perspectives of those motivations through the semi-structured interviews.

The researcher used the Self Determination Theory to frame this study. This theory addresses issues of related processes of structure within human motivation and whether they are autonomous or controlled (Deci & Ryan, 2008). These constructs have been explored through the continuum of motivational regulators and associated styles that stimulate behavior (Deci & Ryan, 2000). The SDT theoretical perspective has been supported both quantitatively in understanding motivation of exercise (Hsu, Buckworth, Focht, & O'Connell, 2013; Bhattacharya, 2012; Sabiston, McDonough, Sedgwick, & Crocker, 2009) and in the qualitative study on triathletes (Lamont & Kennelly, 2012).

## **Methodology**

The philosophical orientation associated with mixed methods is pragmatism. It is an alternative worldview, whereby, by focusing on the questions asked rather than the methods, a researcher is oriented toward 'what works' in practice (Creswell & Plano-Clark, 2007; Polit & Beck, 2008; Teddlie & Tashakkori, 2009). The stances or elements that support worldviews influence how research is conducted and reported (Creswell & Plano-Clark, 2007). They vary among post positivism, constructivism, advocacy and participatory, and pragmatism worldviews. Additionally, "they represent different views on the nature of reality, how we gain knowledge of what we know, the role values play in research, the process of research, and the language of research," (Creswell & Plano-Clark, 2007, p.23).

Within pragmatism, the ontology, or nature of reality is either singular or has multiple realities whereby researchers may test different hypotheses and provide varying perspectives.

The researcher, in this study, asked several questions related to motivations based on age, distance and BMI to gain data on varying perspectives. Epistemology, the relationship between the researcher and that being researched, is practical knowledge, thus researchers address the research question by collecting “what works” in practice (Creswell & Plano-Clark, 2007). The axiology, multiple stances for practice, includes biased and unbiased perspectives from the researcher which the researcher identified within this study during the research process (Creswell & Plano-Clark, 2007). The language of research, or rhetoric, can either be formal or informal (Creswell & Plano-Clark, 2007) and both are presented throughout the manuscript. The methodology provided a more comprehensive understanding of the types of motives for participation and how these motives relate to the style of motivation.

## **Methods**

**Population.** The study participants included Black women who participate in triathlons. The researcher acquired a list of all women who are self-identified as Black registered triathletes, with USA Triathlon (USAT). Participants had to meet all of the following inclusion criteria in order for them to participate in this dissertation study: (1) participants must be Black women; (2) participants must be ages 36 or above by the end of December, 2015; (3) participants must reside in the United States; (4) participants should be preparing for an individual triathlon (as opposed to a relay team) in 2015 or have completed a competitive or non-competitive individual triathlon between the years 2012 to 2014.

The purpose of having women who are either training or have completed an individual competition was to have their perceptions on motivation for participation in triathlons either completed or training for, as above. Those who had completed a triathlon in past years may not have recalled their previous motivation for participation. Furthermore, participants of a relay

team do not complete the full swimming, cycling, and running required for a triathlon; rather these participants do one or two of the stages in the race.

## **Sampling**

The researcher utilized two sampling techniques, convenience and purposeful sampling, for the quantitative and qualitative designs of the study, respectively. The researcher utilized the snowball sampling and maximal variation types for the parallel design so that one type of sampling types does not supersede the other (Teddlie & Tashakkori, 2009). In mixed methods, two separate techniques, known as ‘mixed purposeful’, occur when the research design purposely uses multiple sampling strategies to compare results (Collins, Onwuegbuzie, & Jiao, 2007).

**Quantitative sampling.** Snowball sampling, a type of convenience sampling, was used to sample the population of Black midlife and older triathlete women (Polit & Beck, 2008). This form of sampling asked early sample participants (seeds) to identify other Black female triathletes (36 >) who met eligibility criteria to participate in the study. The seeds were sampled from the various networks including: (1) USA Triathlon (USAT); (2) informal internet networks (e.g. Facebook); and three triathlon group based (e.g. tri-clubs) list serves throughout the United States.

A power analysis was used to determine the required sample size for producing statistical significance in the quantitative data analysis. In most studies, the factors involved for the power analysis include a desired alpha set at the  $p < .05$  level and a desired sample size to yield power = .80 (Tabachnick & Fidell, 2007). The researcher used the previous study, which had the necessary components completed, for direction to find power for this study (LaChausse, 2006). The effect size (Cohen’s  $d$ ) used the calculation of the average means (3.92) and standard

deviation (1.37) from the study that had 1,217 participants. The researcher used the University of Colorado-Colorado Springs Effect Size Calculator made available online to calculate Cohen's  $d$  (Becker, 2000). Finally, the researcher used the internet application PiFace (Lenth, 2009) to calculate power. With  $p < .05$ ,  $d = .40$ , a SD of 1.40, and power of .80, the researcher needed 112 participants to complete the two-tailed test based on equal allocation of each group.

**Qualitative sampling.** Maximal variation, a type of purposive sampling, obtains a broad range of diverse perspectives and information from participants (Polit & Beck, 2008; Patton, 1990). The researcher purposefully sampled participants from the quantitative sample, via email, for the face-to-face or Skype interviews. The researcher needed to further develop ways of evaluating sample size for exploratory research as there were few guidelines to assist in determining a size representative of saturation (Gravlee, 2011). However, estimates for required sample size from several sources indicate that sample size for phenomenology studies usually include between 6 to 10 participants (Teddlie & Tashakkori, 2009).

Maximal variation turned the potential weakness of having a small sample size into a strength by capturing the patterned core experiences or shared opinions of the participants in a study (Patton, 1990). The major groups of this study were age, distance of triathlon, and estimated BMI. To successfully sample participants for interviews, the researcher incorporated recommendations from Gravlee (2011) into a stratified quota sampling design to demonstrate the sample size estimate needed for the semi-structured interviews (Weller, 2007; Gravlee, 2011). The sample size allowed for qualitative comparisons between a total of 10-25 women with different attributes after projecting quotas for all the possible combinations of the groupings, including age, distance of triathlon, and estimated BMI. However, the common rule of thumb is that a qualitative sample size is large enough once saturation is reached, until there is clarity of



the dynamics of a group, and/or the addition of more participants does not result in new information (Creswell & Plano-Clark, 2007; 2011; Teddlie & Tashakkori, 2009).

The researcher grouped samples by the weight and age differences to produce a four cell matrix of younger (36-50 years old) and older (51+) participants and lighter (underweight/normal) and heavier (overweight/obese) weight. Interviews for this study were conducted until saturation was reached and the maximal variation of the groupings demonstrated similar patterns of themes.

## **Recruitment**

Quantitative recruitment occurred first, followed by qualitative recruitment. The researcher required consent from participants before continuing in either portion of the study. The quantitative (Appendix D) and qualitative (Appendix E) informed consent forms, demographic questionnaire and MOMS-T were disseminated through the secure web-based VCU system, RedCap. Interviews were face to face, either in person or via Skype, and the researcher and participants determined a location. All participants were entered into a lottery for the grand prize of winning either a FX 7.3 or Lexa bike (retail price between \$659 and \$740 respectively) sponsored by Trek. In addition, the form also described that all USAT participants would be provided with a race belt by Fuel Belt (retail price \$20) courtesy of USAT.

**Quantitative recruitment.** USAT has agreed to send email notifications to members who are Black women, (estimated) 320 individuals, who have participated in USAT sanctioned triathlons over the past two years. Information about the study was posted on the social network, Facebook, to recruit participants. Additionally, the researcher had Triathlon group based listservs to inform members of the research. The researcher obtained a more diverse within-group sample through convenience sampling from the researcher's affiliation with USAT and snowball

sampling from triathlon based social networks. This approach helped to avoid accessing only one type of triathlete. Furthermore, recruiting participants from different networks may increase generalizability within the sample (Polit & Beck, 2008).

**Qualitative recruitment.** Following completion of the survey, the researcher noted whether the survey is fully completed. Eligible participants with diverse backgrounds (age, triathlon distance, and BMI) based on answers provided in the completed demographics questionnaire received an initial email asking for participants' consent to be interviewed. The first volunteers who met the criteria and expressed interest were provided with an informed consent form (Appendix E). Participants willing to conduct the interview signed the informed consent provided through an Adobe Reader XI, PDF form. If participants did not have the technological capability to electronically sign the consent form with this application, they could also sign their names in the duplicate Word document that was made available through email.

Upon their acceptance of the informed consent, the researcher called the interviewee to set up the face-to-face or Skype interview time and a place convenient for the interviewee. During this call, the researcher built rapport with participants by explaining why they were chosen to participate in the interview process, reiterated that their knowledge of the subject was important and that they would receive support regardless of what they said (Patton, 2002, Galli, 2009). The potential participant was also provided with an overview of the interview process, including the approximate time needed for the interview (up to 60 minutes).

### **Instrumentation**

The three instruments for the study gathered demographic information, quantitatively assess motivation and qualitatively explore the thoughts, attitudes, and opinions about Black women's motivation to participating in triathlons. The independent variables were: age, triathlon distances,

and BMI. The nine dependent variables are: general health orientation, weight control, affiliation, recognition, competition, personal goal achievement, psychological coping, self esteem, and life meaning of motivation are the scales from the SDT. As described in the second chapter, the researcher constructed all the hypotheses for this study based on the results or gaps in research which has been based on the MOMS, SDT, or both.

**Motivations of Triathlon Participation Questionnaire.** The Motivations of Triathlon Participation Questionnaire explored demographics, triathlon participation, and exercise regime (Appendix F). The primary quantitative outcome of interest was motivation to participation, with respect to age, estimated BMI, and distance of triathlons. Age was separated into three categories, each with a ten year period between 36-45; 46-55; 56-65+ based on the age eras developed by Levinson (1996). Four BMI categories, underweight, normal weight, overweight and obese, were calculated based off weight and height provided from participants. The distance of triathlons was indicated as either: Sprint, Olympic, Half-Ironman, or Ironman.

The questionnaire comprised 16 questions. The first 6 questions were relevant to general information such as age, weight, height, educational status, and place of residence. The next 10 questions were relevant to participation in triathlons and exercise. Questions explored the distance and number of triathlons a participant has completed, their perceived level of competition, and their current exercise regime. Furthermore, the extended number of questions, related to triathlons, is to prevent ambiguity during analysis. The questionnaire was a mix of closed and open-ended questions to allow for additional information on the number of years of participation, descriptions of the triathlons and preparatory practices for triathlon participation.

**MOMS-T Survey.** The researcher assessed the motivation for participating in triathlons by using a previously modified version of the MOMS, and confirmed the reliability and validity

among other athletes, including cyclists by reviewing previous studies using modified versions of the Motivations of Marathoners Scale (LaChausse, 2006). Lovett (2011) used a modified version of the scale to gain a deeper understanding of how motivation effects participation of sprint triathletes. It demonstrated reliability and validity for sprint triathletes (Lovett, 2011). For the purposes of this study, since the survey was based on Lovett's (2011) work with triathletes, the researcher identified it as the Motivations of Marathoners Scale for Triathletes (MOMS-T) and it was expanded to include triathletes of varying levels and distances (Appendix G).

The MOMS-T is a 56-item Likert-type survey that assesses motivation to participate in triathlons based on four general categories and nine scales (Masters, Ogles, & Jolton, 1993; Lovett, 2011). The first category, physical health motives, assessed whether the triathletes' motivation is based on an overall desire to improve health, prolong life, and stay physically active; and, based on their weight as to whether they are motivated the opportunity to look leaner, control or reduce their current weight. The second category, social motives, assessed whether participating in triathlons is socially motivated through the affiliation of meeting people, visiting with friends or just sharing a group identity others. It also assessed the recognition they received, including respect and pride. The third category, achievement motives, was based on achievement and whether participating in triathlons is for competition purposes with others, being faster than friends, or placing within the competition. The scale could also be used to assess personal goals, including the purpose for one to improve speed, and if it is to push oneself or, improve overall time. The final category, psychological motives, had three scales that assessed psychological coping, self esteem, and life meaning. The first scale, psychological coping, assessed anxiousness, worry and mood; self esteem assess self esteem, confidence, and

sense of achievement. Life meaning assessed motivation based on finding purpose of life, belonging with nature, and feeling at peace (Ogles & Masters, 1993).

The researcher had modified four statements of the original MOMS, corresponding with items 5, 7, 22, and 30, to include the exercises ‘cycling and swimming’ or the word ‘triathlete(s)’ for the purpose of this study. Words for the purposes of analyzing a different sporting population was first seen in the LaChausse (2006) study where the words “runner” and “running” were replaced with “cyclist” and “cycling” where necessary. Additionally, the Lovett (2011) study had previously modified the words “run” with “participate in triathlons” and “runner” with “triathlete”. A table with the scales and their corresponding questions are presented in Table 6. The directions and modified questions which Lovett (2011) originally developed are presented with the full questionnaire presented in Appendix H.

Table 6

*MOMS-T Scale and Corresponding Items*

General Category	Scale	Item Number
Physical Health	Health Orientation	8, 14, 17, 26, 37, 44
	Weight Control	1, 4, 21, 42
Social Motives	Affiliation	7, 12, 16, 24, 30, 33
	Recognition	3, 6, 19, 45, 48, 54
Achievement Motives	Competition	2, 40, 43, 52
Psychological Motives	Personal Goal Achievement	, 9, 22, 35
	Psychological Coping	10, 15, 18, 36, 38, 39, 47, 50
	Self Esteem	11, 23, 29, 31, 32, 34, 53, 56
	Life Meaning	13, 20, 25

Note. Adapted from “The development of an instrument to measure motivation for marathon running: The motivations of marathoners scales (MOMS),” by K.S. Masters, B. M. Ogles, and J.A. Jolton, 1993, *Research Quarterly in Exercise and Sport*, 64, 134-143.

**Measurement quality.** The researcher used the criterion of reliability and validity to assess the quality of the quantitative portion of the study. Reliability is the accuracy and consistency of information that researchers have obtained, while validity determines whether the findings are

unbiased and well grounded. The MOMS has previously demonstrated its reliability with marathoners, cyclists and triathletes (Masters, Ogles & Jolton, 1993; LaChausse, 2006; Lovett, 2011). However, this did not guarantee its reliability for the population being sampled for this study. Therefore, the researcher assessed the reliability of the MOMS-T by its internal consistency. The items of the MOMS-T were internally consistent if its items measure the same trait: motivation. The Cronbach's alpha is described with a range between .00 and +1.00, with higher values demonstrating higher internal consistency to evaluate internal consistency (Polit & Beck, 2008).

The validity of a quantitative instrument is dependent on its ability to measure what it is supposed to measure. There are no mathematical calculations that can support the validity of an instrument; rather the researcher presented evidence so validity can be inferred. Internal validity was enhanced by only analyzing those surveys which are complete. Additionally, those participants who completed the quantitative survey and then agreed to sit for the interview had an opportunity to accurately know what they said on the MOMS to avoid any bias that could occur due to memory. Finally, using the mixed methods parallel design provided strength to this study (Polit & Beck, 2008). If a causal relationship is inferred, then an effectiveness study can be completed to better concentrate on the external validity of this study, which can be replicated.

**MOMS-T Interview Guide.** The researcher developed the Motivations of Marathoners Scales for Triathletes (MOMS-T) Interview Guide in consultation with Dr. Masters, who developed the MOMS. This exploratory instrument guided the qualitative portion of the study to know if it is useful for understanding the thoughts, attitudes, and opinions about Black women's motivation to participating in triathlons (Appendix I). The interview guide, complementary to questions in the MOMS-T survey, served to supplement the researcher to gather in-depth

dialogue about motivation on participating in triathlons from participants. Items in the guide asked participants to discuss their retrospective motivational perceptions following completing the MOMS-T survey. The researcher has rewritten each of the nine scales and their corresponding statements from the MOMS-T with an introductory clause, “I am motivated to participate in triathlons...” Approximately two to three questions follow under each of the scales for a total of 21 open ended questions asked to further explore participants’ views of the statements. The insights that the interviewees provided helped in identifying whether motivation is extrinsic or intrinsic. The semi-structure allows for flexibility and exploration of new information such as concepts or themes that emerge from the interviews. The interview was be face-to-face, in person, or via Skype.

Participants received a copy of the interview guide during the interview and may choose to skip any question asked. The researcher developed the Motivation for Marathoners Scale (MOMS) based on the qualitative work of Motivations of Marathoners by Masters, Ogles, and Jolton (1995). However, the MOMS, itself, have not been used in a qualitative form. The innovative design of using it from its modified quantitative state (for triathletes) and exploring its use as a qualitative measurement will further understanding of ‘what works’ in research practice of motivation to participate in triathlons.

***Trustworthiness.*** Trustworthiness of the data is necessary to increase the quality of qualitative research (Lincoln & Guba, 1985). Dependability, credibility, confirmability and transferability are terms that parallel the quantitative terms reliability, internal validity, objectivity, and external validity. Dependability is the stability of the data over time, credibility is the confidence in the truth of interpretations of data, confirmability is the potential congruency

between participants' data and transferability is the data's ability to be applicable to other groups (Lincoln & Guba, 1985; Polit & Beck, 2008).

The researcher took steps to achieve trustworthiness of the data. First, to keep within the timeline design of the study, participants were interviewed within five days of their completion of the quantitative surveys. This short time period between the completions of the surveys to the 'think-aloud' interviews prevented recall error from the participants and helped to ensure the dependability that evidence recorded through both the survey and interviews was consistent and stable. Second, the researcher reviewed the field notes and complete an Interview Contact Form (Appendix J) immediately following the interview.

A contact summary is an abbreviated document used to keep track of verbal and non-verbal information learned during interviews with participants (Schutt, 2012). Afterwards, reflections of the interviews, from the researcher's point of view, were written and shared with the interviewees through email in order to assure for accuracy. "The findings must reflect the participant's voice...not the biases, motivations, or perspectives of the researcher," (Polit & Beck, 2008, p. 539). Researchers have noted this form of member checking as the most important technique for establishing credibility (Lincoln & Guba, 1985) and it assisted in the confirmability of the qualitative data. The researcher sought to understand how the data may fit in other extreme populations through a thick discussion of the analyzed themes, complete with visual models, figures or tables, to present the transferability of the study. Interpretation of the results compared the researcher's findings with current literature; assessed how the research questions were answered, reflected on the personal views of the experience, and their relation to the findings and state new questions based on the results (Creswell & Plano-Clark, 2011).



It was through these rigorous steps that emic and etic perceptions allowed for comparison within the qualitative data and lead to the meta-inference of the analysis. Emic and etic perceptions were first referenced by linguist, Kenneth Pike, who realized language exists both verbally and nonverbally as sound units of a language (phonemic) and as speech occurring across languages (phonetics) (Sands & McClelland, 1994). The emic perspective is most often described as the participants' views, their perceptions, meanings, and interpretations that are patterned across a culture (Sands & McClelland, 1994; Holloway & Wheeler, 2010). The etic is the generalization of what the researcher understands about participants' personal values and beliefs through (Sands & McClelland, 1994; Holloway & Wheeler, 2010).

For this study, the participants' perceptions, as well as the researcher's, reflected all participants' environment and culture to effectively grasp all meanings communicated (Holloway & Wheeler, 2010). The researcher identified the perspectives as "insider" (emic) and "outsider (etic) within the analysis. However, the researcher assumed that neither party, "can maintain purely emic or etic perspectives...[rather] both researcher and participants move along a continuum of emic and etic perspectives that [constantly change]," (Sands & McClelland, 1994, p. 33).

## **Procedures**

The researcher collected data by means of two procedures: (1) quantitative and (2) qualitative data collection. As previously described, QUAN+ QUAL parallel design, allows for qualitative and quantitative data to be collected either simultaneously or at different points in time (Teddlie & Tashakkori, 2009). Qualitative data was recorded during the interviews, transcribed verbatim by the researcher following the interviews, and then analyzed in ATLAS.ti7 qualitative data software. All quantitative data was collected through the methodology web-based system,

Research Electronic Data Capture (REDCap). REDCap is software “designed for the rapid development and deployment of electronic data” (Harris, Taylor, Thielke, Payne, Gonzalez, & Conde , 2009). The researcher then analyzed the through the quantitative data software, Statistical Package for the Social Sciences (SPSS).

**Quantitative data collection.** The researcher collected data by means of a survey, guided by the MOMS-T, through RedCap. The researcher had a RedCap designated URL link for potential participants to visit. The introductory page of the link delineated that the study was voluntary and would contain an acceptance button for potential participants to the survey. The first page of the web-based survey contained the informed consent form, which described the potential risks and benefits to participation. Information about IRB approval was also listed. Directions, including the information describing the basic demographic questionnaire, the MOMS-T, and the approximate time to complete all questions were delineated, along with a statement of consent. The marker of consent by the participant proceeded to the demographic questionnaire and redirected participants to the demographic questionnaire. After completing the questionnaire, participants then completed the MOMS-T. The informed consent (Appendix D), demographic questionnaire (Appendix F), and MOMS-T (Appendix G) were made available for a total of 12 weeks beginning in February 2015 and ending in May 2015.

**Qualitative data collection.** The researcher collected data by means of face-to-face semi structured interviews, guided by the MOMS-T. Following their completion of the quantitative questionnaires, participants were invited to participate in the qualitative portion of the study. “If participants are purposefully chosen to be different...then their views will reflect this difference [providing]... a complex picture of the phenomenon” (Creswell & Plano-Clark, p.174, 2011).

Therefore, maximal variation sampling, a form of purposive sampling, is projected to provide different perspectives (Creswell & Plano-Clark, 2011) on motivations for participation.

**Interviews.** The earliest interviews began at month one (February 2015) and ended by month four (May 2015). Two days prior to the interview, the researcher made a reminder telephone call to the potential participants to confirm the interview time. Before the interview begins, the researcher reminded participants of their rights within the previously signed consent form and inform them that they may ask any additional questions before and during the interview. The interview began with the researcher providing participants with their previously completed quantitative MOMS-T survey. If participants have any questions or concerns about their survey, it can be addressed at that time. Next, the researcher explained that the MOMS-T semi-structured interview is to be like a conversation between the researcher and participants. It allowed participants to express their feelings within the predetermined guided questions (Galli, 2009). The interview guide is presented in Appendix I.

Following the interviews, the researcher thanked the participants for their time and for sharing their insights. They were provided with contact information of the researcher should they have additional questions and/or concerns. A post-interview debriefing occurred to give participants an opportunity to ask questions about the study and for the researcher to provide additional information about how this research would be used to advance knowledge in the fields of gerontology and sports psychology (Galli, 2009). This proposed interview process allowed for the qualitative data to be collected while continuous quantitative data was collected through REDCap.

**Recording observations.** To keep an accurate account of the conversation between the researcher and participants, the researcher used two forms of recordings. First, the researcher

used an audio recording to keep an accurate account of what is said during the interview. Next, the researcher took computerized field notes during and after the interview. Note-taking is essential for semi-structured interview processes because it provides aid to the researcher in formulating new questions, allows for unexpected themes to emerge, facilitates data analysis, and aids as a backup in case of audio-recording malfunction (Galli, 2009). Observational notes are objective descriptions of what is observed during the interview (Polit & Beck, 2008). These notes provided information, such as non-verbal communication, that could not be recorded through audio recordings. Reflective notes documented the researcher's views of strategies or methods used during the interview, how personal experiences compared to that of participants, and how to theoretically interpret what was expressed (Polit & Beck, 2008). Following each interview, the researcher re-read all notes taken to develop a working notebook of what was learned during and after the interview process.

### **Convergent Analysis**

The overarching analysis for this exploratory study was driven by the following questions first introduced: (1) What are the motives for midlife to older Black to participate in triathlons?; (2) Are the nine scales of the Motivations of Marathoners Scale for Triathletes controlled or autonomous based on the proposed relationship with the Self Determination Theory? The researcher concluded the analysis through quantitative and qualitative means, including preparing, exploring, analyzing, representing, validating and interpreting quantitative and qualitative data. This included understanding how the independent variables (IVs) related to the dependent variables (DVs), how these variables were described as strongest motivators quantitatively and whether these motivators correlated extrinsically or intrinsically with qualitative explanations. Next, the researcher merged quantitative and qualitative data to

compare results. Finally, the researcher conducted meta-inference to compare, represent, and interpret the combined data to answer the research questions, resulting in a complete mixed methods analysis (Creswell & Plano-Clark, 2011). Figure 4 presents a model demonstrating the relationship between the IVs (green), DVs (orange), constructs (red) and regulators (turquoise) and their regulatory style relations.

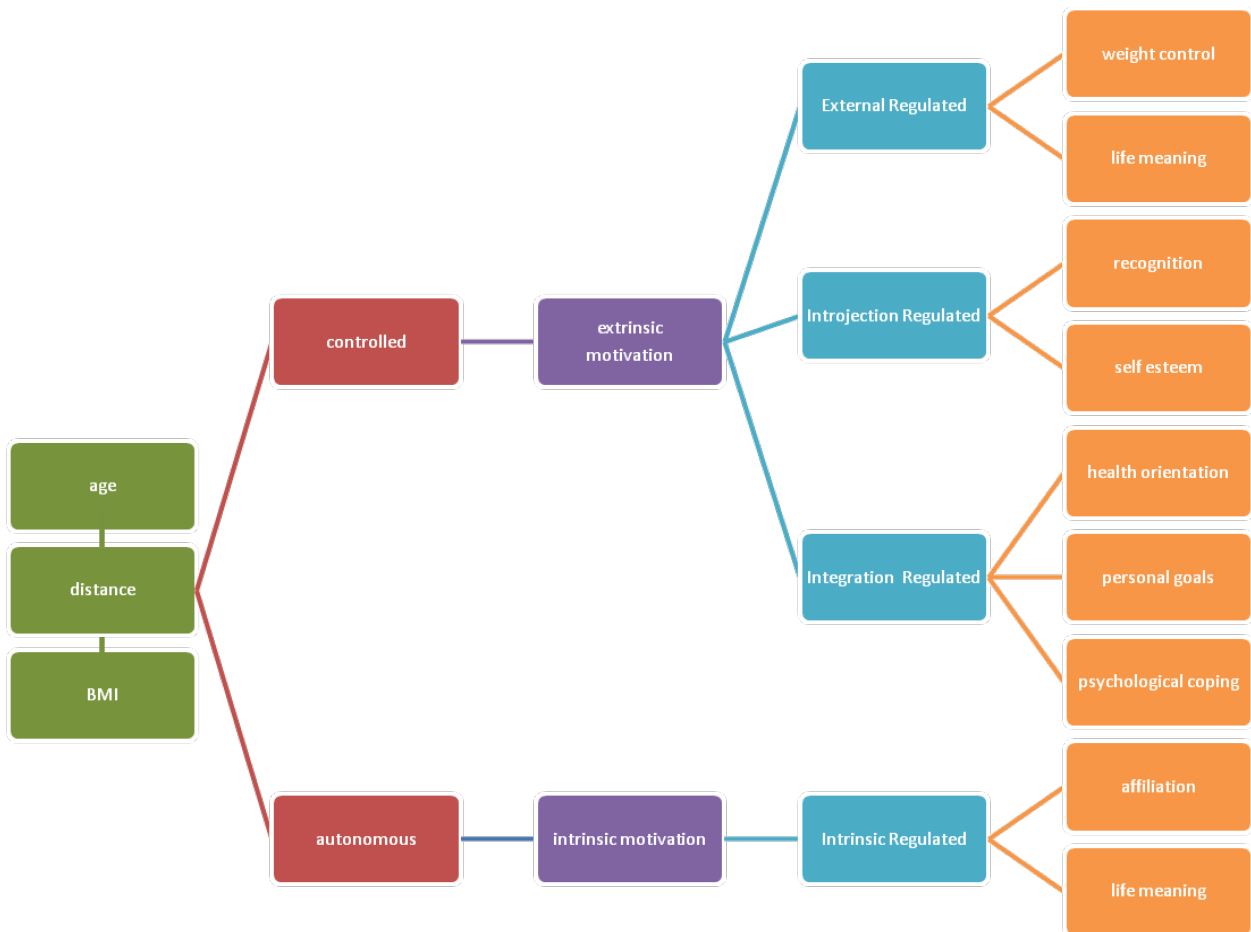


Figure 4. Relationship of Variables, Constructs, Styles and Regulators.

**Quantitative analysis.** The quantitative analysis included descriptive summary information and inferential analysis (Creswell & Plano-Clark, 2011). The researcher conducted three major

analyses. First, the researcher conducted a comparison of motivations for three age groups. Motives for participation between age groups will add knowledge to factors already indicated among younger and Master athletes in previous studies (Dionigi, 2010; Lovett, 2011; Dietrich, 2012). Next, the researcher made comparisons of triathlon distances and motivation that had been done in other studies (Hammermeister & Burton, 1995; Lovett, 2011), and with what would be accomplished in this study, to know how motives differ among the four groups. Finally, a comparison of motivation based on four BMI categories was done with data to further understand how physical health effects motivation of triathletes (Cronon & Scott, 2008; Tribe group, 2009; Lamont & Kennelly, 2012, Dietrich, 2012). The hypotheses tested for this portion of the study were:

- H<sub>1</sub>: The overall effect of extrinsic will be lower and intrinsic motives will be higher among the oldest group.
- H<sub>2</sub>: The overall effect of extrinsic motives will be higher and intrinsic motives lower with greater distances.
- H<sub>3</sub>: The overall effect of extrinsic and intrinsic motives will not be significant with BMI.

The following questions drove the quantitative analysis of the MOMS-T:

QUAN<sub>1</sub>: What are the differences of the extrinsic motives of triathletes, based on age?

QUAN<sub>2</sub>: What are the differences of the extrinsic motives of triathletes based on BMI?

QUAN<sub>3</sub>: What are the differences of the extrinsic motives of triathletes based on distance?

QUAN<sub>4</sub>: What are the differences of the intrinsic motives of triathletes based on age?

QUAN<sub>5</sub>: What are the differences of the intrinsic motives of triathletes based on BMI?

QUAN<sub>6</sub>: What are the differences of the intrinsic motives of triathletes based on distance?

To prepare the data for analysis, first, the researcher estimated BMI from height and weight answers which the participants provided on the demographic questionnaire. Next, the researcher assembled completed MOMS-T survey answers and scored these by assigning numeric values to responses (Creswell & Plano-Clark, 2011). For example, the item statements and their corresponding numbers within the MOMS-T referencing the scale, weight concern include:

1. To help control my weight.
4. To reduce my weight.
21. To look leaner.
42. To stay physically attractive.

The item statements were scored on a Likert scale according to how important a reason was to why participants choose to compete. A score of one indicated that the item is “not a reason” for competing; a score of seven indicated that the item is a “very important” reason for competing. All items within a scale were added to create an aggregate score. The researcher also conducted range-checking and assessment for data outliers, as well as descriptive analyses, including the number of valid cases, sample minimum (smallest observation), sample maximum (largest observation), mean (average) and standard deviation (range of variation) to monitor the N for each variable. If the N was vastly different between the variables then the researcher went back to the data to understand why cases were being lost between variables.

During this visual exploration of the data, seven structured multiple choice questions (e.g. age, education) and three closed (yes/no) question were converted into numerical form for interpretation from the demographic questionnaire. In addition, nine short answer questions were categorized. Outliers, missing data, and non-normality was examined by completing a

demographic profile with descriptive and inferential statistical methods including: frequency tables, measures of central tendency, and measures of variability, relative standing and association (Tabachnick & Fidell, 2007; Teddlie & Tashakkori, 2009).

Specific cases containing the outlying values were inspected. The researcher used raw data to correct values where a data entry error was made and if an outlying value was deemed an intended response from participants the value was unchanged (Galli, 2009). Finally, the researcher conducted recoding and computing new variables through the statistical computer program Statistical Package for the Social Sciences (SPSS). The recoding of the variables helped establish a codebook listing “the variables, their definitions and the numbers associated with the response options for each,” (Creswell & Plano-Clark, 2011, p. 206).

The researcher performed range checking and assessment for statistical outliers to ensure the integrity of the data collected from the MOMS-T as Likert-scales are individually based and have no objective numerical basis. The values assigned to each Likert item (i.e. the scales) had previously been determined with a score of one indicating that the item was “not a reason” for competing and a score of seven indicating the item was a “very important” reason for competing. These values have not been altered for this study (Ogles & Masters, 1993; Lovett, 2011). The researcher assumed that the seven designated categories of the Likert scale inferred equal distances between points (i.e. distance between categories one and two is the same as distance between categories six and seven) with category four serving as the midpoint of the Likert scale. The researcher calculated descriptive statistics to summarize the demographic characteristics of the MOMS-T.

The researcher then analyzed items by choosing an appropriate statistical test by answering the research questions. Initial calculations of composite scores for each of the four MOMS-T



categories: physical health motives (PHM), social motives (SM), achievement motives (AM) and psychological motives (PSM) were completed. Next, composite scores for each of the nine scales, separated by their associated styles external (EX), introjection (INJ), integration (ING), and intrinsic (INT) were completed. The researcher calculated a one way multivariate analysis of variance (MANOVA) in order to evaluate the differences in self-reported motivations for participation in a triathlon, using the nine MOMS-T scales as the dependent variables (DVs). The researcher based the independent variables (IVs), age (separated by decades), BMI (separated by body fat percentage), and distance (separated by total distance) for the one-way MANOVA on descriptive statistics and then derived correlated significance from the MOMS-T.

***Triathlon participation questionnaire analysis.*** Variance in scores was “partitioned into variance[s] attributable to difference[s] among scores within groups and to differences among groups,” (Tabachnick & Fidell, 2007, p.254). Since the participants had scores based on their ages, triathlon distance and BMI, there would be a matrix of scores for each participant. The matrices were formed by subtracting the mean from each score and then squaring the difference. After the squared differences were added together an S matrix formed providing additional tests of the hypotheses about the effects of the 3 IV’s on the 9 scale DVs. (Tabachnick & Fidell, 2007). Table 7, the Age-Distance Variable Table illustrates how the variables related for the analysis of the study. Two other tests for the main effect of motivation included Distance to BMI Status (Table 8) and BMI Status to Age (Table 9). Cronbach’s alpha assessed internal consistency for each of the four categories (Tabachnick & Fidell, 2007). Following the analysis, the researcher reported the practical results of the data through effect sizes and confidence intervals.

Table 7

*Age-Distance Variable Table*

36-45	46-55	56-65+
EX INJ ING INT	EX INJ ING INT	EX INJ ING INT
Sprint		
Olympic		
Half-Ironman		
Ironman		

Table 8

*Distance-BMI Status Variable Table*

Sprint	Olympic	Half-Ironman	Ironman
EX INJ ING INT	EX INJ ING INT	EX INJ ING INT	EX INJ ING INT
Underweight			
Normal			
Overweight			
Obese			

Table 9

*BMI Status-Age Variable Table*

Underweight	Normal	Overweight	Obese
EX INJ ING INT	EX INJ ING INT	EX INJ ING INT	EX INJ ING INT
36-45			
46-55			
56-65+			

The purpose of using MANOVA is to highlight “the mean differences and statistical significance of differences among groups,” (Tabachnick & Fidell, 2007, p.243). There are several advantages to using MANOVA for this part of the analysis. By measuring the three IVs, the researcher increased the change of knowing how motivation changes as a result of varying interactions between the variables. Another advantage of MANOVA is the protection against

Type I error due to the multiple tests of the highly correlated DVs in this study. Additionally, the use of MANOVA may reveal differences among the variables that may not otherwise been observed in other types of analysis (Tabachnick & Fidell, 2007).

**Qualitative analysis.** The researcher used inductive reasoning, mostly associated with qualitative research, to summarize the data (Thomas, 2006). Steps to performing persuasive qualitative analysis techniques include using the researcher, participant and reviewer standards, vary validation techniques, such as member checking, the use of external reviewers (committee members), and limiting procedures for checking reliability (Creswell & Plano-Clark, 2011). Following the collection of the qualitative data through audio recording and computerized field notes, the researcher downloaded and transcribed the audio recording verbatim through Adobe Speech analysis software. The researcher checked the transcription for accuracy and then entered all data collected (including the transcriptions and field notes) into the qualitative data analysis software program, ATLAS ti.7 (Creswell & Plano-Clark, 2011).

The researcher projected that the narratives which described the dependent variables (Appendix B) would support the hypothesized placements to be intrinsic, external, introjection, and integration regulated. The hypotheses tested for this portion of the study were:

- H<sub>1</sub>: The SDT scales weight control and competition are externally styled.
- H<sub>2</sub>: The SDT scales recognition and self esteem are styled through introjection.
- H<sub>3</sub>: The SDT scales health orientation, personal goals and psychological coping are styled through integration.
- H<sub>4</sub>: The SDT scales affiliation and life meaning are styled intrinsically.

The following questions drove the analysis of the interviews:

QUAL<sub>1</sub>: Based on the age of mid-life Black women, do narratives support the placement of the external dependent variables as external, introjection, or integration regulated?

QUAL<sub>2</sub>: Based on the BMI of mid-life Black women, do narratives support the placement of the external dependent variables as external, introjection or integration regulated?

QUAL<sub>3</sub>: Based on the distance of mid-life Black women, do narratives support the placement of the external dependent variables as external, introjection or integration regulated?

QUAL<sub>4</sub>: Based on age of mid-life Black women, do narratives support the placement of the internal dependent variables as intrinsic regulated?

QUAL<sub>5</sub>: Based on the BMI of mid-life Black women, do narratives support the placement of the internal dependent variables as intrinsic regulated?

QUAL<sub>6</sub>: Based on the distance of mid-life Black women, do narratives support the placement of the internal dependent variables as intrinsic regulated?

After preparing the data and transferring it into the ATLAS.ti7 software, the researcher began exploring the data. This included comparing the transcriptions and field notes to assign codes to the text that seem most important based on the objectives of the study. This was to increase credibility to the qualitative research in this study (Thomas, 2006). Memos, or reflective notes, of what had been learned from the data were recorded by the researcher. Memos are used to write the relationships between ideas or concepts that emerge from data exploration (Groenewald, 2008). Memoing identified interrelated themes which focus on the “wholeness of the experience, rather than solely on its objects or parts,” (Moustakas, 1994, p.21; Creswell & Plano-Clark, 2011). The memos were written to help in the development of a qualitative codebook.

The codebook is a statement of codes that emerge during the analysis and also entered into the database. Since interpretation of the narrative data involves looking for the

interconnectedness across the data, codes may be added or removed (Thomas, 2006). The production of a codebook assists the researcher in this constant reorganization of data (Creswell & Plano-Clark, 2011). The researcher used criteria adapted from Bowen (2008) to identify categories that have been adequately saturated, including categories reflecting more than 70% of the interviews.

The data were first divided into small units including phrases, sentences or paragraphs and assigned a label. When a pattern of labels was recognized from the interviews, they were coded (Creswell & Plano-Clark, 2011). These codes were counted and placed in categories and then regrouped according to their similarities to reduce redundancy among the categories. This process continued until overarching themes are identified (Thomas, 2006).; This technique was most important if participants identified a hypothesized extrinsic, as intrinsic, or the opposite. This codebook was used to conduct the analysis (Thomas, 2006) and determined if the researcher had adequately identified the regulatory styles of the MOMS scale.

Thematic analysis differentiates between strong, multiple, or no relations, with relation to questions on motivations identified. Thematic analysis has been described as a way of “seeing” in which understanding is preceded by observation. It moves through three phases of inquiry: recognition, encoding and understanding (Teddlie & Tashakkori, 2009). Themes become the dominant feature of the observation that define and describe the identity of moments (Teddlie & Tashakkori, 2009). A hierarchical outline of the thematic categories and their dimensions was created.

### **Mixed Method Inference**

After completing the analysis of the qualitative and quantitative data separately, the researcher conducted mixed method inference. This inferred conclusion of the merged data

assessed how the separate data emerges and converges based on the mixed methods question of this study (Creswell & Plano-Clark, 2011). The strategy for comparing the merged data consisted of presenting the findings through a summary table for easy comparison. As Table 10 exemplifies, the compared interview and survey data, which includes descriptive statistics and MANOVA results, were presented on major topics or themes found and visually demonstrated how both sources of data provide evidence of each topic or theme (Creswell & Plano-Clark, 2011).

Table 10

*Comparison Summary Table of Data*

Theme	Interview	Survey
Physical health motive	Factors affecting choice	Descriptive statistics and MANOVA results
Social motive	People affecting choice	Descriptive statistics and MANOVA results
Achievement motive	Personal reasons	Descriptive statistics and MANOVA results
Psychological motive	Various reasons	Descriptive statistics and MANOVA results

The merging of the two data sets allowed the researcher to look for similarities and differences between the Black triathletes throughout the data and make generalizations and interpretations. It is at this point that the question, “To what extent do the qualitative and quantitative data converge to explain autonomous and controlled motives?” was addressed. The meta-inferences involved a combination of statistical generalizations from the qualitative phase and analytical generalizations from the quantitative phase (Creswell & Plano-Clark, 2011). The interpretive consistency (consistency between inferences and sampling design) is achieved when statistical generalizations can be made from both sets of samples that adequately represent findings (Collins et al., 2007; Tashakkori & Teddlie, 2009; Creswell & Plano-Clark, 2011).

## **Validation of the Parallel Design**

The exact type of meta-inference for this study could be determined until data from each phase had been analyzed. One major topic identified within mixed methods research was the validation of the design. For this study, the focus of validity was on strategies the researcher may use during the three distinct phases of data collection, separate analyses, meta inference, and interpretation. The validity in mixed methods design and analysis is defined as, “employing strategies that address potential issues in data collection, data analysis, and the interpretations that might compromise the merging or connecting of the quantitative and qualitative strands of the study and the conclusions drawn from the combination,” (Creswell & Plano-Clark, 2011, p. 239).

The validity of a quantitative instrument is dependent on its ability to measure what it is supposed to measure. There are not mathematical calculations that can support the validity of an instrument; rather the researcher presented evidence so validity can be inferred. Content and face validity has already been supported in the Lovett (2011) study with the identification of 56 being the appropriate number of items to measure motivation and cover its domain. It was not known if the interview guide, however, was a valid instrument to use for gathering additional information on motivation and if it can adequately determine the associated style (external, introjection, integrative or intrinsic) one experiences. The researcher validated this through the use of the MOMS-T instrument guide. Additionally, the researcher also evaluated whether the measurements of the independent variables age, distance, and estimated BMI, cause an outcome measure (Polit & Beck, 2008).

Trustworthiness for qualitative data presents advantages and disadvantages to conducting interviews. Advantages include the opportunity to yield the richest data by receiving new

insights through exploration of topics in depth. It allows the interviewer (i.e. researcher) to explain or clarify questions to collect affective and cognitive aspects of answers. After separately minimizing the threats to validity in the qualitative and quantitative parallel design, potential threats continue to exist when merging the two. These threats are displayed in Table 11.

Table 11

*Potential Threats to Validity and Strategies to Minimize Data Analysis Issues*

Potential Threats	Strategy to Minimize Threat
Use of inadequate approaches to converge data	Developing joint display of data
Identifying illogical comparisons of separate results	Use statistical data matching interview quotes
Using deficient data transformation strategies	Maintaining clear direction of transformation procedures
Making illogical comparisons of the results	Find quotes that support the results.
Interpretation issues	
Potential Issues	Strategy to Minimize Threat
Not resolving divergent findings	Use additional strategies including member checking, collecting additional data, reanalyze current data, and evaluate procedures
Giving more weight to one form of data than the other	Use procedures to equally present findings (e.g. joint display)
Not relating the stages of the project to each other	Consider how the problem, theory, or lens overarch to connect the stages

Note. Adapted from "Designing and Conduction Mixed Methods Research," by J. Creswell & V. Plano-Clark, 2011, p. 240-241.

During the interpretation phase, unresolved divergent findings, ignoring discussion of the research questions, and showing favoritism to one form of data more than the other might have threatened validity to the data provided during either part of the study. If differences occurred between the data, inconsistencies were addressed and the researcher noted results which were more congruent than discrepant. If discrepant, the researcher first re-examined the database to gain insight and send information back to participants for member checking. If the discrepancy was methodological, the research needed to collect additional data to resolve the discrepancy, reanalyze the current data, cite more trust in the results of one form of data to the other, or state the limitations of the study in the discussion.



The researcher then addressed each research question, question interpretation and data. The results were compared with past theories, literature, and previous studies on motivation for participation in triathlons. The aforementioned procedures of analysis presented both sets of results, equally, through comparison summary tables and figures for further explanation (Creswell & Plano-Clark, 2011).

### **Limitations**

Limitations to the mixed method design of the study include the time to complete the study because it can be too long and the requirement of feasible resources to collect and analyze both types of data. Specific to the separate methods, non-probability quantitative snowball sampling is not representative of the greater number of Black women in the exercise population and MOMS-T only assesses facilitators of exercise, therefore the possible barriers triathletes may experience was not represented. Within the qualitative portion of the study, the maximal variation sampling may not have provided the most diverse information and observer biases could have interfered with objective observation (Polit & Beck, 2008). There are several disadvantages to conducting interviews, including the expense, consumption of time, and the possibility of receiving distorted information from interviewees through recall error.

Additionally, the flexibility in semi-structured interviews increased the likelihood of inconsistencies (Patton, 2002). Finally, moving from the quantitative survey to asking questions in the interview may have demonstrated a difference from what was written to what was said adding to the potential inconsistencies in the data.

Several biases to the study were also limitations to the study. All of the data was self-reported, introducing measurement bias. Steps to minimize the threats of measurement bias include adequately capturing the target population through the demographic questionnaire, using

a survey previously validated for use of completion in a reasonable time and easily interpreted language and careful processing of the data.

During the interview process, the participants' answers could have been influenced by the researcher. The researcher has experience in interviewing and understands how to manage the data collection workload. Another potential bias that may affect the participant's answers is their triathlon experience history. For example, if a participant was able to complete a race in 2012, but not in 2013 due to injury, they may have recall modifications as to why they were motivated. To minimize this threat, or at least give explanation to possible differences in their answers a question to injury status was in the demographic questionnaire.

The researcher has affiliations with all of the organizations that partnered in this study. She is a member of USAT, on the board of Sisters Tri-ing and a member of Black Triathletes Association. Having memberships with these organizations is also a weakness to the study.

### **Strengths**

Strengths to mixed methods are that the strengths of one method can be used to overcome the weakness of the other. It may add insight that may otherwise be unknown because of the use of one method. It can be used to increase the generalizability of the results. The research design of this study was that it was inexpensive with the use of social media and organizational assistance; and, the quantitative data collection could be fast because it is electronic and the participants are readily available because of their common membership with the same organizations as the researcher. The non-probability sampling focused on a specific type of triathlete who had not been included in other studies and is representative of the larger Black women triathlete population (e.g. 18-35 year olds who are triathletes). The qualitative portion of the study

provided stronger evidence for correlation of the quantitative data. In addition, narrative and photos can be used to add meaning to numbers.

Mixed methods allows for some flexibility. It is possible that the current collection decisions, previously set in place, may change. While the steps in mixed methods data analysis are the logical procedures in conducting the analysis, the decisions of analysis or what options to select for analysis may change (Creswell & Plano-Clark, 2011). Additionally, following the collection and analysis of the data, separately, the researcher made comparisons through examining the similarities of the results and presented in the discussion section of the study. Several important aspects of the methods were not known until after the completion of the study including: the response rates from samples, errors or accidents in carrying out the proposed planned methods, and whether the collected data met the assumptions of the proposed analyses.

## **Conclusion**

The researcher's purpose with this study was to explore the use of the SDT using a mixed methods approach to examine the motivation of participation of triathlons among mid-life to older Black women. The researcher used the MOMS-T, including the nine scales general health orientation, weight control, affiliation, recognition, competition, personal goal achievement, psychological coping, self esteem, and life meaning (Masters, Ogles, & Jolton, 1993) to identify motives among the women.

Each of the scales were identified by their type (i.e. category) of motivation. General health orientation and weight are categorized under physical health motives, affiliation and recognition are social motives, competition and personal goal achievement are achievement motives, and psychological coping, self esteem and life meaning are psychological motives. The quantifiable results of the survey identified which motives were most represented in the population of midlife

to older Black women triathletes. However, the survey, alone could not determine whether these categories were controlled or autonomous motives.

The second aim of the study was to determine whether the scales of the MOMS-T could be identified as either controlled or autonomous motivation. The SDT states that motives are either controlled or autonomous. The regulatory styles of controlled motivation are extrinsic, with varying explanations including external, introjection, and integrated. Autonomous motivation is intrinsic in its regulatory style. Although the scales had been identified by their type of motives, it was unknown how these motives are regulated. The researcher hypothesized that each of the nine scales of the MOMS-T was regulated by one of these four regulatory styles of motivation. Interviews were conducted in order to gain a deeper understanding of how motives are regulated.

The researcher employed a mixed methods approach in this research because there had not been previous studies which utilized both quantitative and qualitative methods to understand motivation for participation. A theoretical model combining the SDT and the MOMS-T had been developed to assist in this exploration. The development was needed because, for example, although recognition and affiliation are both social motive types, they may be regulated differently. In this study, recognition was hypothesized to be regulated through introjection, thus making it an extrinsic and controlled motive. Affiliation, however, was regulated intrinsically, making it an intrinsic and autonomous motive. The differences were due to the key words describing the scales and the descriptions of the associated styles. After surveying to identify which motives were most represented, the interview guide to gather more data helped the researcher determine whether the proposed scales are controlled or autonomous.

The weight of the motives, whether the motives were controlled or autonomous, and using the MOMS-T and the interview guide set possible limitations to the study. Study limitations

include limitations in sample generalizability in that the participants may not be representative of the larger Black women exercise population, and participants may not be representative of a larger triathlete population because of the convenience sampling. With regard to the survey, the quantitative MOMS-T survey only assesses facilitators of exercise; therefore the researcher may not address barriers. Additionally, whether the use of Likert responses as numeric values (i.e. 1 = “not a reason” for competing and 7 = “very important” reason for competing) and whether these are necessarily equal distance has been debated.

In conclusion, the overarching aims of this study were two-fold. First, it was to learn the motives of midlife to older Black women to participate in triathlons. Second, it was to determine whether the identified motives are extrinsic or intrinsic. To date, there has been one study on the barriers to participate in triathlons among this population, but no studies have researched motivation of participation. This study provided an opportunity to explore motivational factors of women who complete triathlons adding value to the research literature of Black women who exercise. The researcher developed a new model which combines the Self Determination Theory, the Motivations of Marathoners Scale, and the variables for this study to explore, through a mixed method design, how motive scales are regulated. This study provided insight into this extreme form of exercise and may assist in the future design of general exercise programs.

## Chapter IV

### Results

The researcher's purpose with this study was two-fold: to examine the motivation on triathlon participation among midlife to older Black women triathletes and to explore how those motives are regulated, as characterized by the Self-Determination Theory (SDT). Chapter Four describes the results of the survey and interviews conducted to ascertain the motivation of Black women who train for the extreme exercise of triathlons. First, the data collection methods of the MOMS-T are presented. This is followed by the analytic methods of the MOMS-T scales, subscales and motivational constructs of the Self Determination Theory (as described in Chapter three). Next, the researcher describes the results of the semi-structured interviews conducted with a subset of the survey respondents. Finally, the two types of results, quantitative and qualitative, are described.

### Recruitment of MOMS-T Survey Participants

The researcher used snowball and convenience sampling techniques for the recruitment of participants. The researcher contacted USAT, and multiple triathlete social networks including: the Black Triathletes Association, Sisters Tri-ing, the International Association of Black Triathletes, Sole Tri-Sisters, and Realizing Your Potential Everyday. All organizations agreed to send out notifications to respective members. USAT sent email notifications to 320 members who identified as Black women, aged 35 and older. Many of the women who were members of USAT were also members of at least one of the other aforementioned social organizations;

therefore, potential participants received more than one recruitment notification of the study. The organisations encouraged early sample participants encouraged to identify other Black female triathletes who fit the eligibility criteria for the study. Participants were also sampled by internet social media networks including Facebook, Twitter, and triathlon group based list serves throughout the United States.

The study survey was available for 12 weeks from February to May 2015. To ensure that social media network administrators continued to promote active recruiting, the researcher kept in bi-weekly contact with administrators. The quantitative informed consent forms (Appendix D), demographic questionnaire (Appendix F) and MOMS-T (Appendix G) were disseminated through the secure web-based system, RedCap, at Virginia Commonwealth University after Institutional Review Board approval of the study protocol.

MOMS-T Survey Participants. There were 140 responses to the survey. Nineteen were excluded: a) three for criteria exclusion (one underage [34 year old] and two men); b) nine for duplicate submission, and seven for incompleteness). The two additional incomplete survey participants were contacted several times and encouraged to complete their surveys as they had only finished the demographic portion of the survey. In total, 121 survey respondents met the study inclusion criteria — this exceeded the 112 participants that the power calculation identified were necessary to provide 80% power to detect a significant difference of 0.4 in the MOMS scale between younger and older groups ( $\alpha = 0.05$ , 2-tailed test). Table 12 presents the demographics for the 112 participants of the survey.

As seen in Table 12, about three-quarters of respondents represent one age category (50+ years of age) while about one-fifth of participants were 35-50 years old and 2.5% of participants were missing a response for age. The original BMI variable had four categories – underweight,

Table 12

*Demographics of Survey Respondents*

Variable	Values	Frequency	Percentage
Age (years)	35-50	93	76.9%
	50+	25	20.7%
	Missing	3	2.5%
BMI	Normal	37	30.6%
	Overweight	37	30.6%
	Obese	31	25.6%
	Missing	16	13.2%
Distance completed	Not completed	10	8.3%
	Sprint	59	48.8%
	Olympic	15	12.4%
	Half-ironman	17	14.0%
	Ironman	17	14.0%
	Missing	3	2.5%

normal, overweight, and obese. One underweight participant was considered normal weight for analysis. Each weight category had close to one-third of participants with 35.2% (n = 37) with a normal BMI, 35.2% (n = 37) considered overweight and 29.5% (n = 31) measuring obese out of a total of 105 participants with non-missing BMI variable values. Table 13 provides means and standards deviations of BMI by categories of distance completed.

Table 13

*BMI and Distance Completed*

Summary of BMI and Distance				
Distance Completed	BMI Mean	BMI Std. Dev.	N Participants	Percent Distances
Not completed	33.3	0.71	9	9%
Sprint	30.0	0.85	53	54%
Olympic	29.3	0.83	14	14%
Half-iron	25.7	0.65	14	14%
Ironman	28.5	0.80	13	13%
Total	29.4	0.81	103	



Out of 103 participants reporting BMI, Sprint was the most popular distance completed with > 50% (n = 53). Other distances were 14.4% (n = 14) in the Olympic category, 14.4% (n = 14) in the Half-Ironman category and 13.3% (n = 13) were then preparing for their first triathlon in 2015. The distribution of samples across all three categorical variables of interest is shown in Figure 5.

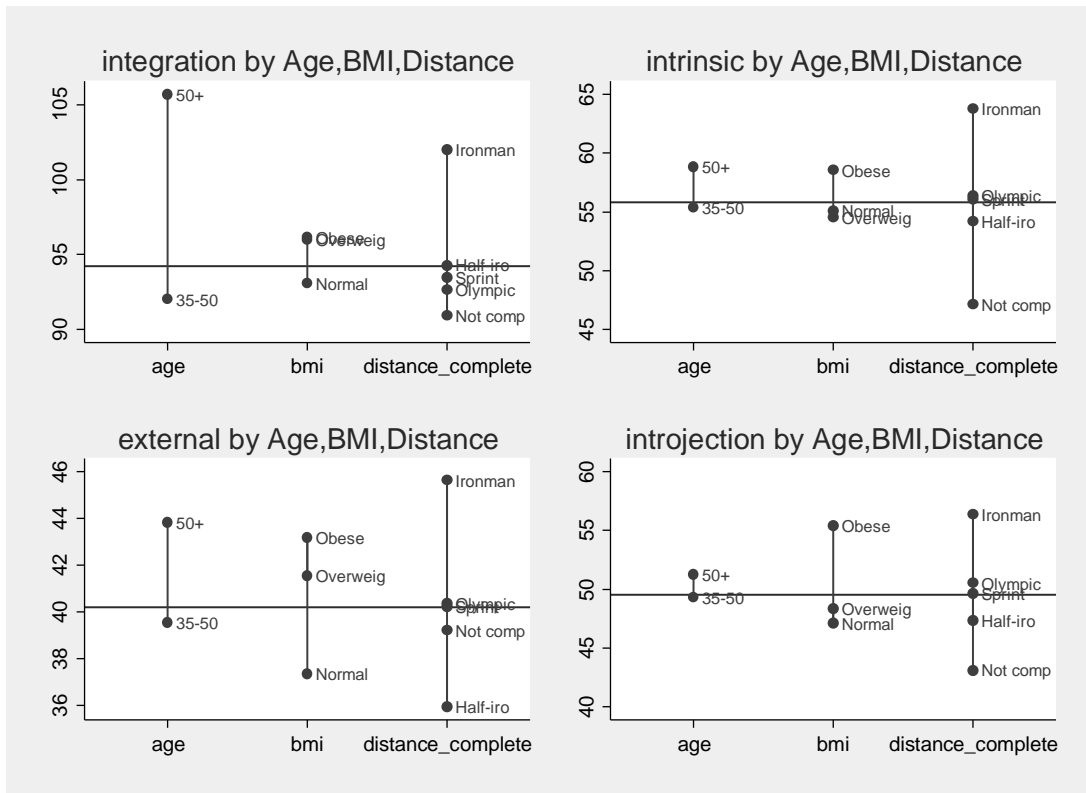


Figure 5: Distribution of Samples Across Age, BMI, and Distance.

## Quantitative Results

The researcher measured motivation using the nine scales based on specific 56 Motivations of Marathoners Survey for Triathletes (MOMS-T) survey items. These scales cover: 1) health orientation, 2) weight control motives, 3) personal goal achievements, 4) competition, 5) recognition, 6) affiliation, 7) psychological coping, 8) life meaning, and 9) self esteem.

**Scale analyses.** To answer the research questions, the researcher first conducted an analysis of the MOMS survey items. The MOMS scales measure clusters of survey items that address certain constructs. The statistics of the items were Likert-type and measured the importance to the individual's motivation, with a minimum score of one indicating that the item is 'not a reason' and the maximum score of seven indicating that the item is a 'very important' reason. Thus, the higher the score, the more important that particular reason is to the individual's motivation.

Table 14 lists the MOMS item responses that were summarized descriptively to provide context to the assessed items. Following, Table 15 lists the highest and lowest ranked motivators within each of the scales. A full version of all of the motivators can be viewed in Appendix K. Upon reviewing the means of the MOMS-T survey the researcher found that results emphasized that the most highly ranked motivators were those in the scales 'personal goal achievement' and 'health orientation', suggesting that personal motivations to meet goals and ensure good health were very important for these participants. Interestingly, the lowest ranked motivators among these women were also personal, as 'recognition' was the lowest-ranked scale category.

**Reliability, descriptive statistics, and normality.** The researcher assessed the reliability of each scale using Cronbach's alpha, defined as the square of the correlation between the scale and the underlying factor. All scales appear to be appropriate; the estimated correlation between them and the underlying factor, which is the square root of alpha, is ~90% for each scale. The average interim correlation of the items in the scales is ~50%. However, the average interim correlation for the scale personal goal achievement was slightly worse at 45% and also for the scale, self esteem, at 42%.

Table 14

*MOMS-T Scales and Corresponding Items*

Scales	Motivational Survey Items
Health Orientation	improve health, prolong life, [be] more fit, reduce heart attack, stay physically fit, prevent illness
Weight Control	control weight, reduce weight,[have a] leaner look, physically attractive
Personal Goal Achievement	improve speed, compete with self, tri faster, push limits, beat time, body [may] perform better
Competition	compete [with] others, place in race, [be] faster than friends, beat new person.
Recognition	earn respect[of] peers, earn respect [of] people, family [and] friends proud, people admire, recognition, compliments [from] others
Affiliation	socialize [with] triathletes, common [with] others, meet people, participate [with]family and friends, share identity, visit with friends
Psychological Coping	[be] less anxious, [be] less depressed, distraction [from] worries, improve mood, [have] time alone, concentrate [on] thoughts, solve problems, blow [off] steam, get away
Self Esteem	meaning [of] life, life purpose, feel whole, life [is] complete, sense [of] belonging nature, time alone world, peace with world
Life Meaning	improve self esteem, more confident, improve self-worth, positive emotional experience, proud [of] myself, feel achievement, mental control, feel like winner

Table 15

*Sources of Motivation*

Scale	Highest Motivational Item	N	Mean	SD	Lowest Motivational Item	N	Mean	SD
Health Orientation	more_fit	119	6.059	1.188	reduce_heartattack	120	4.500	2.268
Weight Control	leaner_look	119	4.773	1.955	reduce_weight	119	4.176	2.154
Personal Goal Achievement	compete_self	119	6.160	1.112	beat_time	119	3.933	2.170
Competition	compete_others	120	3.242	1.932	beat_new_person	117	2.034	1.531
Recognition	famfriends_proud	118	2.754	1.719	compliment_others	120	2.167	1.525
Affiliation	socialize_triathlete	120	4.567	1.814	common_others	120	2.625	1.710
Psychological Coping	improve_mood	119	3.807	2.001	less_depressed	119	2.798	2.048
Self Esteem	meaning_life	120	3.708	2.047	feel_whole	118	2.737	1.874
Life Meaning	feel_achievement	120	5.733	1.401	mental_control	118	4.364	2.024

Table 16 presents the descriptive statistics of the nine scales created based on the reliability of the 56 survey items. The possible minimum and maximum numbers indicate that health orientation, personal goal achievement, recognition and affiliation had large ranges. Psychological coping and self esteem, with higher min and max scores, also had large ranges. When compared to the other scales, weight control and competition had low ranges; both scales only had four values. Life meaning, with the lowest number of values (three) had the largest range. The range of these scales varied widely, but participants were more closely aligned with health orientation, personal goal achievement, recognition and affiliation and had the greatest differences with life meaning.

Table 16

*Descriptive Statistics of the 9 Scales*

Scales	N	mean	SD	min	max
Scale 1, Health Orientation	115	32.03	7.975	6	42
Scale 2, Weight Control	118	18.17	6.597	4	28
Scale 3, Personal Goal Achievement	118	32.30	6.789	6	42
Scale 4, Competition	117	10.75	5.914	4	28
Scale 5, Recognition	113	14.57	7.306	6	42
Scale 6, Affiliation	116	20.82	8.793	6	41
Scale 7, Psychological Coping	112	30.15	14.33	9	63
Scale 8, Self Esteem	116	22.05	10.63	7	49
Scale 9, Life Meaning	115	35.11	10.53	8	56

The researcher performed normality tests for the nine scales to evaluate data distribution, the results of data distribution, and the proposed hypotheses. Table 17 presents the results of the skewness and kurtosis tests for the normality of the nine scales. Health Orientation is normally

Table 17

*Normality Tests for the 9 Scales*

Variable	Obs	Pr(skewness)	Pr(Kurtosis)	Adj $\chi^2$	Prob > 10 <sup>2</sup>
Health Orientation	115	0.0004	0.443	11.21	0.0037
Weight Control	118	0.077	0.0177	7.89	0.0193
Personal Goal Achievement	118	0.0006	0.0433	13.19	0.0014
Competition	117	0.0001	0.2933	13.49	0.0012
Recognition	113	0.0003	0.109	13.18	0.0014
Affiliation	116	0.4536	0.0109	6.58	0.0372
Psychological Coping	112	0.1923	0.0006	11.4	0.0033
Life Meaning	116	0.0439	0.0776	6.69	0.0353
Self Esteem	115	0.3103	0.2552	2.38	0.3049

distributed and the null hypothesis of normality can be rejected (joint  $p = 0.0037$ ). The  $p$ -value 0.0004 indicates that it is significantly different from the Table 16 skewness of a normal distribution at the 99% level. However, on the basis of kurtosis the hypothesis for Health Orientation is normally distributed and cannot be rejected. For personal goal achievement, competition, recognition and psychological coping the null hypothesis of normality can also be rejected at the 99% level, as they all have a near zero  $p$ -value for either skewness or kurtosis.

The self esteem scale does not fail the normality test (joint  $p = 0.3049$ ) as the null hypothesis about normal distribution cannot be rejected even at the 0.1 level; its  $p$ -value for skewness is 0.3103 and the  $p$ -value for kurtosis is 0.2552. Weight control, affiliation and life meaning all have a joint  $p$ -value of less than 0.05 so the normality assumption for these scales can be rejected at the 95% level but not at the 99% level.

### **Analysis of Dependent Variables from SDT Model**

To understand the differences of the motivations of the triathletes based on age, BMI and distance, the researcher performed a series of multivariate ANOVA (MANOVA) models. The researcher hypothesized that the nine scales related to the motivational regulators in the SDT model represented in Figure 6. The extrinsic motives include variable DV1 as External regulated motives and are measured as a sum of weight control and competition. The dependent variable, DV2, is 'introjection' regulated motives measured as a sum of scales recognition and self esteem. DV3 'integration' regulated motives are measured as a sum of scales health orientation, personal goals, and psychological coping. The only intrinsic regulated motives, DV4, are measured by affiliation and self esteem scales.

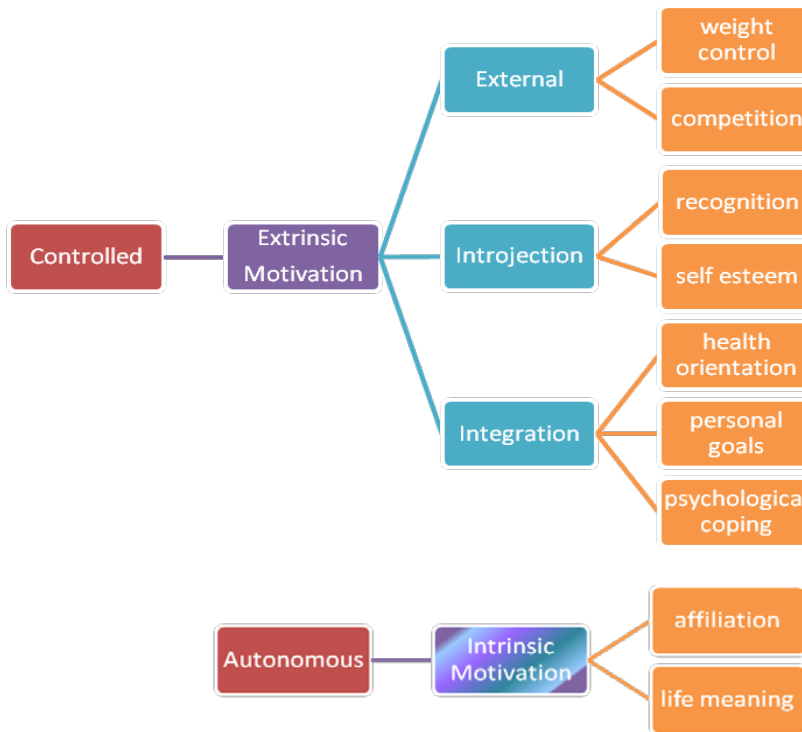


Figure 6. Hypothesized Relationship of Variables, Constructs, Regulators and Styles.

The researcher developed the following research questions for this portion of the analysis:

RQ1. Are there any significant differences in the motivations of the triathletes based on age?

RQ2. Are there any significant differences in the motivations of the triathletes based on BMI?

RQ3. Are there any significant differences in the motivations of the triathletes based on distance?

The hypotheses for this analysis were:

H1: The overall effect of extrinsic motives will be lower and intrinsic motives will be higher among the oldest group.

H2: The overall effect of extrinsic motives will be higher and intrinsic motives lower with greater distances.

H3: The overall effect of extrinsic motives and intrinsic motives will not be significant with BMI.

Table 18 presents descriptive results for the four final dependent variables which are based on nine scales described above. N is the number of women responded to the items that were described in their respective regulator. Following are the means, and standard deviations of those numbered variables. Finally, the minimum and maximum values for each of the variables are presented.

Table 18

*Descriptive Statistics of the 4 Dependent Variables*

Dependent Variables	N	mean	SD	min	max
External	115	40.18	13.78	11	77
Introjection	110	49.55	16.06	14	98
Integration	107	94.22	23.62	21	147
Intrinsic	113	55.82	16.75	14	92

Table 19 presents the results of skewness and kurtosis tests for the normality of four dependent variables: DV1 (External), DV2 (Interjection), DV3 (Integration) and DV4 (Intrinsic). The null hypothesis of normality cannot be rejected for any of the above four variables ( $p = 0.3877$  for external,  $p = 0.7877$  for introjection,  $p = 0.6415$  for integration and  $p = 0.1014$  for intrinsic).

Table 19

*Normality Test Results for the Dependent Variables*

Variable	Obs	Pr (Skewness)	Pr (Kurt)	Adj $\chi^2$	Prob $> \chi^2$
External	115	0.1751	0.895	1.9	0.3877
Introjection	110	0.5017	0.888	0.48	0.7877
Integration	107	0.3869	0.7257	0.89	0.6415
Intrinsic	113	0.447	0.0476	4.58	0.1014

Table 20 presents the descriptive statistics of the four dependent variables, external, introjection, integration, and intrinsic, by the categories of age, BMI, and distance completed.



Table 20

*Descriptive Statistics of Dependent Variables by Age, BMI, and Distance*

Category	DV	N	mean	SD	min	max
<b>Age</b>						
35-50	External	90	39.54	13.31	11	77
	Introjection	87	49.29	16.47	14	98
	Integration	85	92.02	24.08	21	141
	Intrinsic	89	55.39	17.40	14	92
50+	External	23	43.83	15.25	20	77
	Introjection	21	51.29	14.58	22	74
	Integration	20	105.70	18.32	74	147
	Intrinsic	22	58.86	13.77	27	76
<b>BMI</b>						
Normal	External	36	37.33	14.50	11	77
	Introjection	34	47.12	19.11	14	84
	Integration	31	93.10	27.26	21	147
	Intrinsic	35	55.11	19.73	14	88
Overweight	External	34	41.56	13.92	16	71
	Introjection	34	48.35	13.37	20	74
	Integration	33	96.00	24.35	39	141
	Intrinsic	35	54.51	16.60	22	84
Obese	External	31	43.19	14.50	13	77
	Introjection	28	55.39	16.34	32	98
	Integration	29	96.14	20.91	57	141
	Intrinsic	29	58.55	15.76	35	92
<b>Distance completed</b>						
Not completed	External	10	39.20	18.65	13	71
	Introjection	9	43.11	15.96	20	64
	Integration	10	90.90	25.93	57	130
	Intrinsic	9	47.11	15.20	22	71
Sprint	External	57	40.23	13.93	11	77
	Introjection	55	49.62	17.20	14	98
	Integration	53	93.47	24.51	21	141
	Intrinsic	55	56.11	18.00	14	92
Olympic	External	14	40.36	13.39	20	59
	Introjection	13	50.54	17.62	22	77
	Integration	13	92.62	17.37	66	132
	Intrinsic	14	56.36	16.43	27	77
Half-Ironman	External	15	35.93	10.52	16	51
	Introjection	15	47.33	13.70	26	72
	Integration	14	94.29	25.29	39	131
	Intrinsic	17	54.18	15.20	27	74
Ironman	External	17	45.65	12.84	30	77
	Introjection	16	56.38	11.44	30	74
	Integration	15	102.00	24.63	72	147
	Intrinsic	16	63.75	12.07	39	82

**External.** The women in the 50+ age category had more external regulation than those in the 35-50 category. The women in the BMI category of normal had the smallest level of external regulation, with obese women having the most. The Ironman participants had the largest external regulation and those completing the doing the Half-Iron had the smallest, with the women in the other distance categories being in between with similar levels of external regulation.

**Introjection.** The 50+ women had a somewhat stronger introjection regulation than the 35-50 women. Obese women were more regulated by introjection than women with overweight and normal BMIs. The women doing the Ironman distance were most regulated by Introjection and those not competing were least.

**Integration.** Integration regulated women in the 50+ age category more (105.7) than those in the 35-50 age group (92.2). Those who weighed more were more regulated by integration and those women who did the Ironman distance were more regulated by integration than women doing any other distance. The women who did not compete were the least regulated by integration, with those the olympic, sprint distances and those doing the half-Ironman being in the middle.

**Intrinsic.** For the women in the 50+ category the regulation was somewhat more intrinsic than the women in the 35-50 category. Similarly, obese women had a stronger intrinsic regulation than the women in the normal and overweight categories. Those doing the Ironman had by far the strongest Intrinsic regulation with those not competing having the lowest, with those in the other distance categories having similar levels of intrinsic regulation.

Figure 7 provides graphs of the information displayed in Table 20. This is to see how the calculated central values (i.e. mean) of each regulator interact and intersect with the ages, BMI and distances of the participants. Integration is viewed here as the major motivator. The women

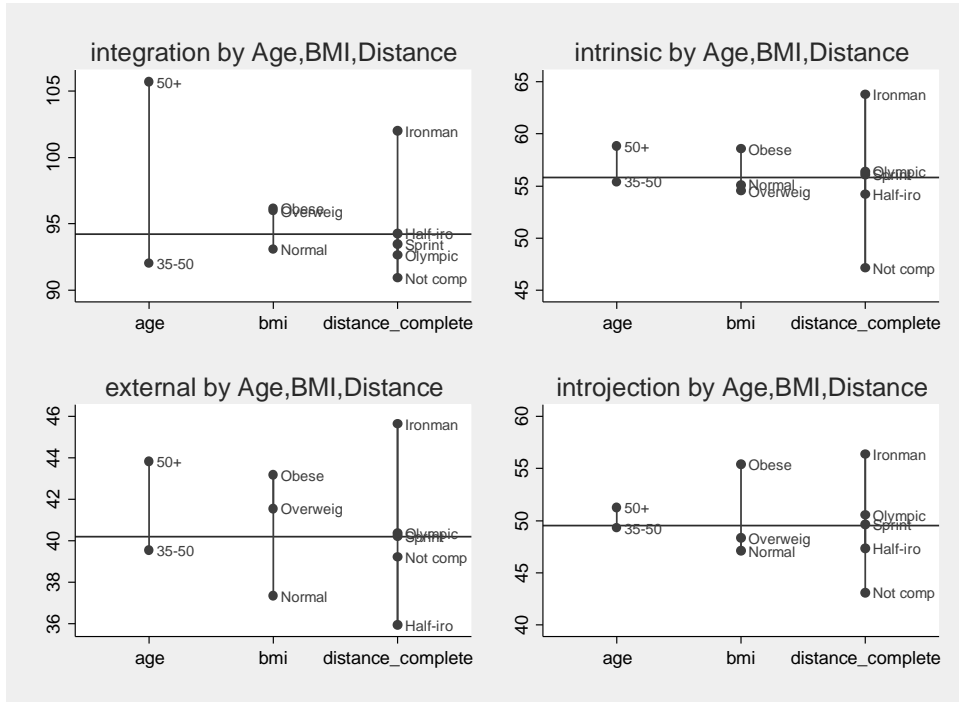


Figure 7. Outcome Variables by Age, BMI, and Distance Completed.

in the 50+ category had more of each of the four types of motivation than the women in the 35-50 age category. Obese women had more of each of the four types of motivation than women in the normal and overweight categories and those women who did the Ironman distance had more of each type of motivation than those doing any other distance. In most cases the women who did not complete reported the least motivation.

**Outlier analysis.** The researcher found that outlier analysis showed that the four outcome variables DV1, DV2, DV3, and DV4 had only two outliers and both were relatively close to being within 1.5 of the interquartile range. Here an observation is defined as an outlier if it lies outside of the 1.5 of IQR (this is a conventional definition for boxplot graphs). Therefore, the outliers were not dropped from the sample. The DV1 (External regulator) and DV4 (Intrinsic regulator) outcomes did not have any outliers. The DV3 (Integration regulator) had one

participant outlier (Integration = 21, which is -1.8 IQR). The DV2 (Introjection regulator) had one participant outlier (Introjection = 98, which is 1.65 IQR).

### **MANOVA Tests**

This section presents the results of MANOVA analysis. One way MANOVA is presented first to demonstrate the differences between the independent groups of the variables age, BMI, and distance. Next, two way MANOVA shows the correlation between the four dependent variables: External (DV1), Introjection (DV2), Integration (DV3) and Intrinsic (DV4) regulators, and how the aforementioned independent variables influence their response on the dependent variables.

The researcher used Wilk's Lambda for this study to test differences between the means of identified groups of participants on the various dependent variables. Roy's largest root is asymptotically different and was reported in several tests since the behavior of statistics can be different if the sample is small or if the MANOVA assumptions are violated. To test the placements of the hypothesized styles of the scales the researcher developed separate questions for a two-way MANOVA analysis:

RQ4. Are there any significant differences in the motivation of the triathletes based on a combination of age and BMI?

RQ5. Are there any significant differences in the motivation of the triathletes based on a combination of age and distance?

RQ6. Are there any significant differences in the motivation of the triathletes based on a combination of BMI and distance?

The alternative hypotheses for the two way analysis were:

H4: All pairs of treatments have the same vector (DV1, DV2, DV3, DV4) means.

H5: At least one pair of treatments has a different vector (DV1, DV2, DV3, DV4) means.

The hypotheses, when separated out from those presented above, test whether the mean vectors, of the regulatory styles, are the same or different for the two age categories. They also reflect whether the mean vectors of the regulatory styles, are the same or different for the three BMI categories. Distance, also tested by its five categories, was either the same or different as well.

**One-way MANOVA test results.** Based on Wilks' lambda H0 (pair of treatments have the same vectors), age cannot be rejected at the 95% level but there is an indication of differences between age categories at the 90% level ( $p = 0.068$ ). There is no sufficient evidence to reject H0, distance ( $p = 0.7429$ ) and H0, BMI ( $p = 0.1686$ ) as seen in Table 21.

Table 21

*One-way MANOVA Wilks' lambda for Age, BMI, and Distance Completed*

Source	Statistic value	p
Age	0.9075	0.068
Distance completed	0.873	0.7429
BMI	0.8639	0.1686

**Two-way MANOVA test results.** Table 22 presents the results of a two-way MANOVA testing the correlation between four dependent variables (DV1, DV2, DV3, DV4) with

Table 22

*Two-Way MANOVA Statistics*

Source	Statistic name	Statistic value	p
Age_Bmi	W = Wilks' lambda	0.7636	0.4281
	R = Roy's largest root	0.2018	0.0141
Age_Distance	W = Wilks' lambda	0.4924	0.0083
	R = Roy's largest root	0.3395	0.003
BMI_Distance	W = Wilks' lambda	0.4426	0.3986
	R = Roy's largest root	0.3323	0.1049

combinations of the independent variables age, BMI and distance. By analyzing these factor combinations the statistics below the researcher allows accepting or rejecting the hypotheses:

$H_0$ : All pairs of treatments give the same means.

$H_a$ : At least one pair of treatments on at least one variable is different.

Based on Wilk's lambda,  $H_0$  should be rejected for the age and distance factors. There is insufficient evidence to reject  $H_0$  for age and BMI, and BMI and distance. However, based on the Roy's root statistic the difference between age and BMI treatments is also significantly different. Results of conducting a Monte Carlo simulation suggest specific tests are preferred in specific situations (e.g. when DVs are highly related). In these situations significant variable results suggest a high dimensionality of the group. Table 23 presents the predicted means of the outcome variables with confidence intervals for each cell of the two-way table of BMI and distance.

Table 23 shows that those who competed in the Ironman distance with a normal weight had the greatest mean within external regulation. In general, out of all the distance types those who participated in the Ironman distance appear to be the most externally regulated. There is variation in external regulation among the group that did not compete, compared to those of normal BMI and having the least external regulation, to those with an overweight BMI and having a moderately high level of external regulation.

The group most highly regulated by introjection was overweight and competing in the Olympic distance. Overall, the two distance groups most regulated by introjection were those in Olympic and Ironman distances. The group that had not yet competed appeared less regulated by introjection than the other groups, particularly those with a normal BMI.

Table 23

*BMI, Distance Model Predicted Means with CI*

	External DV		Introjection DV		Integration DV		Intrinsic DV	
	Mean	Range	Mean	CI	Mean	CI	Mean	CI
Normal Not completed	15	-13.6 43.6	28	(-5.6, 61.6)	85	(35.1, 134.9)	40	(3.8, 76.2)
Normal Sprint	36	28.9 43.1	44.8	(36.4, 53.2)	88.8	(76.3, 101.3)	54	(44.9, 63.1)
Normal Olympic	43.3	29.0 57.5	52.5	(35.7, 69.3)	90.5	(65.5, 115.5)	61.8	(43.6, 79.9)
Normal Half-Ironman	31.8	17.5 46.0	40	(23.2, 56.8)	89	(64, 114)	42.8	(24.6, 60.9)
Normal Ironman	52	37.7 66.3	61.5	(44.7, 78.3)	110.5	(85.5, 135.5)	65.5	(47.4, 83.6)
Overweight Not completed	44.8	30.5 59.0	43.8	(26.9, 60.6)	94	(69, 119)	44.3	(26.1, 62.4)
Overweight Sprint	44.7	36.1 53.3	50	(39.9, 60.1)	97.6	(82.6, 112.7)	59.1	(48.2, 70)
Overweight Olympic	39.7	23.2 56.2	62	(42.6, 81.4)	107.7	(78.8, 136.5)	67.7	(46.8, 88.6)
Overweight Half-Ironman	33	18.7 47.3	43.5	(26.7, 60.3)	86	(61, 111)	50.8	(32.6, 68.9)
Overweight Ironman	50.3	36.0 64.5	54.3	(37.4, 71.1)	120	(95, 145)	65.5	(47.4, 83.6)
Obese Not completed	31.3	14.8 47.8	44.3	(24.9, 63.8)	76.3	(47.5, 105.2)	45.3	(24.4, 66.2)
Obese Sprint	46.8	39.9 53.8	58.9	(50.7, 67)	102.4	(90.3, 114.5)	60.9	(52.1, 69.7)
Obese Olympic	39.3	22.8 55.8	49.3	(29.9, 68.8)	90.7	(61.8, 119.5)	51.7	(30.8, 72.6)
Obese Half-Ironman	37	8.4 65.6	42	(8.4, 75.6)	76	(26.1, 125.9)	43	(6.8, 79.2)
Obese Ironman	43.7	27.2 60.2	57.3	(37.9, 76.8)	91.3	(62.5, 120.2)	68	(47.1, 88.9)

Integration demonstrated the largest type of regulation out of the four regulators. Those competing in the Ironman distance are most regulated by integration and those women who had not yet competed were less regulated by integration. The women participating in Olympic and Ironman distances appeared to have the highest levels of intrinsic regulation, while the women who had not competed had the lowest level of intrinsic regulation. In particular, the group of obese women, participating at the Ironman distance, displayed the highest regulation. The group

with the least amount of regulation had a normal BMI and had not yet competed. There were not statistically significant differences between groups. It is possible that a different type of statistical analysis, like a Tukey test, would allow a better analysis of trends across groups.

Table 24 presents the predictions of the MANOVA model for each cell of the two-way table of age and BMI.

Table 24

*Age, BMI Model Predictions with CI*

	External DV		Introjection DV		Integration DV		Intrinsic DV	
	mean	CI	mean	CI	mean	CI	mean	CI
35-50_Normal	37.3	(31.3, 43.2)	47.1	(40.2, 54.1)	90	(80.0, 100.0)	54.9	(47.3, 62.5)
35-50_Overweight	41.4	(35.1, 47.8)	49.9	(42.4, 57.3)	96	(85.3, 106.7)	55.6	(47.5, 63.7)
35-50_Obese	42.7	(36.5, 49.0)	54	(46.7, 61.2)	94.7	(84.3, 105.2)	57.1	(49.2, 65.0)
50+_Normal	46	(31.4, 60.6)	50.3	(33.2, 67.3)	110	(85.5, 134.5)	58.5	(40.0, 77.0)
50+_Overweight	44.1	(33.1, 55.2)	45.7	(32.9, 58.6)	106.6	(88.1, 125.1)	56.4	(42.4, 70.4)
50+_Obese	50.8	(36.1, 65.4)	63	(46.0, 80.0)	107	(82.5, 131.5)	66.5	(48.0, 85.0)

Table 24 emphasizes that the greater the BMI of the participant the greater the level of motivation, although there were not statistically significant differences ( $p = 0.05$ ) across BMI categories. The mean levels of External factors were greater in the 50+ group of women than the 35-50 age group, but differences were not statistically significant. Obese women were most highly regulated by External factors and normal BMI were least.

The same groups that were most highly regulated by external factors were also most highly regulated by introjection. There was variation when considering BMI. Although the 50+ group had the highest level of regulation by introjection, it was the overweight group and the 35-50 age



group that had a higher introjection. The 50+ overweight group was least regulated by introjection out of all the other groups of age and BMI.

For all categories of BMI the 50+ age group was more regulated by integration than the 35-50 age group. Among both of the age groups the group with a normal BMI was least regulated by integration while those with an obese BMI were most regulated by integration.

Table 25 presents the predictions of the MANOVA model for each cell of the two-way table age and distance. Members of the 35-50 age category who were the Ironman participants had the highest external regulated motivation, while the 50+ age category group, that had not yet competed, was most highly motivated by external regulated factors. The 35-50 age group, at the Olympic and the Ironman distances, were highly introjection motivated. Additionally, the 50+ age group with non-competing and sprint distance triathletes were most highly motivated by introjection. The age 35-50 non-competing group was least motivated by introjection while the age 35-50 group doing the Olympic distance was most highly motivated by introjection, closely followed by the non-competing 50+ group.

Integration was by far the greatest source of motivation for all groups of age and distances out of the four types of motivation. The 50+ age group was more motivated by integration than the 35-50 age group for all distances except for Olympic. The 50+ age group that had not completed a triathlon were most highly motivated by integration while the younger women, of the same distance category, were the least motivated by integration. Out of all the distance groups, with these two groups constituting the groups with the highest integration motivation and groups with the lowest integration motivation out of all the age and distance groups.

For intrinsic regulated motivation, within the 35-50 age category the Ironman distance group that was the most highly motivated, while within the 50+ age category it was the Olympic

Table 25

*Age, Distance Model Predicted Means with CI*

	External DV		Introjection DV		Integration DV		Intrinsic DV	
	Mean	CI	Mean	CI	Mean	CI	Mean	CI
35-50_Not completed	32.3	(22.7, 41.8)	41.4	(29.7, 53.0)	82.6	(65.8, 99.4)	45.9	(33.9, 57.8)
35-50_Sprint	40.7	(36.4, 45.0)	49.0	(43.8, 54.2)	92.7	(85.2, 100.2)	55.7	(50.3, 61.0)
35-50_Olympic	41.4	(31.8, 51.0)	57.1	(45.5, 68.8)	96.3	(79.5, 113.0)	59.6	(47.7, 71.6)
35-50_Half-Ironman	35.4	(26.8, 44.0)	46.0	(35.6, 56.4)	88.5	(73.5, 103.5)	48.8	(38.1, 59.5)
35-50_Ironman	45.9	(37.7, 54.1)	56.7	(46.8, 66.7)	103.4	(89.0, 117.7)	68.0	(57.8, 78.2)
50_Not completed	71.0	(43.9, 98.1)	57.0	(24.0, 90.0)	130.0	(82.5, 177.5)	57.0	(23.2, 90.8)
50_Sprint	46.2	(37.2, 55.3)	55.7	(44.7, 66.7)	104.8	(88.9, 120.6)	61.9	(50.6, 73.1)
50_Olympic	42.5	(23.3, 61.7)	45.5	(22.2, 68.8)	93.5	(59.9, 127.1)	68.0	(44.1, 91.9)
50_Half-Ironman	35.0	(7.9, 62.1)	44.0	(11.0, 77.0)	126.0	(78.5, 173.5)	66.0	(32.2, 99.8)
50_Ironman	54.0	(34.8, 73.2)	52.0	(28.7, 75.3)	119.5	(85.9, 153.1)	50.5	(26.6, 74.4)

distance group. The 50+ age group was more intrinsically motivated for all distances except for Ironman. The age and distance groups with the highest level of motivation by intrinsic factors were the age 35-50 Ironman distance group and the age 50+ Olympic distance group. Table 26 represents the independent and dependent variables.

### Quantitative Conclusions

The researcher used quantitative data analysis of a one-way and two-way analysis to understand how the variables interact with one another and with the dependent variables. Univariate analysis showed that age has an effect as a predictor for the four DVs at the 90% level of significance, but there was not sufficient evidence to reject H<sub>0</sub>, BMI ( $p = 0.1686$ ). However, when the researcher tested age with BMI, the results demonstrated that the variables were

Table 26

*Independent and Dependent Variable Correlations*

	External	Introjection	Integration	Intrinsic	Age	BMI	Distance
External	1.00						
Introjection	0.78	1.00					
	0.00						
Integration	0.81	0.74	1.00				
	0.00	0.00					
Intrinsic	0.74	0.88	0.75	1.00			
	0.00	0.00	0.00				
Age	0.13	*0.05	0.23	0.08	1.00		
	0.18	0.61	*0.02	0.39			
BMI	0.17	0.20	*0.05	0.08	-0.07	1.00	
	0.09	0.06	0.62	0.46	0.45		
Distance	0.08	0.14	0.11	0.17	*0.02	-0.18	1.00
	0.43	0.14	0.25	0.08	0.82	0.07	

significant predictors for the four motivational DVs as a group ( $p$ -value = 0.0083). Also, because age was a significant individual predictor, age and BMI were significant predictors for the four DVs according to Roy's largest root ( $p$  = 0.0141). In addition to insufficient evidence to reject  $H_0$  BMI, univariate analysis found no sufficient evidence to reject  $H_0$ , distance ( $p$  = 0.7429). Therefore, when the researcher conducted the two-way analysis, BMI and distance completed did not have a significant influence based on Wilk's lambda.

When looking at the values for all regulators, integration (>50%) demonstrated the highest mean throughout all the two way analyses. The analysis also revealed that the participants in the survey were least regulated by external factors, followed by introjection and then intrinsic regulation. The older women at all three weight categories were most regulated by integration. The researcher found that with both distance and age all of the older women were most regulated by integration except those who were competing at the Olympic distance. The largest variation in integration was between distance and BMI with each weight having at least one large mean:

normal weight at the Ironman distance, overweight at the Olympic distance and obese at the Sprint distance.

### **Qualitative Research Questions and Hypotheses**

The researcher designed the qualitative portion of this study to focus on the same relationships that were studied quantitatively. Gathering data through interviews produced descriptive and narrative data explaining the complex processes of the MOMS-T survey. The Self Determination Theory (SDT) guided the interview process to addresses human motivation to understand whether the motives of Black women triathletes, participating in triathlons, are extrinsic or intrinsic. Using the regulators of the SDT, external, introjection, integration and intrinsic a deeper understanding of how the scales of the MOMS-T motivate are revealed. Following the return of the transcripts and before producing the report, the researcher continued by completing the four remaining phases of thematic analysis including: generating codes, and then searching, reviewing, defining and naming themes. Questions that guided the qualitative analysis included:

QUAL1: Based on the age of mid-life Black women, do narratives support the placement of the External dependent variables as External, Introjection, or Integration regulated?

QUAL2: Based on the BMI of mid-life Black women, do narratives support the placement of the External dependent variables as External, Introjection or Integration regulated?

QUAL3: Based on the distance of mid-life Black women, do narratives support the placement of the External dependent variables as External, Introjection or Integration regulated?

QUAL4: Based on age of mid-life Black women, do narratives support the placement of the internal dependent variables as Intrinsic regulated?

QUAL5: Based on the BMI of mid-life Black women, do narratives support the placement of the internal dependent variables as Intrinsic regulated?

QUAL6: Based on the distance of mid-life Black women, do narratives support the placement of the internal dependent variables as Intrinsic regulated?

The researcher projected that the narratives which describe the dependent variables (Appendix B) would support the generated hypothesized placements to be intrinsic, external, introjection, and integration regulated. The hypotheses tested for this portion of the study were:

H1: The SDT scales weight control and competition are externally styled.

H2: The SDT scales recognition and self esteem are styled through introjection.

H3: The SDT scales health orientation, personal goal achievement and psychological coping are styled through Integration.

H4: The SDT scales affiliation and life meaning are intrinsic.

**Participation information - qualitative interviews.** The quantitative sample provided the potential participants for the qualitative interviews. Considering the independent variables of the study of age, estimated BMI, and distance of triathlon, the researcher incorporated recommendations from Gravlee (2011) into a stratified quota sampling design to demonstrate the sample size estimate needed for the semi-structured interviews (Weller, 2007; Gravlee, 2011). Projected quotas for all the possible combinations of the groups the sample size allowed for qualitative comparisons between a total of 12 women with nine different attributes.

Following completion of the quantitative survey, the researcher asked participants for their willingness to be interviewed. When a participant indicated interest, an automatic email was sent to the researcher who then reviewed the potential interviewee's survey to ensure the survey was completed. Completed surveys of eligible participants who could fill the projected qualitative

quota were contacted first. Participants were qualified based on their personal characteristics (age, distance and BMI). The researcher sent an email to verify their willingness with the consent form attached.

Following confirmation of reading the consent form, the researcher provided an overview of the interview process, including the approximate time and date needed for the interview. Most communication, leading up to the interviews, occurred over email. In addition to email, the researcher had telephone communication with 7 of the 12 participants prior to interviews. The qualitative informed consent forms (Appendix E) were sent to all interviewees. All participants signed an electronic version of the consent form (on the researcher's iPad2) at their face-to-face interview. The one phone interview participant mailed her consent form to the researcher prior to her interview. The interviews began during the second week of data collection and ended at the eleventh week of data collection.

There were multiple participants residing in the same city; the researcher contacted each participant two days before the scheduled interview to verify the time and place of where the interview would take place. The approximate travel cost for the interview process (airline tickets, rental vehicle, hotel stay) was \$530 for each trip. The researcher interviewed one participant in her city of residence of Raleigh, NC and traveled to interview two women in Charlotte. Two participants each resided in Georgia and Illinois. The remaining states (Michigan, Virginia, Massachusetts, and Colorado) had one participant each. The telephone interviewee resided in Los Angeles, CA.

**Interview process.** Each interview began with an explanation of the purpose of the interview; participants were then provided a copy of their previously completed MOMS quantitative survey. Participants signed an electronic version of the consent form (on the

researcher's iPad2) after reviewing the survey. Next, the researcher gained permission to record the interviews for accuracy using the Olympus WS-801 Digital Voice Recorder. The researcher also explained that she would be taking computerized observational notes on the iPad2.

The researcher asked the questions previously approved for the purpose of this study from the MOMS-T Interview guide. A follow up question was asked if the researcher needed more in depth information. The researcher repeated personal situations parallel to those that of participants to develop rapport.

At the conclusion of the interview, the researcher conducted a brief post interview and asked for any additional comments or questions from the participants. Copies were sent to the respective participants after the researcher transcribed each interview. They were provided the opportunity to correct any misinterpretations the researcher may have typed. Table 27 presents a matrix of the participants, stratified by age group, with their name, weight, age, distance, and date of interview.

Out of the 121 eligible participants for the quantitative study, the researcher identified 12 women based on their differences of age, weight, and triathlon distance. After transcribing the first 10 interviews, the researcher noticed a redundancy of answers for each of the questions and questioned whether this was saturation reached. For example, the first ten participants mentioned their concern with swimming as the most challenging discipline. The study PI encouraged the researcher to continue the interview process and complete at least two more interviews to ensure that the saturation occurred. The common rule of thumb is that a qualitative sample size is large enough once saturation is reached, until there is clarity of the dynamics of a group, and/or the addition of more participants does not result in new information (Creswell & Plano-Clark, 2007; 2011; Teddlie & Tashakkori, 2009). After interviewing 2 additional participants(n= 12), these

Table 27

*Qualitative Participant Table*

Participant	Age	Distance	BMI	Date of interview
Triathlete A	45	Olympic	normal	March 14
Triathlete B	51	Sprint	normal	March 14
Triathlete C	45	Half-Ironman	normal	March 18
Triathlete D	44	Sprint	obese	March 19
Triathlete E	56	Sprint	normal	March 25
Triathlete F	50	Sprint	overweight	March 26
Triathlete G	43	Ironman	overweight	March 27
Triathlete H	58	Olympic	overweight	March 29
Triathlete I	54	Half-Ironman	overweight	April 9
Triathlete J	49	Ironman	obese	April 14
Triathlete K	60	Half-Ironman	overweight	April 23
Triathlete L	39	Sprint	obese	April 27

three criteria were achieved, the interviews ceased, and the researcher closed the REDcap survey.

**Trustworthiness.** Focusing on relationships through human experience, for the production of descriptive and narrative data, requires multiple steps to ensure the quality of the research (Rolfe, 2006, Creswell & Plano-Clark, 2007). For example, the researcher interviewed participants within three weeks of their completing the survey. The researcher also provided a review of their answers at the interview to prevent recall error and ensure the dependability that evidence recorded through both the survey and interviews are consistent and stable.

Second, contact forms were used to reflect the researcher's views of strategies and methods used during interviews. Contact forms focused on recalling main issues or themes that were



significant of each participant, summarizing the information learned or not provided, and anything else that was salient, interesting to the participant. The researcher included personal experiences, compared to that of participants'. The forms provided an opportunity to write target questions for the next interviewee that may be significant for the study.

Using phenomenology, the researcher developed a coding book during analysis. The memos, the development of the coding, and themes were sent to two qualitative external reviewers for member checking. Member checking provided an additional opportunity to assess whether what the researcher interpreted is what the participant intended. It also provided additional information to assess the adequacy of particular aspects of the data.

The results of this study indicate the possibility of inclusion of other groups. The MOMS has been used in completed research among marathoners and cyclists. Since the interview guide was adapted from the MOMS-T future researchers may also use it with other groups. Lincoln and Guba (1985) advised that the key to successful transferability lies in the actual 'burden' of generalizing being placed upon a future researcher considering applying this original work to his/her own circumstances. Therefore, a thorough description of the participants, settings, circumstances and methods is up to a future researcher or practitioner to determine if a researcher's own circumstances are sufficient to duplicate those of this study to warrant transferability.

### **Qualitative Results**

The researcher based the interview questions in the questionnaire for on the quantitative MOMS-T survey and developed three additional questions to understand how the women started in the sport and their plans for continuation of the sport. Then the researcher created a hierarchical outline (Appendix L) of the thematic categories and their dimensions based on the

analysis of the transcribed interviews for the study. The results are interpreted and presented in Figure 8, demonstrating the relationship of the MOMS-T constructs (purple), Self-Determination Theory regulators (teal), themes (green and pink) and MOMS-T scales (orange).

The researcher first presented the seven hypothesized extrinsic motives in their respective regulated styles. The researcher explored the participants' views, their perceptions, meanings, and interpretations from the culture of triathletes, and as Black women. Weight control and competition were both hypothesized to be externally regulated; recognition and self esteem were deemed introjection; and health orientation, and personal goals and psychological coping were integration. Hypothesized intrinsic motives included affiliation and life meaning. Finally, lifestyle, the new motive which emerged from the study, was described.

The researcher used ATLAS Ti.7 to assist in the qualitative analysis. Each transcription was read and quotations identified main ideas that were potential codes. There were 654 quotations placed into the coding system resulting in a total of 58 codes. The researcher placed seven codes (aging, aging dreams, injury, sickness, setback, life extension and lifestyle) as secondary codes as they did not have a direct relation to what the themes described.

As set in the proposal, the researcher used criteria adapted from Bowen (2008) to identify categories that were adequately saturated, including categories reflecting more than 70% of the and depression which came under the 70% criterion. However, each of these codes provided a more extensive understanding of the groups. The codes were separated among the original 9 interviews. The exception to this rule is the discussion on the Athena triathletes, medals, fears, MOMS-T themes and the one new theme.

**Weight control.** The researcher hypothesized weight control as an external regulated motivator. Several themes emerged including weight regulation, being physically attractive,

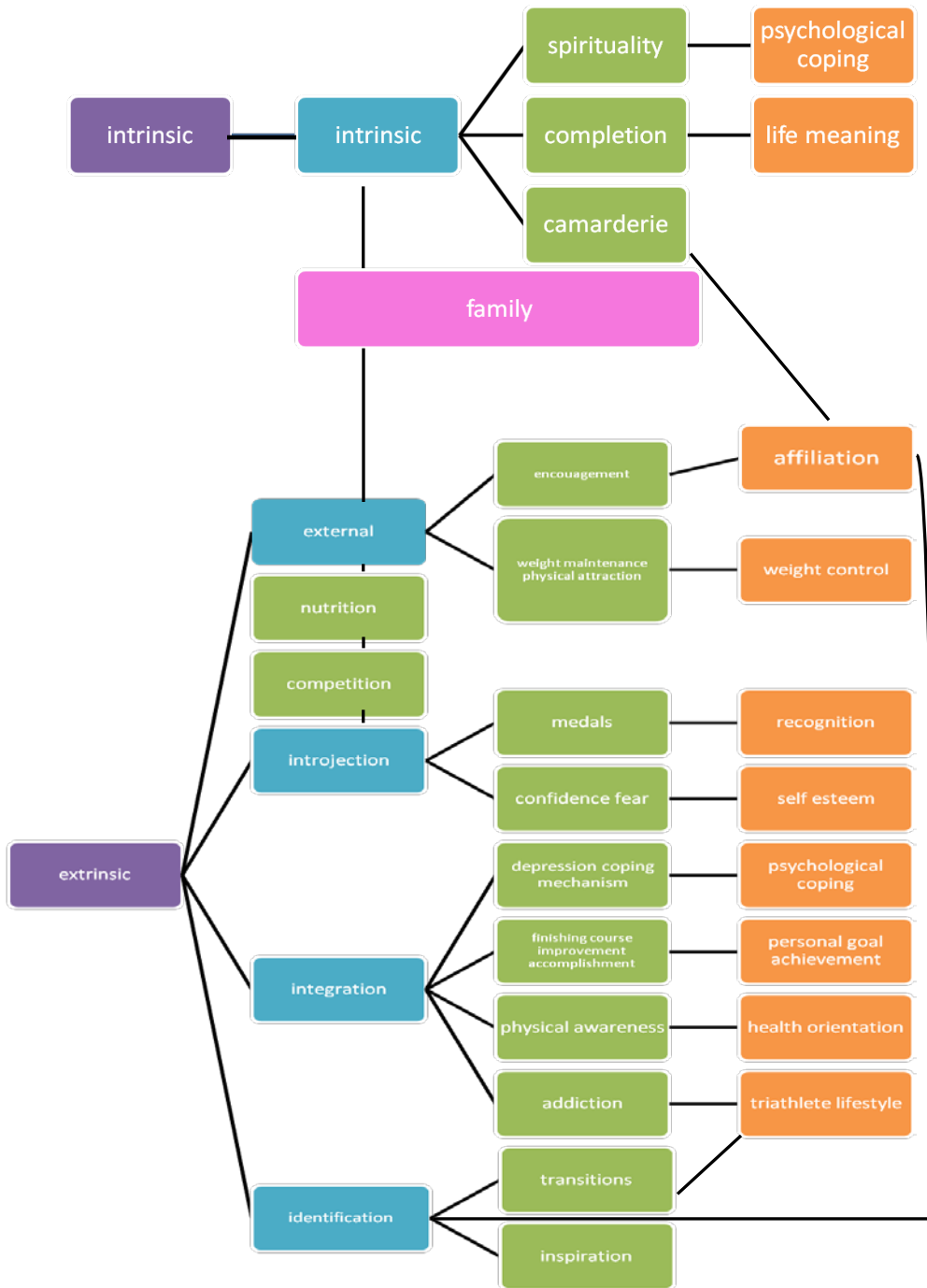


Figure 8. MOMS-T and Self Determination Theory relationship.

and nutrition. The three themes are intertwined with one another. Descriptions of being physically attractive were directly associated with weight, which is directly affected by due to nutrition.

All interviewed women talked about weight regulation and either how they desired a weight change or an increase in lean muscle mass. However, only the women in the older group expressed that their triathlon journey began because of outside experiences which were directly related to their need to lose weight. Both Triathlete H and Triathlete K were instructed to lose weight, from their doctors. Triathlete I's family history is full of members not living past 55 years old due to 'catastrophic heart attacks'. When 8 of her generational family members died before they were 60 years old, she made the decision that she would not be part of that statistic.

Weight reduction, was an external motivator for reasons including wanting to fit into certain clothes and looking better in the mirror. However, as Triathlete L explained, losing weight is an expectation, but not everyone loses weight. Through experience, Triathlete G understood weight reduction as a means for being a better triathlete:

Let's just tell it straight. I'm a much better athlete at 190 than I was at 285...I didn't lose weight because I wanted to be skinny. I lost weight because I wanted to get faster on the bike and it worked...I think that a lot [of Black women] miss out on what we can accomplish, athletically, because we are so sensitive to being criticized for our fitness level based upon our body type.

The desire to lose weight, for at least one woman in each of the BMI groups, altered from the desire of wanting to lose weight to the desire of being 'lean'. This thought of being lean is carried from knowing one's body type and not having the expectation that their personal body type may not look like the typical triathlete, but they are still strong. This is clear from women like

Triathlete D, who is considered obese, “I don’t have to be long and lean. I can be thick, healthy, and powerful and I can still do this. The leanness and appearing leaner, that means a lot more than the number on the scale.” Starting the sport helped to reduce the weight for all the women, except one (Triathlete L) but remaining in the sport has allowed the women to control their weight and be leaner.

A second theme was the externally regulated physical attractiveness. All of the women, except for Triathlete A, either described what it meant to be physically attractive or how they believed others viewed them. She spoke of physical attractiveness from a personal critical point of view when she said, “I really don’t see myself as being that.” However, to Triathlete K, being physically attractive was “...in the eye of the beholder. And what’s attractive to one may not be someone else”. Many women believed that being physically attractive was not about thin, being a certain size, or conforming to society’s idea of what attractiveness meant.

The concept of physical attractiveness also appeared to change over time. The women described their transition of what being physically attractive meant as they aged. This varied and was related to previous experiences as a former athlete, or not. As a previous dancer, Triathlete I especially related to the idea of a mind shift of what being physically attractive meant:

For me, physically attractive has changed over the years. When I was in my teens and twenties, physically attractive was being as thin as possible. I hated being as muscular- I hated my thighs because they were so muscular. I hated my ass. I just was like...I’m too heavy and too this and too that. Now, I love seeing myself. I love looking in the mirror and flexing my arm and seeing cut. I LOVE IT. I love looking down at my calves – cause for me, that’s power. So that’s attractive to me.

For others, being physically attractive is wrapped in the ability to be physical. Their transition was directly related to their completion of a triathlon. Triathlete J said that being physically attractive is “[being] as fit as you’re genetically able to be”. And although she was a swimmer, it was not until Triathlete G completed her first Ironman that the shift occurred.

I used to believe that what other people thought of me, especially men determined my beauty. Now this is a whole different aspect – after I did Ironman I was like, ‘Fuck that dude, I’m an Ironman’. I could be the ugliest chick in the world but I’m still an Ironman.

The third theme was nutrition which plays a key role for triathletes. It is learned that food is used to fuel the body for the endurance activities performed. The participants also talked about nutrition about from several points of view but the consensus was that nutrition was an everyday choice. Some of the women struggled with nutrition and indicated they do not eat as well as they should. Others eat more clean when they are preparing for a race but go back to their everyday eating habits once the race is complete. These habits are not “bad” per se, but not as strict as the race diet may be. From an external view, Triathlete L admitted that seeing past photos of herself completing a race, and being in better shape, was a motivator to eat right and said, “Some of them I like – ‘cause it’s just me and my weight. It’s like wow...we need to get eating right cause I like that picture right there”.

The women also indicated that an introjected shift in nutrition is a positive lifestyle change. Triathlete B said, “My energy level is up so I’m not as inclined to go out and get a sugary treat or eat something.” Ironman finisher, Triathlete J, felt her overall health was impacted by the sport because, “It makes me more conscious of how I’m eating, how I’m fueling by body.” Triathlete

G changed her whole life. “I cut out entire [parts] of the grocery store....I felt like ‘Oh moderation? No. Moderation does not work for [me].”

**Competition.** The researcher hypothesized competition to be externally regulated and was described as both external and introjection by several of the participants. The distance a woman competed in did not determine competitiveness as several women, from varying distance categories, expressed similar attitudes about competition. Triathlete C, who competes in Half-Ironmans, explained that competition is within their training groups:

I try to tell- you know it’s a competitiveness that’s inside of me. You know, although we all root for each other and I’m happy and I love my tri family – I have a really great support team. But...we all like, ‘You know what? I’m gonna beat her. I’m striving to take her place this time.

Others said competition was unbeknownst to other participants in the race. Triathlete H, an Olympic distance triathlete, described that she races against other ladies because “That keeps me going a little bit faster to maintain my pace and not to move off if I’m feeling tired. You know, just to look at competitor that’s ahead of me and pass her”. The purpose for passing another competitor is strictly to improve personal chances of a faster result, as Sprint distance Triathlete D explains, “If I catch her and pass her, then I’m gonna improve my time.”

There is a craft to choosing who to pass and an art in how that passing is completed. For Triathlete D, a sprinter, it is a game. “It’s never anyone that I think is my size... it’s always that long, lean-runner lookin’ person. If I can catch ‘em and pass ‘em then I’m like ‘okay, I passed her’. I do ‘pick a target’ so to speak.” For Triathlete A it is a production where she is the hero going after the villain, entitled ‘Superhero’. “I go into a different mindset like I’m in a movie.

I'm following this person. I gotta keep up and I'm just thinking the entire time, 'You gotta catch them,' and I just play a movie in my head."

At the Ironman level, Triathlete J described introjections competition as an "internal competition knowing what I'm dealing with in that moment". Yet, the Sprint distance triathletes, like Triathlete F, believe that, "The only person that I'm competitive against, is myself," and Triathlete B wanted to clarify that "I do it as a form to compete against myself." Triathlete I (Half-Ironman) felt the same way when she expressed, "The competition is against myself." Triathlete D described her external motives, but later in the interview, she expressed intrinsic motives too. "I compete against myself all the time and I always want to do better. I'm going to win because I beat my last time by two seconds."

Participants also described competition as though it was not a current possibility. Triathlete L mentioned that she was not at all competitive but also reiterated that one would need to be "in a place to be competitive" to feel as though you are competitive. This 'placement' of competitiveness is influenced by weight and supported by Triathlete G's thoughts when reflecting on her journey from being a finisher of the Ironman to being a competitor of the Ironman:

...for ten years, I never thought about competing. I just didn't. Just doing the tri and crossing the finish line was enough for me. And then I decided to sign up for something called Ironman. I'm trying to be competitive in the sport and doing that I know that I can't be as big as I used to be.

The constraint of weight, however, is not a necessity for placement in all distances of triathlon. Within some sanctioned races there are competitors who have the choice to be placed within the Athena category. This category is embraced by some athletes and intimidating to



others. “I was really excited about the Athena [category]. It was just a really – a really good feeling – and now I just really do feel unstoppable,” said Triathlete D. Triathlete K, who does Half-Ironmans admitted, “Athenas –they’re nothing to laugh at. Because they are strong women and that’s one reason why I don’t race Athena – they’re strong women. And so I have a better chance in my age group.”

All of the women felt competitive in one way or another. Ultimately, everyone and anyone is the competition. The distance the participants competed in did not make a difference. And many had the realization that they were their own competition, or that people who participated in the race were their competition, and even people whom they were never likely to meet were their competition. As Triathlete G states:

If Usain Bolt and I lined up together tomorrow I would try and beat the hell out of him. Now, he would drop me in about 3 seconds. But maaaaan- those three seconds- he’s gonna have to earn it ‘cause I’m not gonna just give it to him just ‘cause his name is Usain Bolt.

**Recognition.** Recognition includes themes of inspiration and medals and the researcher hypothesized that it would be introjection regulated. The researcher, however, analyzed inspiration to be identified. Identified was not an initial regulator which the researcher intended to use in this study and was not hypothesized to be a regulator. Identified, an extrinsic regulator is described when an individual is motivated by pursuing valued outcomes, not by continuing the behavior, itself (Kinnafick, Thogersen-Ntoumani, & Duda, 2014).

Several women from varying categories of age, distance, and BMI described their desire to be an example to others. Two (Triathletes H and I) out of the three participants who did not suggest that inspiration was not a motivator had definite similarities including being older and

overweight. However, the addition of Triathlete A, who is younger and has a normal BMI, suggests that inspiration is not dependent on age, distance, or BMI.

In order to maintain the ability to inspire others, the participants adopted a sense of responsibility. After inspiring others to exercise, the women did not want to disappoint those they inspired. Triathlete K said, “I just want to be an example to others, in terms of being in good physical shape and looking the part.” Triathlete C explained:

I see how my kids how they look up to me. I see other people they are so proud and they’re always giving me recognition... You want to be able to inspire other people to be exactly the same way...to get there.”

Triathlete L felt that being an inspiration was “cool [because] you have no idea who is picking up on it and who goes forward and go and do it themselves. It’s happening and you’re not even aware that you’re having an effect.” She also explained her effect on others, but that was not her personal motivation. “I don’t do it for that. I don’t do it for any of that. I do it for the bling – but that’s about it.”

The researcher identified medals as another theme under recognition as introjection, and getting the medals, or the ‘bling’, is what motivated many participants. Triathlete B explained that “It’s just a wonderful sense of accomplishment when you’ve got your medals”. And Triathlete D said that even though you may feel tired, hot, and sore. It is worth it because, “You get that medal!”

**Self esteem.** Self esteem involves understanding that it is often contingent on performance. The researcher hypothesized it to be regulated by introjection, and found that it was the performance of a triathlon which affected participants’ self esteem and that most related self esteem to their level of confidence. For a few, accomplishing the plan for participation increased.

Triathlete C said, “It’s self-confidence. I used to lack a lot of that. And now when you achieve certain goals like completing a triathlon – you sit there and you’re like, ‘Okay, I’m the shit here.’” For Triathlete D, participating in triathlon and finishing made her feel unstoppable. Confidence could also be sustained and part of the reason for continuing to compete in triathlons: As Triathlete G put it:

It is part of my identity now and it’s a part that has changed me so much for the better that I don’t really want to part with that...from my successes – a person who believes in herself. Triathlon helps a lot. It helps a lot to believe in yourself. It helps to believe in your ability to achieve things.

Age made the difference in the confidence of the women. Women in the older group said that participating in triathlons did not affect their self esteem. Triathlete K expressed, “I don’t think I have low self esteem. I’m excited once I’m finished [and] just so thankful that the good Lord gives me health and strength to cross that finish line.” Triathlete I also explained that increased self esteem is “like the cherry....it’s like that added little benefit”. The older women expressed that their self esteem issues were ones that they were able to overcome years earlier. So, being a triathlete in their later years was not of consequence to their esteem. Self esteem does not come from working out, even though there is a sense of achievement.

Confidence can be affected by the participants’ ability to compete and was contingent on their ability to participate. The theme, fear, was discussed in direct relation to ability to achieve the plan of completing a triathlon. Introjection also regulated this theme since there are three separate sports involved with completing a triathlon, and various obstacles that may prevent completing a race.

Fears can begin as barriers, in the early stages of the journey to triathlon. Most of the women had varying degrees of fear of swimming. Triathlete K said, “That’s one of the things – there’s fear... in the water. My thing is if I ever have to stop, is what will I do?” The women recalled their thoughts on fear of swimming differently. Triathlete E laughed as she explained her beginnings and discussed how she had to overcome the barrier of water and change her fear of water to a motivating factor because without swimming, she could not be a triathlete:

Well, I had been trying to learn how to swim for like a year and never got it.

So, I took more time out to learn. A girlfriend who has done an Ironman says, ‘You gotta go to open water.’ And I went to open water and was like, ‘Are you crazy? Really?’ She says, “In order to do the triathlon you gotta get from here to way over there.’ And I was like, ‘Are you crazy?’

Triathlete K also laughed as she told the story of her first swimming lesson at 49 years old:

It was my very first lesson, the lady had me on my stomach kicking. And so she said, ‘Just wanna follow the black line. Triathlete K do you see the black line?’ I said, ‘No.’ She said, ‘You don’t see the black line?’ I said, ‘No.’ and she said, ‘Triathlete K, are your eyes open?’ I said, ‘No.’ She says, ‘Triathlete K you have goggles on. You can open your eyes.’ I said, ‘Oh! Okay!’

Managing fears was a necessity to continue racing. Sometimes, fear was induced due to experiences that may not have directly involved the triathlete. The more time spent as a triathlete, the more likely a triathlete learned of and from these types of experiences. Triathlete G explains it like this:

When I first started triathlons, I had no problem with open water swimming.

And then somewhere along the line, I started getting the panicky feeling. I was

in a race and a guy died on the swim. And so it was kinda like traumatizing. So, every time I got back in the water I was freaking out. So, I really had to deal with that.

Those who support triathletes also needed to manage fears. Triathlete A explained that even though her parents support her desire to participate in triathlons, they are also concerned for her safety.

When I do open water, my mother doesn't want to know, she just – she really doesn't want to know. She doesn't want to attend. She does not like it when it's open water because just she's thinking it's the worst and it's, you know. There are certain races that bring out a fear.

**Personal goals.** With personal goals, the hypothesized regulation was integration. The synthesis of setting and achieving that goal was of personal interest to every one of the participants. Integration themes of finishing the course, improvement and accomplishment were confirmed within the scale of personal goals. Personal goals changed as the women progressed in the triathlon journey. For Triathletes I, G, D and C, the first personal goal was to remove completion of a triathlon from their bucket list. With different distances for their first race, finishing the course is what was most important and served as an initial motivator. Triathlete E explained that it did not matter to her how she finished, but that she finished, "I'm a triathlete. I trained to finish. I am too close to not finish. I will finish this....And whether you have to crawl, scoot, or however you get there to the finish line." Triathlete B said, "I love the idea of setting a goal, putting a plan in place to accomplish it and then being able to say that I trained for this event and I completed it and actually earned a medal." And Triathlete L expressed, "When you

cross that finish line, there's not better feeling in that world that you set a goal and you continued through the whole day, through that race, to finish that goal."

And at the beginning, it did not matter where the women finished in rankings. All the women believed that with experience, however, comes the idea that improvement should occur.

Triathlete F explained, "I know that I can do better because the more you do the better you get at it. Right? So, I anticipate to do better what than I did before." Familiarity with a course can motivate women to do the same race as Triathlete C said, "I'm doing the same one again because I'm like 'I gotta get better' – better time." And Triathlete H said, "What's... important is to....see if I can beat the time I had before on that same course." For Triathlete I it was "always about how am I going to make it better?"

Personal goals ultimately changed as the women raced more. All had the expectation of improving their time. And with this expectation was the personal goal of not being last. Triathlete K said, "If you come in last, okay you come in last. But, I don't think anybody ever wants to." And Triathlete A. laughed as she said, "I didn't come in last. That was the basic thing. I came in second to last but I was still good [because I wasn't last]." Speed, and the need to be fast varies depending on the person and the course. As Triathlete J explained, "There's a very different dynamic in the longer course where it's less about speed and finishing fast versus just finishing." However, in the longer courses, speed is important because in those races. If participants do not finish part of the race within a certain time, they receive a DNF (did not finish). In this case, finishing the course is just as important as beating the clock.

The women valued accomplishment, another personal goal theme, after completing the race. "It gives a sense of accomplishment because not many people would be disciplined enough to try to do three different events-all in one day," Triathlete A explained. However, after completing

the race, the sense of accomplishment moves into other areas of life, too. Triathlete H said, “I do feel as though I can accomplish whatever goal I set out for whatever reasonable goals.”

Triathlete J explained, “When I participate in triathlon, there’s this sense of accomplishment; personal accomplishment radiates into every other area of my life.” Completing the triathlon also serves as a reminder to one’s ability, as Triathlete B said, “When someone tells you did something bad you can look at your medals and know you did something good.”

**Health orientation.** Doing something good and feeling good are synonymous with each other for the triathlete. The desire to “feel better” and wanting to “...do what I want to do, when I want to do it” were motivators for Triathletes H and I respectively. Although all of the women spoke of how their health was important to them, it was the older women who really spoke of how being a triathlete has impacted their personal health status. The researcher hypothesized health orientation to be regulated through integration. In order for an athlete’s health to be integrated, a synthesis of identified meaningful aspects related to triathlon should occur. The older women have had experiences which made them realize how necessary having good health is. Physical awareness is the one theme that came from health orientation.

Triathlete I discussed her family histories of diabetes, high blood pressure, and cancer and how she did not want these complications. “My health status is better, blood pressure went down,” Triathlete H explained. Triathlete E told the story of how she contracted a Methicillin-resistant *Staphylococcus aureus* (MRSA) infection and Triathlete F had health complications. But their recoveries were quick and their doctors attributed this to their current state of athleticism.

All of the women experienced positive health changes, including the younger triathletes. “You know, once I started, I noticed the change it had on my body, I was able to sleep better,”

said Triathlete C. And Triathlete L said, “There are so many healthy benefits to it. In fact you’re getting your heart pumping [and] your oxygen is flowing,” The knowledge of being able to do triathlons and knowing the health and wellness benefits created a sense of pride for Triathlete A, “I can still do things that most people my age can’t.” This form of physical awareness motivates the women to continue training.

**Psychological coping.** Participants perceived psychological coping as a mechanism that is regulated through integration. This form of regulation is representative of a person knowing themselves and having an understanding of knowing how they need to handle situations. Triathlons were integrated into all of their lives as a coping mechanism to get through life. Since preparation for the triathlon requires hours of training the women use this form of exercise preparation to get through the sections of life that would normally provide an alternative way of coping with feelings, including stress and anger. Triathlete B and L both expressed that these forms of exercise were a good de-stressor. Triathlete C said, “Whenever I’m upset or angry, I take it out on the pavement.” And Triathlete G jokingly expressed that “This world is a safer place because I’m doing triathlons. I just need to tell you that right now, there are people who are walking around alive today because I’m doing triathlons”.

All three sports provided the women with some type of coping strategy. Many of women felt the exercises provided a sense of clarity on issues. They were able to resolve issues either during the exercise period or directly afterward. Triathletes B, K and C found their ability to cope while running. Triathletes H, I, and E while swimming, and Triathlete L with cycling. For the Ironman participants, Triathletes G and J, all three sports were a way to cope. The differences between those who choose to use one sport over another to get clarity or resolve issues was based on ability more than preference. Triathlete K and Triathlete A both explained that with swimming



they are trying to concentrate on form so that does not give much time to think about other issues in life. They both used songs from memory to help with timing and breathing techniques.

Triathlete I, who uses swimming for coping, expressed her frustration of the timing of clarity in the water:

I hate when this happens 'cause I'll be...swimming a mile and... I'll be thinking about something at work and I'll come up with an answer and I'll be like- good, great, done. I'll get back to shore...and it's like, 'What was that answer?...What WAS that?...and for some reason, that's what happens in the water. Like, I don't know, it's like as soon as I get on land- all of the miraculous clarity leaves and I'm like 'Damn. I can't write it down.

Triathlete L enjoyed getting on her bike to de-stress:

I get on my bike and I just ride around in the neighborhood and you feel that wind in your hair and you're like 'there's no problems in the world' because at that moment it's just you and the bike and you're not thinking about anything else.

This clearing and cleansing of the mind is what the women felt was so important to achieve while training. Spirituality, an intrinsically regulated motivation, was a theme under psychological coping, is something the women all had and believe was a necessity to achieve the goal of completing a triathlon. In this process, Triathlete J expressed that long practices are a form of spiritual practice where she would see the world begin to dissolve around her and in her complete solitude she would find comfort. At this time, the listening of higher information would occur and she could hear the 'inner wisdom' coming through. It was like having an out of body experience. Triathlete K explained, "I'm just so thankful that the good Lord gives me health and

strength to cross that finish line...the Lord has enabled me to do this. So, I just thank Jesus.” The triathlon experience from training, to the end to the finish line, was thoroughly described by Triathlete G who said:

You’re exercising the Garden of Gethsemane everyday and there are two paths: make the hard choice, the sacrifice- not that we’re Jesus-but it’s the same metaphor. You can make the make the hard choice, the sacrifice or you can get your out. There will always be an out. You can always find an out- out of going the other way. You can always choose the alternative and nobody will blame you for it. But when you make the hard choices, when you decide to make the sacrifices, when you get into the Garden of Gethsemane and you say, ‘I will myself to do it, to make the hard choice.’ You go through the hard choice – and then what happens? Glory, yeah.

Depression was a third theme to psychological coping. Similar to what was experienced with fear, depression can either be allowed to be a barrier or can serve as a motivator to complete whatever goal has been set out to reach. However, depression is more integrated because this is believed to be a part of their behavior. To free themselves of the behavior depression causes, several of the women used triathlon to assist in their diagnosis of depression. Triathlete D was the first to explain, “I do have depression but taking medication...I just didn’t like the side effects...so, I just did my research. Exercising was the thing that made me feel good.” For Triathlete J, triathlon helped to solve her problem of depression that would have otherwise needed management from day to day. Triathlete F provided the perspective on how depression can become a part of life when a person is unable to be actively involved with triathlon due to injury:

Since I've been restricted...I have to connect with certain people and certain groups to keep my mind going because if I don't I get so depressed....I just feel down. So when I connect with these people they keep me going and keep me motivated...it does take me through depression if I don't connect.

**Affiliation.** Affiliation is linked with the desire for having a connection with others, which the researcher hypothesized to be intrinsically regulated. Both themes, family and camaraderie, supported being intrinsically regulated. However, family also demonstrated external regulation too. The women continuously spoke in the affirmative about social support, who believed that having others who supported them during the different phases of triathlon was important. Triathlete K said, "I don't see training by myself is challenging and I need the group – I enjoy the group." And Triathlete E recalled the importance of support during the race while telling the story of her daughter, "[She] said the man came and asked her, 'You still standin' here?' She said, 'Yeah, my mama still in that water.' She said she aint' goin' no place till you get out that water. I said, 'Thank you.'" Even at the end of a race, having social support is desired, even if it comes in the least expected way. Triathlete L laughed while telling of one of her first races where she had to walk to complete:

I remember I called my boyfriend at mile 11 – mile 10 – and I was like, 'Tell me something, just talk to me.' He was like, 'I ate your Girl Scout cookies.' I went dead silent. [Then] I was like, 'You know what, I don't even care.' I was in – you don't understand – I was in a different place. But, he got my mind off me thinking about the pain in my feet.

For several of the women, social support served as an initial motive when they began their triathlon journey. Triathlete H and her friend were working out at a gym and they realized, "...if

we took a week's worth of workouts and did this all in one morning, it would be a triathlon." For others, creating social support was a necessity because there was a gap in the availability for such, as Triathlete J explained:

...there was no all women's group...at the half- Ironman, full Ironman level, there was nothing. And so I started the [group] Endurance for Women who are racing long course...so that we could call for a bike rides, runs or walks if we couldn't run.

Triathlete I, whose triathlon team is made of former mentors of the Team in Training Kidney Society have their own support crew, also known in the triathlon community as a 'sherpa', in her husband. Family is a theme under affiliation because often it is a biological family member who serves as the social support for the triathlete. However, the word family, for triathletes, also has another different meaning. "When I started doing this, I was introduced... to a different family...I have a tri family," said Triathlete C, "...I'm being honest. Sometimes you become more close to this side of the family than you do your own blood family." For Triathlete J, those who are in triathlon are her family. "Those are the people I spend my weekend with. Those are the people I travel with, the people I race with are friends for life. It's just automatic default." Triathlete I provided the external regulation that occurred her tri family. But, she is an exception to the family separation because her husband is an integral part of her triathlon team. She stated:

We started where we were all working out, training together. But now, we have dinner, like I said, they love my husband. My husband sees them more as daughters.... It's become more of a thing where we'll meet each other. We'll go out for a drink, we'll go meet for breakfast, have brunch. Some of them are now

getting to the point where they're getting married, they're having babies...it becomes...very family-like.

The triathlon family is one that presents another theme, camaraderie. Triathlete K talked about the fact that she likes the camaraderie within the sport even though "You have many various backgrounds...everybody is the same out there...you know, running or racing – you get doctors, lawyers, Indian chiefs...but once you're out there, everybody's the same." This type of camaraderie is one that allows for people to build their lives around because they understand one another. This is the feeling that Triathlete J "wants to have forever" because it is not just about the recreation of the sport, it is about the lifestyle of the sport. People who succeed in triathlon are a "very very small part of the population when you consider there are 500,000 USAT members compared to 300 million people in America. So, I'd say we're just different and that's okay," said Triathlete G. In the end, Triathlete D found that when the race was completed, "It [meant] a lot to have that support out there from your fellow athletes".

The camaraderie among triathletes leads to having another theme under social support; that of encouragement. Encouragement is demonstrated in various ways. Sometimes encouragement goes to those who are interested in the sport. Participants found that allowing others to see them go through the process often encouraged them to take up the sport too. Other times, encouragement is from those who have already completed the race course on race day, as Triathlete J explain:

...in long course triathlon, when you get to 140.6 distances, there's this camaraderie where the people who won or placed in the top quartile, actually come back out to support or witness the people in the fourth quartile just trying to finish."

Encouragement also comes from those who are triathletes, themselves, but may not be racing on a particular day by going to the race to support one another. Black triathletes especially welcomed this as family, camaraderie and encouragement takes on a different hue.

There is an inherent desire for people to be among those who share similar backgrounds. This is true for the Black triathlete family that has found race sharing in race and culture. Several spoke of how social media groups like, Black Triathletes Association (BTA), have filled in a gap of support they did not previously have. “I’m usually the only Black person in a lot of the local races,” said Triathlete A, and E explained that “Most Black women are not out there...when you’re racing you’re the only one”. Thus, being a minority in a sport can mean you may be mistaken for one not racing, even if you are looking the part. Triathlete G explained:

For so long I felt like Moses in the desert, showing up to races and people saying, ‘Are you a volunteer?’ ‘Where do I park my car?... Here are my keys.’ And you’re like ‘Bitch, really? Don’t you see this tri kit?’ And you can’t do that when there’s like 30 Black people walking up there talking about, ‘Let’s get to the swim start.’ So there is power in unification and community. And I’m LOVING what BTA is doing. I’m loving what it’s doing for other Black triathletes.

“Knowing that people that I’ve met on Facebook are going to be [at a race] and I’m not going to be there alone makes me feel like okay, my tribe- it’s like my tribe,” said Triathlete D. Triathlete D also expressed:

I hate to say it but I never saw this many minorities participating in this type of sport. So, when I did meet this group (BTA) I was just inspired and every time I see someone and their posts I’m like ‘Wow!’ and I get so happy and I want to attend all the events and I want to be involved and I wanna be out there biking

and swimming with them.

Social support is not to be confused with socializing, however. Triathlete H spoke of the difference between the two while at a race. Since she is not affiliated with a specific triathlon group, her experience at races is different. She may do a, “little bit of socializing, [but] it’s not to the point where [she] feels that’s the place to make friends.” Therefore, the socializing aspect is not part of her motivation. She has friends who are not involved with triathlon, she wishes they were- or at least exercising, but her attempts to encourage them to be involved have been futile.

**Life meaning.** Life meaning is the final scale based on the original MOMS. The researcher hypothesized life meaning to be intrinsically regulated. The one theme under life meaning is the feeling of being complete. The feeling of completion crossed over age, distance, BMI and in this case, active status variables. Triathlete I intrinsically felt as though it was not just the aspect of triathlon that made her feel complete, because “When I’m not working out, I am not – I’m missing something. I’m not happy.” Triathlete F , who is in the process of recovering from a knee injury and is now discovering how much being a triathlete is part of who she is, supported her quote of feeling complete:

It’s like now, after competing – or doing triathlons for the last two years – if I don’t do a triathlon this year I won’t feel completely whole. You know I won’t feel whole. I have to do at least a couple races just to feel whole.

Triathlons are also the great neutralizer for life. Triathlete L said, “It gives my life more meaning. Instead of just being, you know, being a worker- being a person who just goes to work back and forth – this adds balance to my life.” Triathlete B was also reminded that:

You gotta remember your purpose and the why you’re here. It may not be tied solely to doing triathlons but it certainly helps to know that in addition to you

being the mother, to being the professional, that you're also this weekend athlete, this weekend warrior.

### **Qualitative Conclusion**

Qualitative analysis revealed the scales within the MOMS are not as easily defined into a regulated style simply based on the scale itself. Rather, the themes within the styles are what mitigate whether a scale is external, introjection, integration, identification or intrinsic. This section presents the analysis of the hypotheses based on the generalization of what the researcher understood about participants' personal values and beliefs. The researcher examined the regulatory styles, their definitions, and whether the hypothesized scales were supported by the participants' viewpoints.

**External regulated.** The SDT scales weight control and competition were hypothesized to be externally styled. Weight control was described by the women as either a necessity or a desire. Signified by weight regulation some were ordered by physicians and others encouraged themselves to lose weight due to medical issues. The women, whether they were ordered or encouraged to lose weight, took ownership of their need to do this. This was often indicated by the influx of their voices when talking about the seriousness of the matter during the interviews. Additionally, the participant's facial expressions often changed to that without a smile indicating a seriousness of their need to lose weight.

The effect of weight loss, however, expressed as the desire to be 'lean', thus giving a more defined look of one who is athletic. Being lean was perceived to be more physically attractive and although physical attractiveness was relative, every woman wanted to be considered attractive. For some it was in how their bodies appeared in the mirror, for another it was the



status they had achieved as a triathlete. Therefore, physical attractiveness presented as an external motivator.

Nutrition played a vital part in both weight regulation and physical attractiveness because what fuels a body makes a difference in how it looks and performs. Nutrition, therefore, is external and possibly introjection due to the need of making personal choices in fueling the body to know what works for each triathlete. Weight control is an external motive with possible regulation of introjection based on nutrition motives of individual triathletes.

The researcher found that two themes, family and encouragement, originally under the scale affiliation, to be externally regulated. Family was both external and intrinsic. Externally regulated 'family' were those who are in a triathlon group providing positive peer pressure to the triathletes. A noted saying among the BTA members was that once you get into the group you will 'drink the Kool-Aid'; meaning that seeing other group members competing and achieving goals motivated others to do the same. Encouragement was present and most often led to members first meeting through social media and then meeting in 'real person' at an event where members provide Sherpa services at a race. The encouragement also led to providing 'tastes of Kool-Aid' so that others would sign up to complete a Half-Ironman or Ironman. Encouragement, thus, appears to be a circular process.

Competition, however, presented as both an external and integration motivators depending on the context of the competition. The external regulation of competition occurs when a triathlete makes the conscious choice to rival against teammates or other triathletes in a race. This often involves making an effort to be faster than the next person. The women who had strategies for overcoming another triathlete enjoyed and often giggled at their thoughts of how they would view the other triathletes during a race. Competition also contained an element of integration of

setting a goal to achieve, essentially creating a personal and internal competition. All of the women expressed elements of competition, but not all expressed it openly. When asked if they were competitive, some women paused at the question. One triathlete wondered if she was to provide a 'diplomatic' answer because, according to her experience, being competitive was 'taboo'. At the reassurance that this research was seeking truth and there was not a wrong or right answer, the researcher received very open and honest answers where they most often came to this conclusion, on their own, that they enjoyed the idea of competition.

**Introjection regulated.** The researcher hypothesized the SDT scales recognition and self esteem to be styled through introjection. However, recognition was not a motivator for all but one participant. The majority of participants were not concerned about what others thought of their participation in triathlons and did not participate for approval. However, all agreed that they appreciated receiving recognition in the form of encouragement, compliments, respect, or motivation for other women to participate. Achieving different feats within the sport is cause for celebration but the level of celebration is not defined by the distance of the race, or whether the athlete placed in the race, but where in their triathlete career did they race. For example, the new sprinter who completed her first triathlon spoke of how much recognition she received just like the three time Ironman finisher. Both triathletes eyes' lit up with such pride and a smile cut across their faces, as though they could recall every encouraging word they received during training.

Although inspiration was an intrinsically derived motivator, the women described it as identification. They felt a sense of responsibility after inspiring others to do triathlons. It was as though after they chose this lifestyle, others were expecting them to stay in the life. Medals were a form of recognition that was seen as introjection as the medal served as 'proof' that they had

completed a course. These medals were most often displayed by the participants. They served as a reminder of what the participants had experienced in the past and also as a way to inform others of their accomplishment. In this way, medals are also be described as externally regulated because some triathletes would not participate in certain races if they knew they would not receive, at least, a finisher's medal.

Self esteem is an idea which can change over time and is built based on experience. The women in triathlon for a shorter period of time felt as though participation increased their confidence. All of the older women did not feel that triathlon affected their self esteem, through confidence, because they came into the sport having conquered esteem issues earlier in life. Fear was a theme which describes a certain paralysis in either training or during a race if it was not overcome. There were levels of fear of the water including: 1) fearing the pool; 2) fearing the deep end of the pool; 3) fearing the fresh open water; 4) fearing the animals (i.e. fish) that might be in the fresh open water; 5) fearing the saltwater; 6) fearing the bigger animals that might be in the saltwater. For the bike the two fears were falling off the bike or getting hit by a vehicle while riding the bike. With running, the fears of getting hit while running or not being fast enough to get away from a dog (that can happen in the city or the country) were of the biggest concern. And although it is regulated through introjection, it was the external activities which caused the fear. It was also the determination of completing the triathlon which assisted in overcoming the fear. Recognition and self esteem were not one dimensional regulated scales due to the differences in the types of themes.

**Integration regulated.** The researcher hypothesized the SDT scales of personal goals, health orientation, and psychological coping to be styled through integration. Every one of the participants found personal goals important. There was a sense of pride with setting goals and

achieving them. It was motivating to finish the course, no matter what occurred while out on the course. It was equally important to demonstrate improvement in one's personal finish time in one or all of the disciplines. Accomplishment, however, must be differentiated from finishing the course. The feeling of accomplishment that occurred after completing the race is one that was reported to carry into other parts of life. The theme of physical awareness represented health orientation. Several meaningful aspects related to triathlons were present within this theme. For example, there was a personal process of an awareness of change which can present as either external or intrinsic. Awareness was described as being integrated into their motive for training; once training started they could experience the effects physically, spiritually, socially and psychologically.

Psychological coping was also regulated through integration. Like health orientation, it involved knowing oneself and having the ability to navigate through situations; both related to triathlon and not related to triathlon. The women often reported using the physical aspect (i.e. health orientation) to handle anger and the stressors life brought. One of the three disciplines was a favorite or the 'go-to' form of exercise for the women. This is when they would receive some type of clarity to an issue or find resolve. Depression served as another theme whereas several women used the sport as a way to handle their depression. Those who consistently exercised noticed that they were less likely to be depressed in the future.

**Identified regulated.** Identified is the final form of extrinsic regulators which the researcher had not previously hypothesized to be a regulator among the SDT scales. Two themes, inspiration (under recognition) and transitions (under triathlete lifestyle) were analyzed to be identified regulators. The women spoke of how they were inspired to be triathletes and then recognized their own ability to be an inspiration; they experienced their autonomy of continuing

to practice the sport not just because of their own personal benefit, and recognized that others were drawn to also engage in the exercise activity because they saw the women's ability to do so. The transition of being a triathlete was also a recognition in the sense of owning the title of 'triathlete'. This was not as easily adopted by some of the women because of the more socially accepted and described viewpoints of what a triathlete looks like. However, as the women furthered their pursuit of adopting the lifestyle of a triathlete, they also came to identify themselves as a triathlete-regardless of their personal looks.

**Intrinsic regulated.** The researcher hypothesized SDT scales affiliation and life meaning as intrinsic. Affiliation was regulated as the women discussed their personal internal desire to be connected with people who were like themselves. The participants warmly welcomed having an affiliation with other triathletes. Even though several of the women discussed their biological family, there was a distinct difference between the connection they received from them and what they received from their tri-family. More often than not, a biological family member was not able to understand why the women competed. This did not mean they were unsupportive. Many family members are supportive because they support the beneficial lifestyle to which competing in triathlons can lead. But, the inability to identify with the triathlete is what would lead to the camaraderie the women had when they became part of a triathlon group.

The camaraderie that the women received from either their triathlon team members or those in their associations was one that could not be matched. These groups of people fully understood and were able to process the different aspects of triathlon. The motives could be extrinsic if the women were introduced to groups/associations by others. When the women discussed groups like BTA, it was their seeing people, who looked like themselves (i.e. Black) that was the motivating factor for them to join. Socializing, however, is not the same as social support.

Socializing was something that was conducted under the guise of 'having fun' and when a triathlete is preparing to race, 'fun' is not the goal. This does not mean that they do not have fun. But, in that moment of preparation, the focus is on the goal, not on making friends.

Life meaning is represented by the idea of feeling whole or complete due to being a triathlete. The women felt as though triathlons were the one thing they could control in their lives and this provided a meaningful choice in how they chose to live. They discussed the different 'hats' they wear, either as wives, partners or girlfriends, mothers, or professionals and how those positions did not necessarily provide a feeling of wholeness. This is due to those positions being ones of the provider, rather than of the recipient. They receive much from being a triathlete and this is what helps to complete their lives. The women felt that when participation was put on hold due to life or injury, they could tell that their lives were greatly affected. Although life meaning is intrinsic, affiliation has a more broad regulatory style which is its opposite, external. The researcher found that a tool essential to all of the women, spirituality, a theme under psychological coping, was intrinsic rather than integration. It did not matter what a person believed in – even if it was the 'spaghetti monster' – recognition to everything in life being connected to a being or universe greater than themselves was a necessity.

**Triathlon lifestyle.** The new theme of triathlon lifestyle emerged from the interviews. It is described as a 'motivation that is or is perceived to be sustainable over time, as opposed motivation that is temporal'. The lifestyle, itself, is a journey one takes when they begin the sport, continues through participation in the sport and looks forward toward aspirations for the sport in later life. The one theme which the researcher identified within the triathlon lifestyle is the lifespan of the sport. Similar to the thought of aging across the lifespan, triathlons are identified as a lifespan sport and previous studies suggest athletic performance can be maintained

at high levels through advancing age (Baker et al., 2006). Within the lifespan are steps that demonstrate participants' dedication to the sport. These are the continued addiction and consistent transition within the sport.

When beginning the sport, there are those who do are 'one and done'. This is a person who has likely checked off 'triathlon' from their bucket list. But, a person who 'catches the bug' has the potential to become a junkie who is addicted to the lifestyle. Although there is the phrase 'weekend warrior', as Triathlete B previously spoke of, the lifestyle of the triathlete warrior is one in constant preparation for the war. A 'weekend warrior' is one who prepares for a race and when they have completed that race, they are finished for the season. This does not mean they have adopted a lifestyle per se, but have adopted the necessary tools to get through a temporary race. The lifestyle triathlete, however, recognizes that after they have spent weeks or months to prepare for a race, they must continue to live this lifestyle because even after completing one race, the next race will be upon them. To continue to be successful, the triathlete's preparation becomes a lifestyle.

Some of the women of this study thought triathlon would be a onetime event in their lives, too, but they felt differently after their first experience. Triathlete I had 'completing a triathlon' on her bucket list. Triathlete C, too, as she recalled her first triathlon:

Oh yes, I caught the bug at the first one. You know when you're training for it and when you're in the midst of doing the triathlon (especially the swim portion for me) I said a lot of curses and said, 'I'll never do this again! Bucket list checked!'

Triathlete D felt the same way, "I love it. I got addicted to that sprint." For Triathlete G it was the end of the race that hooked her:

I saw the finish line and...I had WON- I was like last or whatever but... it felt like a party when I crossed the finish line. And I was like hooked- I was like I wanna do this for the rest of my life. And sometimes, it was not the participation that made the participants keep going, but rather being among the people and the experience of triathlon.

Triathlete F spoke of what happened in her first triathlon, “It was a relay- a tri. I couldn’t swim- because of medical issues so I ended up volunteering and I got hooked ever since. Got hooked.” After being ‘hooked’, the transition to self-recognition as a triathlete begins. For Triathlete E, the transition to recognizing her lifestyle change occurred when she came to respect what triathlon did for her beyond the physical.

When I first started it was just like ‘Yeah right. Ya’ll wanna pray afterwards, let’s pray and let me go on’. Seriously I did not really appreciate – did not recognize the healing of stress, of problem solving. It does so much for you. But, at the beginning? I didn’t recognize that because I had just started.

Triathlete I found that she began accepting that she would need to work harder to be better at racing, “Everything came back into place for me...I started to really find myself in my third season. I was like, I was such a junkie.” The usage of the words “being hooked” or “junkie” became words paralleled with “crazy.” For some, doing their first triathlon made them think they were crazy. As Triathlete C was swimming in her first triathlon, she said aloud, “Oh my God I’m crazy. If you could just, Lord Jesus, if you could get me through this – this is it!” And after she completed her first triathlon, the recognition she received the most was, “You did it. Proud of you. You’re crazy.” But Triathlete B recognized that being a part of this lifestyle and being part of the triathlon family is fine because, “It’s...encouraging that I’m not this crazy person. Here’s a



group of people that have a similar goal and so it's been encouraging me to continue and work on that. When everybody is crazy, nobody is."

**Lifespan participation.** Many women wanted to achieve participation across their lifespan. When the researcher asked if they would continue to be a triathlete as they age, all said yes. However, there were varying degrees to what they report they would do in their latter years based on desire and also what they perceived their bodies would be able to do as they get older. The younger women expressed their thoughts for continuing their lifestyle of being a triathlete. Triathlete G plans to continue racing but not at the Ironman level. Triathlete C wishes to prolong her life so that she can continue to run and bike well into her 80's. The lifespan practice of triathlon is for life extension. Triathlete D explains that this lifelong extension is "not only to me, but like I said earlier, my girls. They're going to see that, you know, mommy's doing things to live a long and healthy and fit, you know lifestyle." Triathlete C also felt as though being a triathlete was to prolong her life. Living the life of a triathlete is one that Triathlete F intends to keep because "it keeps [her] mind active."

The older women can see into their immediate future more clearly than the younger participants. Triathlete K, who recently turned 60, plans to race as long as possible. If she cannot run (due to bad knees), she will move to doing the Aquabike (swimming and cycling). She believes the life she leads now is preparing her for the future, "When I can't run anymore, I'll have that swimming to lean on." Triathlete I knows to listen to her body because, "it's a practice, it's going to be lifelong. I'm not going to hurt myself."

The lifestyle of being a triathlete involves a process of knowing the body changes with age thus possibly having an effect on the distance and number of triathlons completed in a given year. Aging does not mean quitting as all the women discussed doing triathlon well into their

later lives. They believe that continuously exercising, in preparation for triathlon, serves as a life extension. A summary of some, but not all, the qualitative results was placed earlier in this section and the rest of the results are more appropriately placed here as they form a logical lead-in to meta inference.

### **Mixed Method Inference**

The quantitative and qualitative results of the study provide a more comprehensive approach to understanding the general motives for midlife to older Black women. To minimize the threat to validity, the researcher reanalyzed data and the interpreted results demonstrate a concise and equal display of the quantitative and qualitative data. Additionally, basing the motive differences on age, BMI, and distance helped to give a more broad understanding of quantitatively how the participants of this study differ from those who previously took the MOMS. Finally, the addition of the qualitative interview guide was essential to understanding how the scales, within the general categories of the MOMS, were regulated.

Table 28 is a summary table which represents the compared and merged data. It focuses on the most significant scales in each general category and compares them to interview data. The range of the means for the sources of motivation was between one and six. For the purpose of understanding the impact that each of the scales, those with a range of one to four have been labeled (low), five to eight are mid impact (mid) and nine-12 have a high impact (high). The researcher applied these same concepts to the number of responses directed or related towards the scales but with a range of one and 12 since there were 12 women in the study.

Table 28 reflects that scales which the participants considered significant varied from the survey to the interviews. The four scales demonstrating differences included affiliation, psychological coping, life meaning and competition. Affiliation, psychological coping, and life

Table 28

*Analysis Mixed Method Inference*

Category	Scale	Survey Results	Interview Results
physical motives	general health orientation	more fit and improve health (mid)	health complications in family members motivated some to becoming triathletes, triathlon improved overall health (high)
	weight control	leaner look and control weight (high)	one woman from each group shifted the focus on weight control from a physical health to a triathlon performance perspective.
social motives	affiliation	socialize with triathletes and meet new people (mid)	camaraderie with other experiencing was important, meeting new Black triathletes at races was inspiring, social support and socializing different for those not affiliated with group (high)
	recognition	family and friends proud and earn respect of peers (low)	inspiring others of importance, respect is appreciated, not expected. Getting a finishers medal is the tangible type of recognition most desired. (low)
achievement motives	competition	compete with others and place in race (low)	competing with self more evident than competing with others, need to be 'in a place to be competitive' to place in race (high)
	personal goal	push limits and	setting a goal and

Table 28 con't

		compete with self (high)	achieving that goal was of interest. Improvement should occur with each race. (high)
psychological motives	psychological coping	time alone and concentrate on thoughts (mid)	each discipline provided opportunity to cope with stress and clarity with issues (high)
	self esteem	feel achievement and proud of myself (high)	low self esteem not an issue. Self confidence to complete races and becomes part of identity but is the 'cherry on top' not the building block. (high)
	life meaning	add sense to meaning of life and make life purposeful (mid)	triathlons give meaning to life as the great neutralizer, feeling of not being whole without doing the sport (high)

meaning all moved from being quantitatively mid level of importance to being of high importance to the women. The researcher found that competition was insignificant within the survey, but was of high importance among the interviewees. The varying types of competition may provide a greater explanation for this difference.

Socializing with triathletes and meeting new people was of mid level importance with the survey, but, during the interviews, the women discussed how seeing other Blacks at races were encouraging. Additionally, the camaraderie with other triathletes was important because these are the people who understand what it means to be committed to this sport. One interviewee did not feel as though socializing at an event was of importance. She stated that her focus was on the

race. However, she did not have an affiliation with any triathlon group so, her views were skewed from the majority of the triathletes.

Psychological coping consisted of having time alone and the ability to concentrate on thoughts. The participants of the survey felt these two motives were of mid level importance. However, when the researcher spoke with the triathletes, she noted that having time alone and concentrating on thoughts, during the race, is not what motivated them the most. Rather, it was the time before the races that allowed for time alone and concentration. Often, the women used their training time as a conduit for getting out of stressful situations or to prevent from verbally hurting others. They often had time to work through problems and come to solutions while exercising.

The two survey items adding sense to 'meaning of life' and 'make life purposeful', which the researcher found to be of mid level importance, supported life meaning. Triathlons provided a reason for the women to exercise. The spiritual aspect of triathlon made an impact on their lives to the point that being a triathlete was a form of religion on its own. Their purpose of being on this earth was not just wrapped in their jobs or families. It was wrapped in who they identified as with triathlons.

Competition was insignificant for the survey participants. But, the interviewees provided a greater explanation as to why this may be the case. The MOMS explains competition as competing with others and placing in the race. Neither of these items was of importance. It was during the interview the women revealed why competition was not important. The items in question did not ask about their competition with themselves. That item was found under personal goal and not competition. But, the women felt as though the two were related as there are personal goals to improve time within a triathlon and this is what they see as the competition.

**Age.** The experiencing results revealed the older women were more motivated in all four regulatory styles when compared to the younger groups. However, when speaking to the women, all had definite plans for continuing their participation in some type of sport as they got older. Both sets of women had experiences with meeting older women who participate in triathlons. These encounters shaped their ideas of continuing to participate into their 70's and 80's. The level of motivation between the two groups of interviewees was not more significant than the other. Both sets included women who were making plans to participate in their future and both sets had women who were more distinct in what those plans were. For example, Triathlete I knows that her knees will not allow her to continue racing the longer distances forever, so she knows she will move to Sprint and Olympic distances as she ages.

**BMI.** The quantitative results revealed the obese women were most motivated in all four regulatory styles. One distinct difference when moving from the normal, to overweight, to obese weight was the change in the intrinsic style. The women who were overweight were the least intrinsically motivated. The women, whom the researcher interviewed in this study, did not have the same lack of intrinsic motivation as those who only completed the survey. As a matter of fact, two of the overweight women, Triathletes K and G were highly motivated because of their plans of completing Ironmans for a first and third time, respectively. Additionally, Triathlete F, who was previously injured, could not wait to get back to training because she was experiencing withdrawal from training and the community.

**Distance.** When looking at the survey results, the greatest differences between the three variables were with the distances. Typically, there was a gradual increase in motivation as one raced the longer distances. However, the least motivated women were those who focused on the Half-Ironman distances in every regulatory style except for integration. Even those women who

had yet to complete a triathlon for the 2015 season had more external motivation than those who did the Half-Ironman. The qualitative results did not indicate that the women who were completing the Half-Ironman were any less motivated than the women competing at the other distances.

## **Conclusion**

While the demographics indicated that 78.8% of the participants fell into those 35-50 years old and 21.2% were 50 and older, the data analysis demonstrated that it was the older women who were overall more motivated by each of the regulators. During the interviews, the older women expressed their desire to continue participating in triathlons despite physical changes. Their age and these apparent changes provided them with a more clear sense of where they wanted to be years later. Their level of comfort of who they are was evident based on having time to accept who they were physically. This gave them confidence that was not as evident among the younger women.

The researcher developed a new theme, triathlon lifestyle, after conducting the interviews. This theme has a focus of not only participating in triathlons, but adopting the lifestyle that comes with being a triathlete. All the interviewed women believe they will continue doing some type of competition related to triathlons, although some feel that their distances may decrease due to anticipated physical age-related changes.

Based on the results of the BMI of the women, the majority (70%) were equally either of normal weight or overweight. Being 'more fit' was one of the greatest motivators among all of the women. However, it was the women in the obese category that demonstrated the most overall motivation for participating in triathlons. The women were well aware that their weight control had an effect on their ability to race at a quicker pace but, their weight did not determine how

they felt about who they were as triathletes. As the women described in their interviews, their motives for participation were most often aligned with weight regulation because of the unwanted health issues that often accompany being obese. They were all working toward being healthy, not necessarily thinner.

There were consistent overall age and BMI increases with the regulators; however, this was not the case with distance variable. Integration for the Half Ironman distance was the only regulator with a mean that was greater than the shorter distances and less than the Ironman distance. The Half-Ironman distance is the distance where many triathletes learn whether they are able to successfully complete a long distance, three part race. Many times it is this distance that helps to determine whether a person will attempt a full Ironman or not. Therefore, the need to have a more integrative regulation to training and preparation for the race is different than that when completing a Sprint or Olympic distance.

Although distance did not determine their level of competition, the interviewed women noticed there was not a question directly related to self-competition on the survey. Participants discussed the differences between competing with others in the race (which is not as motivating for some) and competing with themselves (which was a motivator for all those interviewed). Self-improvement truly motivated these women. Competition was not necessarily about being fast, but having the ability to endure. The women's endurance factor most often determined the success of any triathlon, but more for the longer distances of the Half Ironman and Ironman. The women who competed at these distances wanted to beat the clock and felt that while it was desirable not to come in last, it was more important to finish.

In the final chapter the researcher examines the results from the data analysis and critiques that which was learned from this study. The researcher also explained how this study relates to



those previously conducted and she provided recommendations for further research to improve that which was completed for this study.

## Chapter V

### Discussion

Black women comprise 13% of the women in the US but constitute 52% of inactive women leading to questions of how the other 48% are motivated to be physically active (Banks-Wallace & Conn, 2002; Kirchoff, Elliott, Schlichting & Chin, 2008; Landry & Soloman, 2004). These national health disparities for exercise levels among Black women led to examining the most extreme of athletes- Black triathlete women. The researcher utilized mixed methodology in this study to examine the motivations of triathlon participation among 121 Black women who were 35 and older in age. It explored the extent to which motives were extrinsic or intrinsic, as characterized by Self Determination Theory (SDT). SDT is a theory of human motivation that addresses issues such as self-regulation, psychological needs, life goals and aspirations and a host of other issues related to well-being and life domains (Deci & Ryan, 2008).

The researcher used the Motivations of Marathoners Scale for Triathletes (MOMS-T) as a survey to collect the motivational thoughts of the participants and formed six research questions to guide the analysis using ANOVA and MANOVA. The researcher then developed questions from the MOMS-T for semi-structured interviews which explored participants' thoughts of their motives and used the six research questions for thematic analysis of the descriptive and narrative data.

The remainder of this chapter provides discussion of the analysis including a summary of the quantitative, qualitative and mixed methods results. The study strengths and limitations are

presented leading to recommendations for future research. Finally, a conclusion and implications of the study results are presented.

### **Quantitative Discussion**

The analysis of the MOMS-T survey data revealed that the following three items yielded the highest mean scores for motivation: whether the women were motivated to push their limits; compete with themselves; or become more fit. Based on mean scores, the three least motivating items within the survey were: beating a new person; receiving compliments from others; and recognition. This suggests that the women's motivations were more personal in nature and were not motivated by others' views of their accomplishments.

Those items which were most motivating, within the MOMS-T survey, provided a base for the analysis of the SDT regulatory styles. The characteristics of women reporting the highest means for the four SDT regulatory styles were either older (50+), obese, or had completed triathlon distance of Ironman. Through the analysis the researcher learned that the SDT style of integration was the major regulator between age, BMI, and distance. This, thus, suggests that the women in this study who were either 50+, obese, or an Ironman, placed such high value in their triathlon participation of the sport that it has become integrated into their sense of self.

Next, the researcher evaluated the combinations of the independent variables (IV) Age, BMI, and Distance with the correlation between four SDT regulatory style dependent variables (DV) external, introjection, integration, and intrinsic motivation. Final analysis found age as the most likely individual predictor for motivation. The other variables, BMI and distance became significant predictors of the DVs as a group when they were also tested with age. However, the variables BMI and distance were not a significant influence in their separate univariate analysis. Therefore, when paired with one another, they remained insignificant. The results imply that no

matter the age of a Black woman, if she is motivated to participate in a triathlon, her ability to complete the goal is not dependent on her BMI or the distance she is competing. These two variables of BMI and distance are often the focus of competition among triathletes, but these analyses reveal they should not be considered as primary motivators. Neither BMI, nor distance, is synonymous with the motive to complete a triathlon.

Greater than 50% of the women who participated in this study demonstrated the sport of triathlon to relate more to integration in their lives than any other regulation. Many women felt that having an active lifestyle was important and their motive for participation was ingrained in their lives. Thus, external motives were not a necessity. The eldest women were the most motivated across the three weight categories, again indicating that in this study BMI was not a determinant of motivation. There was variation in integration with the variables distance and BMI with each weight having at least one large integration mean: normal weight at the Ironman distance, overweight at the Olympic distance and obese at the Sprint distance. These variations may indicate that one's weight is a determinant of how motivated a woman is to complete a specific distance.

### **Qualitative Discussion**

The researcher derived qualitative data analyses from the MOMS-T Interview Guide, which was designed to gather in-depth information about participation motivation in triathlons. Contrary to the researcher's expectations, the analysis revealed the nine scales within the MOMS-T are not easily defined by a single regulatory style based on the scale items. The MOMS-T scales of self esteem, health orientation, personal goal achievement, and life meaning were regulated by a single regulatory style (Figure 9). However, themes related to the scales

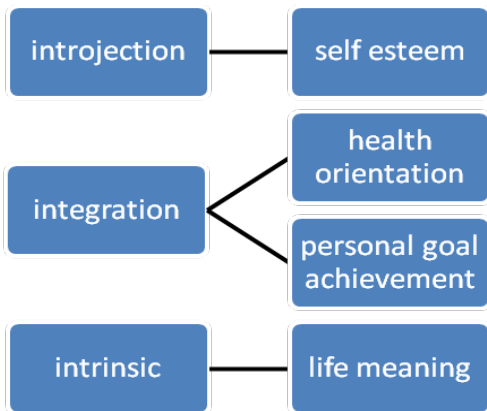


Figure 9. Scales with One Regulated Style.

weight control, recognition, psychological coping, affiliation, and triathlete lifestyle included multiple regulatory styles following the interviews (Figure 10).

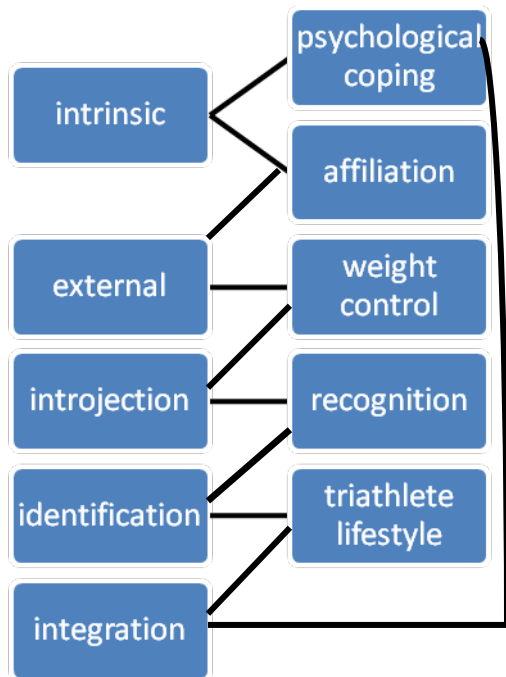


Figure 10. Scales with Two Regulated Styles Scales, including Weight Control, Recognition, Psychological Coping, Affiliation, and Triathlete Lifestyle were regulated by two styles.

**Self esteem.** Introjection regulated self esteem by the two related, but contrary themes, of confidence and fear. Based on the evidence, the researcher believes that self esteem contingent on the outcome of performance. The development of becoming a triathlete increased self esteem in the younger women. However, answers to interview questions about self esteem manifested differently for the older women as they revealed their confidence in body image as they aged. The one factor that influenced self esteem for all participants was mastery of fear over swimming.

**Health orientation.** Integration regulated health orientation, as demonstrated by a synthesis of identified meaningful health related aspects to triathlon. The theme, physical awareness, revealed common personal or familial health issues including histories of diabetes and high blood pressure. All the women were motivated to continue training by the understanding of the health benefits to the exercises .

**Personal goal achievement.** Personal goal achievement had the three integration themes of finishing the course, improvement and accomplishment. Although finishing the course may have begun as a ‘bucket list’ type of item for some women, after their first triathlon experience they were motivated to continue racing. The desire to improve encouraged some to continue racing, while the experience of not finishing a race in the allotted time was sometimes a motivator to improve their time and race again. It was noted that the accomplishment of achieving set triathlon goals also radiated or impacted other areas of their lives.

**Life meaning.** Life meaning had a complexity of themes that were intrinsically regulated. Some women reported that triathlons helped give them meaning and helped to add balance to their lives. When this balance was disrupted, the absence of any aspect of triathlon made the women feel incomplete. Intrinsic regulation is a form of self motivation, but injury makes this

self motivation challenging. Those currently injured and those who have been injured in the past spoke of the necessity of getting back into the sport because it is a part of their being.

**Psychological coping.** Both integration (extrinsic motivation) and an intrinsic regulator regulated psychological coping; and integration also regulated the two themes of depression and coping mechanisms. Several women managed their depression by integrating triathlete training into their lives. This training also provided types of coping mechanisms for situations in everyday life. Spirituality was intrinsically regulated and all of the women reported feeling there was a higher power that assisted in their training and execution of the races. The women considered training a form of practice where comfort, solitude and peace were found. It provided an opportunity to internally receive an inner wisdom and revelations were made about issues that could not be solved through external motives.

**Affiliation.** Affiliation was intrinsic and was regulated by camaraderie and family; however, family also demonstrated external regulation with encouragement. The women developed camaraderie as they internalized the importance of social support during different phases of triathlon. The intrinsic motive of creating a social network or having an affiliation with other triathletes created a sense of family, something that the women felt made their experiences as a triathlete more enjoyable. The triathlete family did not replace their biological family, who more often displayed motivation through words of affirmation, but provided an alternative place of understanding.

**Weight control.** Weight control had three themes: weight regulation and being physically attractive, which were externally regulated, and nutrition which was regulated through introjection. Several women began the journey of triathlon because of the need to lose weight.

The emphasis with weight regulation was not in weight loss as much as the desire to achieving a

lean frame to enhance their athletic performance. Being a triathlete did not guarantee weight loss, therefore, they believed weight did not limit them from participating but rather recognized that having a lower weight could make them a faster triathlete. Several triathletes reported that they do not stick to their nutritional plan after their racing season has ended. Thus, nutrition is an introjection regulator because the behavior is temporarily learned but is not continued outside of the triathlon season.

**Recognition.** Recognition was regulated by receipt of medals through introjection and inspiration through identification. Medals, which are Introjection regulated, provided the women with a sense of self-approval. Some women would not sign up for a race unless they knew they would receive more than a t-shirt or hat. The choice to register for a medal race is for self-recognition; however, displays of medals on social media following the race are for receiving recognition from others.

The triathletes learned that they became an inspiration to others which is consistent with the SDT regulation of identified. None of the Black women the researcher interviewed intended to be an inspiration originally, but they soon learned that they could encourage other Black women to participate in a triathlon. They identified with this is sense of responsibility to others in hopes their lives as triathletes would witness to the effects of participation in triathlon. They inspired family members, friends, and sometimes other triathletes with their abilities.

**Triathlete lifestyle.** The triathlete lifestyle, a new proposed scale within the MOMS-T, was regulated by identification and integration by the themes transitions and addiction, respectively. All the women expressed their continued desire to race in the sport as they age. They knew this after they completed their first triathlon. Constant transition occurs for the triathlete who seeks new challenges and it is through these transitions they become more experienced. However,



researchers have studied the identification as a triathlete due to the at-risk possibility of the sport becoming an addiction as opposed to a commitment to exercise (Youngman & Simpson, 2014).

Commitment to the sport requires long hours of preparation. The triathlete can spend between 10-20 hours weekly preparing for a race. This is in addition to their commitments to family, career, and community. However, when there is the opportunity for performance improvement the triathlete will find a way to make it work. For some, this meant temporarily sacrificing certain luxuries. For others, it meant choosing destination vacations that correspond with triathlon races to maximize family and triathlon time. Triathlons, therefore, have been integrated into their lives.

### **Mixed Method Discussion**

The philosophy of mixed methods, for this study, involved an understanding of “what works” in practice (Creswell & Plano-Clark, 2007). The nature of reality (ontology) for the women of this study was revealed following the interviews which had developed questions based on the quantitative survey (MOMS-T). The relationship between the researcher and that which was researched (epistemology) was congruent because of the previous practical knowledge of how to conduct the study with Black women triathletes and how to interpret the data from participants of both the quantitative and qualitative procedures. Therefore, when converging the two analyses the researcher was able to decipher points leading to distinct similarities and differences between the quantitative and qualitative results.

First, the similarities for both the quantitative and qualitative discussion results indicated those who were older, obese, or competing at longer distances were likely to be the most motivated. More specifically, the quantitative analysis of personal goal achievement revealed that personal goals were very important to the triathletes; with the theme of competing against

self demonstrating the highest mean (6.160) out of all 56 MOMS-T items. Similarly, the women whom the researcher interviewed discussed that to be better triathletes, goal setting became a necessity. All the women interviewed expressed importance of their motives with varied demeanor; their passion within the discussions cannot be quantified.

Second, differences in the two methods revealed the women were more motivated by recognition during the interviews than data results of the quantitative survey. Recognition had the lowest quantitative mean with compliments from others (2.167). However, the discussion of medals made receiving recognition more important; indicating the type of recognition makes a difference. The women were not concerned with receiving verbal recognition from family, friends, or unknown others, whereas receiving medals following the completion of a race was motivating for them. This type of self-earned recognition is not an inquiry within the MOMS-T survey and may warrant incorporation into a future version of MOMS-T.

A new potential MOMS-T scale of triathlete lifestyle also emerged during interviews. Qualitative analysis indicated that this related to how the sport has been integrated into the lives of some participants, while for some women it also indicated an addiction to the sport. Currently, there are no questions directly related to the diagnosis of addiction to the sport, however, language usage from some of the women indicated the possibility of addiction to the sport, rather than the adoption of a triathlete lifestyle. Quotes including those such as: “I love it. I got addicted to that sprint.” and “...my third season, I was like, I was such a junkie,” expressed a different emotional connection to the prospect of continuous participation. Understanding whether the life of a triathlete revolves around the sport or if the sport is integrated into their life may make the difference between one who is addicted and one who has a ‘triathlete lifestyle’.

The relation of the SDT regulators to the MOMS-T scales of this study were first hypothesized by identifying the definitions of the SDT regulators and assessing how they related to descriptions of the MOMS-T scales. Analysis identified integration as the strongest SDT motivational regulator when considering both the quantitative and qualitative methods. Quantitatively, more than 50% of the women believed it was the integration of the sport which motivated their participation. Qualitatively, integration regulated four of the MOMS-T scales (psychological coping, health orientation, personal goal achievement, triathlete lifestyle). The regulated styles within the SDT revealed more about how women are motivated. While the MOMS-T, alone, provided more of the 'what' motivates a person to participation, the regulated styles provided the 'how' of motivation. It was the 'how' that may help researchers with developing a more concrete infrastructure dedicated to the increasing the number of women who exercise. Figure 11 is a visual model of how the regulators and scales of both methods relate.

While previous researchers who conducted studies on Black women and exercise sought to understand the barriers to participation (Ingram, Wilbur, McDevitt, & Buchholz, 2011), this researcher's study focused on motivations. The researcher found that body image, a previously reported barrier (Brown & Collins, 2009) to be an accepted trait as the participants aged. This acceptance of body image may be because body image related factors change over time or because those factors may have less of an impact in older women than in younger women. Swimming has been previously reported as a barrier to exercise among Black women due to sociocultural myths (Im et al., 2011) and realities (Huebschmann, Campbell, Brown, & Dunn, 2015). However, the thought process of swimming among these women evolved from being a barrier to that of a motivation because without the ability to swim, they could not be triathletes.

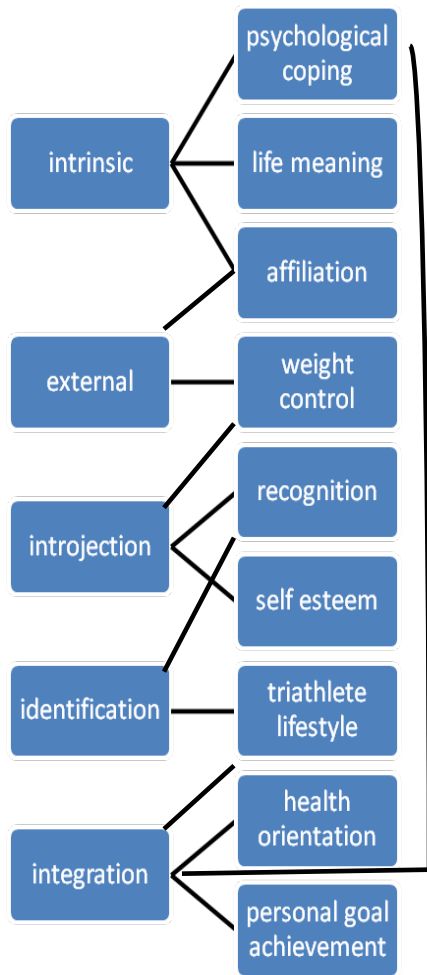


Figure 11. Regulators and their Styles.

The researcher's findings in this study consistently supported the paradox of being a metabolically healthy (Ortega et al., 2013, p. 391), while being overweight, or obese. Ortega posited that it is possible to be 'metabolically healthy' if, aside from weight, a person has adequate levels of good cholesterol, low triglycerides and low blood pressure. Over 55% of the women reported being either overweight or obese. Although the researcher did not calculate the basal metabolic rate (BMR) of the women, the average number of calories a woman would likely burn during the training and completion of their triathlon demonstrates that participation in extreme exercise, like triathlon, was physically possible for these Black women who are

overweight or obese. The special category of triathlon for ‘Athenas’ (165+ lbs) demonstrates a more widespread recognition that individuals who are not of normal BMI may successfully participate in triathlons.

Cronan and Scott (2008) revealed a transformative effect for women who participated in a triathlon training program, where the women assessed moved from struggling with their body image to recognizing the strength they embodied. Like Cronan and Scott (2008), some younger women in this study believed that participation aided in the development of an acceptance of their body image. The older women of the study felt as though their bodies were more beautiful in the present as triathletes, when compared to when they were younger, sedentary women.

Finally, Black women triathletes in the present study indicated a high quantitative alignment with affiliation, which complemented that of the findings of Cronan and Scott (2008), underlining the point that triathletes indicated a ‘sense of belonging’ from participation in the sport. Triathletes were also found to possess a strong social component to the triathlon subculture (Virnig & McLeod, 1996). This was confirmed during interviews as the women spoke of the importance of being part of local triathlon groups and larger organizations like Black Triathletes Association.

### **Study Strengths**

The researcher, with this study, was the first to examine if the scales within the MOMS-T are determined by the regulators of the Self Determination Theory (SDT) based on gathered data. In the realm of exercise, SDT has most recently been used to assess motivation in gymnasts (Kipp & Weiss, 2015), orienteers (Lundqvist & Raglin, 2015) and football players (Zuber, Zibung & Conzelmann, 2015; Readdy, Raabe, & Harding, 2014). However, none reviewed the regulators of the SDT to understand how they affect motives among the athletes. This is one of the first

studies that examined Black triathletes and the effects of regulators on motives. The assessment of how multiple socio-cultural constructs in exercise among aging Black women and how they relate to health (Plescia, Herrick, & Chavis, 2008), physiological (Booth & Zwetsloot, 2010), psychological (Windle et al., 2010), and social (Peters, 2012) motives demonstrated the regulators of the SDT are complex.

The researcher found that using a valid survey of motivational factors for triathletes (i.e. MOMS-T) was also a strength. Findings were representative of the study population and comparable to previous studies (Croft, Gary, & Duncan, 2007; Lamont & Kennelly, 2012). Although other researchers had used the MOMS in the quantitative study on triathletes (Lovett, 2011) it had not yet been transformed into an interview guide for the purpose of conducting interviews. The mixed-methods approach provided additional qualitative explanations of the survey answers thus demonstrating that using a secondary method of gathering data through interviews, as a follow up to gathering survey data was important to provide further understanding about certain constructs, such as the lack of assessment of triathlon medals as a form of external recognition that was not measured in the MOMS-T but was important to these triathletes.

### **Study Limitations**

The study limitations including participant representativeness, potential misrepresentation, methodological issues and potential researcher bias was a limitation to this study. While findings provided useful information, this study presented the complexity of the sport from physical, social, achievement, and psychological aspects. First, the uniqueness of this population limits the ability for this study to be generalized as participants in this study were triathletes and may not be representative of the total population of Black women who exercise. Likewise, only midlife

and older Black triathlete women were considered for this study. Thus, one way to check the impact of this study on gender or ethnicity would be to compare the demographics of participants with those who are triathletes overall.

Another limitation was to the methodology of the study. The sampling, resulted in participant self-selection which suggested that those who participated in this study may differ from those who did not. The quantitative data collection was only made available through computer access. It is possible that the sampling techniques used through computer access did not reach as many subjects as possible. Because the researcher used convenience and snowball sampling techniques, triathlon affiliated networks were unable to verify the legitimacy of samples' participation rates. Due to self-reporting, the demographic survey asked questions could have been answered incorrectly (e.g. weight/height).

The researcher's interpretation formed the base for the development of the matches between the MOMS-T scales and descriptions with the associated styles of the SDT, thus allowing potential bias. Only 37% of the 320 Black women who were contacted by USA Triathlon (USAT) chose to participate in the MOMS-T survey. Yet, the majority of the participants (70.2%) were registered as members with USAT. The additional participants, invited via social media and list servs, may not be USAT members. The triathletes that participated in the quantitative survey may have different motives from triathletes who chose not to participate.

Self-report bias of BMI or reported triathlon distances are also limitations of the study. Social desirability bias is a possibility due to inaccurate self-reported estimates of body weight (Ambwani & Chmielewski, 2013) and physical activity rates (Brenner & DeLamater, 2014). It was not feasible for the researcher to objectively verify the self-reported information in this national survey. Previous studies have indicated that self-reported BMI tends to be lower than

actual BMI, as people tend to underestimate weight and overestimate height (Roth, Allshouse, Lesh, Polotsky, & Santoro, 2013); in addition, Black women are particularly likely to miscalculate their weight (Hendley et al., 2011). If BMI was overestimated across the study sample, it is possible that the sample of 'normal' BMI women also included some women who were truly overweight or obese, and that could potentially lead to false negative findings of study group differences across BMI categories. However, researchers have cited BMI as having limitations as a health indicator due to not taking bone mass and muscle within weight measurement and studies have reported race/ethnic group bias when estimating body fat and BMI percentages (Gallager, et al., 2000; Deurenberg-Yap, 2000; Jackson, et al., 2002).

Additionally, the researcher was unable to know if the maintenance of exercise has been consistent. There were a greater number of participants ages 35-49 years than women who were 50 years and older. This disparity could be due to the lower number of older women (50+) that do triathlons. Finally, all the participants were amateur triathletes, not professional, even though three self-identified as professional. Since the researcher assumed that all participants would answer the questionnaire measure truthfully, it can only be assumed that these three women were unaware of the standards set by USAT to qualify as 'professional triathlete' status.

Even though the MOMS-T is validated through other studies (LaChausse, 2006; Lovett, 2011) this study uncovered a gap in the scale items for competition. The validated items of competition are currently unidimensional, not rating self-competition. Self-competition was a theme revealed by several of the participants in the interview process. Not rating this theme limits the type of data analysis that could be captured in understanding the multidimensional effects between competition against others and self-competition.



The 12 women the researcher interviewed for the qualitative portion of the study were aware of the researcher's triathlon experience. The validity of the qualitative portion of the study is questionable due to the possibility of a self-fulfilling prophecy. This would mean the researchers' interpretations of the participants' motives were correct, even if the qualitative hypotheses not (Merton, 1948). Thus, the participants' answers could have been skewed. Additionally, one of the interviews was not conducted face to face, but rather on the telephone, making it impossible to incorporate any relevant non-verbal communication.

One researcher completed the analysis of the qualitative portion of the study who then sent the results of the analysis coding to two external reviewers with previous training for qualitative coding. The reviewers were not present during the interviews and had not read the transcripts; their knowledge of the interviews and the original derivation of the codes are limited. However, based on the extensive notes and development of coding provided, the level of inter-rater reliability for the analysis was strong.

### **Recommendations for Future Research**

This is the first study to assess the physical, social, achievement and psychological motives of midlife to older Black women triathletes. Overall, results from this study established that there are differences in the motives among Black women triathletes contingent on their age, BMI and, distance of the triathlon. The results from this study and findings from previous work in this area (Lovett, 2011) demonstrate that additional research evaluating motivation with older female triathletes is warranted.

Recommendations to the design of the study focus on sampling, time and funding. Sampling demonstrated to be the greatest limitation and greatly impacts the findings and replication for future studies. Only those who were currently exercising and midlife or older had access to the

data collection. A survey could be expanded to understand how sedentary people begin their exercise program. Additionally, surveying younger participants may assist in understanding motivation from a lifespan view. A comparative analysis of older to younger participants may provide understanding of motives from those who were in athletics before the passing of Title IX to those able to take advantage of the law since 1972 ([www.titleix.info](http://www.titleix.info)).

Triathlon affiliated networks were unable to verify the legitimacy of samples from participation rates as the quantitative survey was only available through computer access. Time and funding were also factors as mixed methods research requires more time than doing a quantitative or qualitative study, alone. Conducting the face to face interviews with participants for this study required the researcher to travel. To potentially increase the number of triathletes and decrease time and cost, data collection could be made available on-site, at race venues. These venues will also be able to verify participation at these particular races.

The researcher identified two distinct types of recognition (self-serving and that received from others) in this study. However, the researcher does not know if the type of recognition impacts motivation. Future research may benefit from a focus on designing an intervention based on two groups' social motives and learning if receiving extrinsic recognition, like continuous social support and encouragement plus the knowledge of receiving a medal, motivates triathletes more than those who would not receive those types of extrinsic motivators.

In terms of major themes, the analyses from this study revealed the importance of respecting triathletes who do not look like the 'typical' triathlete. The self-identified triathletes of this study knew that others do not necessarily recognize them as triathletes because they were not the typical White, slender framed, male. Individuals recognized by USAT who are in the Athena (165+ lbs) and Clydesdale (220+) categories have increased in numbers over the past several

years. Due to their increasing numbers, USAT has designated an annual separate national competition for the groups. Conducting a study on these triathletes could reveal currently unknown information related to motivation among overweight triathletes. This research could further examine how appearance or body image affects motivation outcomes.

The results of the study lay the foundation for considering expanding the scope of analysis related to the SDT. Multiple studies, in varying disciplines, have used the SDT to understand motivation. However, as cited earlier, self determination has been most applied to sport, education, and health care (Brummett et al., 2011; Deci & Ryan, 2008). Therefore, to understand how people are further motivated, the SDT regulators and how they intersect with motives need additional mixed methods analysis.

Another way to expand the scope of analysis of the SDT and possibly affect policy related to exercise would be to use of the Short Form (SF-12) Health Survey in additional studies ([www.hss.edu/physician-files/huang/SF12-RCH.pdf](http://www.hss.edu/physician-files/huang/SF12-RCH.pdf)). The SF-12 has most recently used to evaluate the validity and reliability of a questionnaire developed to measure the influence of competitive sport participation on lifespan health and well being (Sorenson et al., 2015). The use of such an instrument in combination with surveys of exercise levels and motivation, such as the MOMS and MOMS-T, may help in understanding the effect of exercise on health status.

Another important aspect of this dissertation study was the utilization of a modified version of the MOMS survey to assess motivation. Researchers have previously conducted the MOMS to understand the motives of ultramarathoners (Doppelmayer & Molkenhain, 2004; Hanson, Madaras, Dicke, & Buckworth, 2015). The results of that study indicated, like the triathletes of this study, that personal goal achievement is of significant importance. However, the MOMS had not been tested in ethnic populations of athletes who perform triathlons in longer-distances;

therefore, it was unknown whether groups, like marathoners and ultramarathoners, regulate the same way as longer distance triathletes. The majority of the triathletes of this study participated in Sprint distances (48%) with a lower number in the Olympic (12%), Half Ironman and Ironman distances (equally 14%). Future researchers could focus their studies on a larger number of those who participate in the longer distances. Having a larger number of survey participants may make a difference in the significance. Additionally, the information could be used to compare analysis with other extreme athletes, like various distance marathoners.

The MOMS-T survey could also be revised and revalidated after the inclusion of questions relevant to the newly emerged 'triathlon lifestyle' construct. This construct provided a separate dimension of understanding motives from a life perspective, rather than the health, achievement, social, and psychological constructs previously assessed. Additionally, the interviews of this study also confirmed what Lovett (2011) discussed for expanding analysis to the MOMS-T by measuring the fun or enjoyment as motives for participating triathlons. Finally, the MOMS-T could also be strengthened through the addition of several aspects which were revealed in the qualitative portion of this study. There are currently three questions related to life meaning, none which directly relate to spirituality. The interviews revealed spirituality as a theme which impacted all of the women in this study.

The MOMS-T Interview Guide uniquely assessed secondary data by interviewing the women about their motives. Using the MOMS-T in a qualitative form provided the researcher with additional information on motives (i.e. triathlon lifestyle) not found in the quantitative survey. The previous study by Lamont and Kennelly (2012) also found interview categories of motivations not previously added within the nine scales of the MOMS. This study's finding of triathlete lifestyle, similar to that of the category 'enduring commitment' identified by Lamont

and Kennelly, could be incorporated into the MOMS-T to understand the role of lifestyle in other triathletes. The need for understanding why an athlete chooses to make racing a lifestyle choice is of interest considering 50% or more of women who begin supervised exercise programs drop out within three months (Kiovula, 1999). The researchers could put the interview questions in quantitative form and added to the MOMS-T to provide a broader spectrum of what is learned about motivation among athletes. The results of the data in this study demonstrated the possibility of success in additional studies that use the mixed methods approach.

Finally, as this study focused on midlife to older Black women, future studies could be expanded to include midlife to older Black men. Including Black men in future studies would provide an opportunity to compare men and women and delineate outcomes of motivation among the population. Also, including triathletes of other ethnic backgrounds either within the United States or other countries would increase the knowledge of triathletes' motives.

## **Conclusion**

In 2012, Blacks were reported the least active racial/ethnic group with 40.9% of adults meeting the recommended aerobic and muscle strengthening national guidelines (USDHHS, 2014). Additionally, most Black women have an insufficient amount of activity or are inactive due to sedentary lifestyles (CDC, 2012). While previous studies have focused efforts of understanding exercise through barriers, this study focused on the influential motives of a group of Black women who exercise.

This study added to the literature in this topic area (Masters & Ogles, 1995; Croft, Gray & Duncan, 2007; Deci & Ryan, 2008; Lovett, 2011; Lamont and Kennelly, 2012) by identifying that integration was the most prevalent regulator in midlife to older Black women triathlete participants. While the item, 'more fit' was one of the greatest motivators among all of the

women, those who were obese demonstrated the most overall motivation for participating in triathlons. As the triathlon distance increased, the researcher identified a more integration regulation approach to motivation for training and preparation. However, it was the older women who were most motivated by all four of the analyzed regulators. Gerontologists, whose research agendas are most aligned with seeking ways to add longevity to a lifespan, would find that information most relevant. Researchers may require further understanding on how the motives affect older minority women to develop sustainability of an intensive training commitment with competing demands and longevity.

Additional research is warranted in the field of understanding the physical, social, achievement and psychological motives among triathletes as a fluid process. Understanding how motives are regulated among triathletes may assist in understanding the inconsistencies of motive importance from this study's quantitative and qualitative results. While encouraging more women to exercise – or even TRI, (a word with double entendre, among triathletes to mean to “try” and also to participate in a triathlon) having intrinsic motivation and regulation by the extrinsic motivator integration is most likely to motivate a successful lifestyle change to exercise.

A goal of Healthy People 2020 (USDHHS, 2008) is to increase the number of adults who engage regularly in aerobic exercise. The U.S. Department of Health and Human Services (DHHS) created the National Physical Activity Plan to promote exercise among inactive persons (DHHS, 2010) in response to the gap in health promotion for the adult population. This report offers recommendation to improve activity in communities through the use of relevant research and development of programs. The group, TRI It For Life, is one program assisting women in their journey for starting exercise, and even competing in an all women's triathlon ([triitforlife.com](http://triitforlife.com)). Additional community support groups around specific events or distances

could, perhaps, adopt practices which would encourage more women to be engaged to participate in exercise. Triathlete communities, such as those which the researcher discussed in this study, provide infrastructures and programs to increase the number of women who participate in exercise adding to the research that previously established the positive link between physical activity and its impact on health among adults.

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## Appendix A

### MET Formula

$$1 \text{ MET} \equiv 1 \frac{\text{kcal}}{\text{kg} * h} \equiv 4.184 \frac{\text{kJ}}{\text{kg} * h}$$

One MET is the ratio of the rate of energy expended during aerobic exercise to the rate of energy expended at rest or 1 MET is the rate of energy expenditure while at rest or sleeping.

An exercise with a MET value of 5 expends 5 times the energy used by the body at rest. If a person performs an aerobic exercise, with a MET value of 5 for 20 minutes, he or she has done  $5 \times 30 = 150$  MET-minutes (or 2.5 MET-hours) of aerobic exercise. This is the nationally recommended amount of minutes for moderate levels of aerobic exercise in one week's time.

## Appendix B

### MOMS General Categories, Scales, and Descriptions

General Category	Scale	Description
Physical Health Motives	General Health Orientation	Improve health, prolong life, stay physically active
	Weight Concern	Look leaner, control weight, reduce weight
Social Motives	Affiliation	Meet people, visit with friends, share group identity
	Recognition	Earn respect, feel pride from others, earn recognition
Achievement Motives	Competition	Compete with others, be faster than friends, placement achievement
	Personal Goal Achievement	Improve speed, push myself, improve overall time
Psychological Motives	Psychological Coping	Be less anxious, distraction from worries, improve mood
	Self Esteem	Improve self esteem, improve confidence, sense of achievement
	Life Meaning	Find purpose of life, belong with nature, feel peace

\*Adapted from Ogles and Masters, “General Categories, Scales and Sample Items for the Motivations of Marathoners Scales” (1993).

## Appendix C

### MOMS Scales, SDT, and Associated Style

MOMS Scale	MOMS Descriptions	SDT Keywords	SDT Associated Style
General Health Orientation	Improve health, prolong life, stay physically active	Synthesis of goals	Integration
Weight Concern	Look leaner, control weight, reduce weight	External reward	External
Affiliation	Meet people, visit with friends, share group identity	Enjoyment	Intrinsic
Recognition	Earn respect, feel pride from others, earn recognition	Ego Involvement	Introjection
Competition	Compete with others, be faster than friends, placement achievement	External Rewards	External
Personal Goal Achievement	Improve speed, push myself, improve overall time	Synthesis	Integration
Psychological Coping	Be less anxious, distraction from worries, improve mood	Congruence	Integration
Self Esteem	Improve self esteem, improve confidence, sense of achievement	Self esteem	Introjection
Life Meaning	Find purpose of life, belong with nature, feel peace	Inherent satisfaction	Intrinsic

## Appendix D

### Quantitative Research Subject Information and Informed Consent Form

TITLE: Motives for Participation in Triathlons among Black women: A Mixed Methods Study

VCU IRB NO: HM 20003713

#### PURPOSE OF THE STUDY

The purpose of this study is to build understanding of the motivations of midlife and older Black women to participate in triathlons. The number of triathletes has increased in recent years, overall, and among Blacks. To help us in this study, we are asking for your participation in the following questionnaire and survey.

#### STUDY DESCRIPTION

If you choose to participate in this study, you will be asked to first read and electronically mark your understanding of the informed consent form. You will be directed to complete a 19 question demographic questionnaire. Following the questionnaire, you will be asked to complete a 56 item survey. The total time for completing this will be which approximately 30 minutes. By selecting the CONSENT option below, you are indicating that you have read and understand the contents of this consent form.

#### PARTICIPANT CRITERION

If you identify yourself as a Black woman, older than age 36 by the end of this calendar year, have completed a triathlon (not just a relay) in the past two years (between 2012-2014), reside in the United States and currently exercising, you are welcome to read and sign the informed consent form and continue to the questionnaire and survey.

#### RISKS AND BENEFITS

There are no known risks or harm associated with participation in this study. There may be direct benefits from participating in this study through learning about your own perceptions for motivation to participating in triathlons.



## COSTS

You will not be charged for participation in this study. USAT members will receive a race belt by Fuel Belt. There will be a random drawing for all participants who complete the surveys for a Trek FX bike. The winner will be responsible for finding a Trek retailer who will fit the cyclist for their bike.

## CONFIDENTIALITY

The information you provide will remain secure. However, note that information sent through the Internet is confidential only to the extent the Internet is secure. Any part of this study that is published or presented will include not identify participants by name, but rather by a pseudonyms. Your participation is voluntary and you may refuse to participate or stop at any point without consequence. All documents and information relating to this study will be kept confidential, unless required by federal, state, and local laws and regulations to be disclosed. Data in this study may be reviewed by Virginia Commonwealth University and its researchers, the principal researcher, the student researcher, the student researcher's colleagues (if applicable), and/or university governmental agencies to assure proper conduct of the study and compliance with regulations.

## VOLUNTARY PARTICIPATION AND WITHDRAWAL

You are not required to participate in this study. You may also choose not to answer particular questions within the survey. You may also end the survey without penalty.

## QUESTIONS

In the future, you may have questions about your participation in this study or the results of the study. Questions may be directed to either:

Candace S. Brown, Student Investigator

Virginia Commonwealth University

PO Box 980228

Richmond, VA 23298

Phone: (804) 828-1565

Email :brownc22@vcu.edu

OR

Dr. J. James Cotter, Principal Investigator

Virginia Commonwealth University

PO Box 980228

Richmond, VA 23298

Phone: (804) 828-1565

If I have any questions concerning your rights as a research participant contact:

Virginia Commonwealth University

Office for Research Subject Protection

PO Box 980568

Richmond, VA 23298

Phone: (804) 828-1565

## Appendix E

### Qualitative Research Subject Information and Informed Consent Form

TITLE: Motives for Participation in Triathlons among Black women: A Mixed Methods Study

VUC IRB NO: HM 20003713

#### PURPOSE OF THE STUDY

The purpose of this study is to build understanding of the motivations of midlife Black women to participate in triathlons. The number of triathletes has increased in recent years, overall, and among Blacks. To help us in this study, we are asking for your participation in the following interview.

#### STUDY DESCRIPTION

If you choose to participate in this study, the student investigator will schedule a time and place where the interview will be conducted. Before beginning the interview you will be asked to first read and sign your understanding of the informed consent form. The interview will consist of a series of open ended questions. The total interview time will be approximately 60 minutes. The interview will be audio recorded for the purpose of complete analysis.

#### PARTICIPANT CRITERION

If you identify yourself as a Black woman, older than 36 years of age by the end of this calendar year, have completed a full triathlon (not just a relay) in the past two years (between 2012-2014), reside in the United States and currently exercising, and have previously completed the questionnaire and survey, you are welcome to read and sign the informed consent form.

#### RISKS AND BENEFITS

There are no known risks or harm associated with participation in this study. There may be direct benefits from participating in this study through learning about your own perceptions for motivation to participating in triathlons.

#### COSTS

You will neither be charged nor paid any fee for participation in this study.

#### CONFIDENTIALITY

The information you provide will remain secure. However, note that information sent through the Internet is confidential only to the extent the Internet is secure. Any part of this study that is published or presented will include not identify participants by name, but rather by a pseudonyms. Your participation is voluntary and you may refuse to participate or stop at any point without consequence. All documents and information relating to this study will be kept confidential, unless required by federal, state, and local laws and regulations to be disclosed. Data in this study may be reviewed by Virginia Commonwealth University and its researchers, the principal researcher, the student researcher, the student researcher's colleagues (if applicable), and/or university governmental agencies to assure proper conduct of the study and compliance with regulations.

#### VOLUNTARY PARTICIPATION AND WITHDRAWAL

You are not required to participate in this study. You may also choose not to answer particular questions within the survey. You may also end the survey without penalty.

#### QUESTIONS

In the future, you may have questions about your participation in this study or the results of the study. Questions may be directed to either:

Candace S. Brown, Student Investigator

Virginia Commonwealth University

PO Box 980228

Richmond, VA 23298

Phone: (804) 828-9060

Email :brownc22@vcu.edu

OR

Dr. J. James Cotter, Principal Investigator

Virginia Commonwealth University

PO Box 980228

Richmond, VA 23298

Phone: (804) 828-1565

If I have any questions concerning your rights as a research participant contact:

Virginia Commonwealth University

Office for Research Subject Protection

PO Box 980568

Richmond, VA 23298

Phone: (804) 828-1565

## Appendix F

### Motivations of Triathlon Participation Questionnaire

1. What is your name or a pseudonym you prefer?
2. What is your email address?
3. What is your age ?
  - a. 4. What is your highest level of education?
    - a. High school
    - b. Some college
    - c. College degree
    - d. Some graduate school
    - e. Graduate Degree
    - f. Doctoral Degree
    - g. Other Please specify\_\_\_\_\_
5. Where is your city and state of residence?
6. What is your relationship status?
  - a. single
  - b. partnered
  - c. married
  - d. divorced
  - e. widowed
7. How many individual triathlons have you completed in the past two years?
8. How many total individual triathlons have you completed in your lifetime?
9. What distance do you most compete?
  - a. Sprint



b. Olympic

Half-Ironman

d. Ironman

How many of these types of races have you completed?

Type	Number
Sprint	
Olympic	
Half-Ironman	
Ironman	

11. What category of a triathlete do you compete?

a. amateur

b. professional

12. When did you complete your most recent triathlon? Please provide the name of the triathlon, the month and year you participated.

13. Are you currently preparing for a triathlon? (Yes/No)

\* If yes, please answer number 13, if no, you may move to question 14.

14. What length of course is the triathlon for which you are currently training?

15. What form of exercise are you currently doing? (fill in the blank)

16. What is your weight (lbs) and height (ft/in).?

## Appendix G

### Motivations of Marathoners Scales for Triathletes (MOMS-T) Survey

Please rate each of the following items according to the scale below in terms of how important it is as a reason why you compete in triathlons. A score of 1 would indicate that the item is “not a reason” for competing; a score of 7 indicates that the item is a “very important” reason for competing.

A Most

Not a

Important

Reason

Reason

1      2      3      4      5      6      7

1. \_\_\_\_\_ To help control my weight
2. \_\_\_\_\_ To compete with others
3. \_\_\_\_\_ To earn respect of peers
4. \_\_\_\_\_ To reduce my weight.
5. \_\_\_\_\_ To improve my running, cycling, and swimming speed.
6. \_\_\_\_\_ To earn the respect of people in general.
7. \_\_\_\_\_ To socialize with other triathletes.
8. \_\_\_\_\_ To improve my health.
9. \_\_\_\_\_ To compete with myself.
10. \_\_\_\_\_ To become less anxious.
11. \_\_\_\_\_ To improve my self esteem.
12. \_\_\_\_\_ To have something in common with other people.
13. \_\_\_\_\_ To add a sense of meaning to life.

14. \_\_\_\_\_ To prolong my life.
15. \_\_\_\_\_ To become less depressed.
16. \_\_\_\_\_ To meet people.
17. \_\_\_\_\_ To become more physically fit.
18. \_\_\_\_\_ To distract myself from daily worries.
19. \_\_\_\_\_ To make my family or friends proud of me.
20. \_\_\_\_\_ To make my life more purposeful.
21. \_\_\_\_\_ To look leaner.
22. \_\_\_\_\_ To try to run, cycle and swim faster.
23. \_\_\_\_\_ To feel more confident about myself.
24. \_\_\_\_\_ To participate with my family or friends.
25. \_\_\_\_\_ To make myself feel whole.
26. \_\_\_\_\_ To reduce my chance of having a heart attack.
27. \_\_\_\_\_ To make my life more complete
28. \_\_\_\_\_ To improve my mood.
29. \_\_\_\_\_ To improve my sense of self-worth.
30. \_\_\_\_\_ To share a group identity with other triathletes.
31. \_\_\_\_\_ It is a positive emotional experience.
32. \_\_\_\_\_ To feel proud of myself.
33. \_\_\_\_\_ To visit with friends.
34. \_\_\_\_\_ To feel a sense of achievement.
35. \_\_\_\_\_ To push myself beyond my current limits.
36. \_\_\_\_\_ To have time alone to sort things out.

37. \_\_\_\_\_ To stay in physical condition.
38. \_\_\_\_\_ To concentrate on my thoughts.
39. \_\_\_\_\_ To solve problems.
40. \_\_\_\_\_ To see how high I can place in races.
41. \_\_\_\_\_ To feel a sense of belonging in nature.
42. \_\_\_\_\_ To stay physically attractive.
43. \_\_\_\_\_ To get a faster time than my friends.
44. \_\_\_\_\_ To prevent illness.
45. \_\_\_\_\_ People look up to me.
46. \_\_\_\_\_ To see if I can beat a certain time.
47. \_\_\_\_\_ To blow off steam.
48. \_\_\_\_\_ Brings me recognition.
49. \_\_\_\_\_ To have time alone with the world.
50. \_\_\_\_\_ To get away from it all.
51. \_\_\_\_\_ To make my body perform better than before.
52. \_\_\_\_\_ To beat someone I've never beaten before.
53. \_\_\_\_\_ To feel mentally in control of my body.
54. \_\_\_\_\_ To get compliments from others.
55. \_\_\_\_\_ To feel at peace with the world.
56. \_\_\_\_\_ To feel like a winner.

## Appendix H

### MOMS Modified Directions and Statements for Triathletes (MOMS-T)

### Original Directions

Please rate each of the following items according to the scale below in terms of how important it is as a reason for why you run. A score of 1 would indicate that the item is "not a reason" for running; a score of 7 indicates that the item is a "very important reason" for running; and scores in-between represent relative degrees of each reason.

### Modified Directions

Please rate each of the following items according to the scale below in terms of how important it is a reason why you compete in triathlons. A score of 1 would indicate that the item is "not a reason" for competing; a score of 7 indicates that the item is a "very important" reason for competing.

Item Number	Original Statements	Modified Statements
5	To improve my running speed.	To improve my running, cycling, and swimming speed.
7	To socialize with other runners.	To socialize with other triathletes.
22	To try and run faster.	To try and run, cycle, and swim faster.
30	To share a group identity with other runners.	To share a group identity with other triathletes.

## Appendix I

### Motivations of Marathoners Scales for Triathletes (MOMS-T) Interview Guide



The following document represents the semi-structured interview proposed for this study. It has been adapted from the original Motivations of Marathoners Scales (MOMS) and received direction from one of the original authors of the MOMS, Dr. Kevin Masters. Bracketed words are representative of the sentence structure, however, are not part of the original MOMS. The researcher will read the questions to the interviewee and also provide a copy of the questions for reference.

The researcher will state the following: “I will ask you several questions that pertain to your participation in triathlons.”

How long have you been competing in triathlons?

How did you get started in competing?

Do you anticipate continuing competing as you get older?

(older participants 51+) What has motivated you throughout the lifespan to continue competing?

(older participants 51+) How do you think your motives have changed throughout your time?

Next, the researcher will state the following: I’m going to read a series of statements that pertain to a certain topic within the MOMS-T you have previously completed. After I read the statements to you I will ask you to consider the statements as you answer a few questions.”

I. The first series of statements are in reference to HEALTH ORIENTATION.

“I choose to participate in triathlons....”

8. To improve my health.

14. To prolong my life.

17. To become more physically fit.

26. To reduce my chance of having a heart attack.

37. To stay in physical condition

44. To prevent illness.

In consideration of the statements you have just heard, do you feel that participating in triathlons has affected your overall health? What is your definition of “physical condition”? You may use the statements as references while answering the question.

II. The second set of statements are in reference to WEIGHT CONTROL

“I choose to participate in triathlons...”

1. To help control my weight

4. To reduce my weight.

21. To look leaner.

42. To stay physically attractive.

Does participating in a triathlon help to control your weight? How has participating helped to reduce your weight? How do you interpret the phrase “to stay physically attractive?” You may use the statements as references while answering the question.

III. The third set of statements are in reference to your PERSONAL GOALS.

“I am motivated to participate in triathlons ...”

5. To improve my running, cycling, swimming speed.

9. To compete with myself.

22. To try to run, cycle, and swim faster.

35. To push myself beyond my current limits.

46. To see if I can beat a certain time.

51. To make my body perform better than before.

How do your personal goals within the sport affect your motivation to participate? You may use the statements as references while answering the question.

IV. The fourth set of statements refer to your level of COMPETITION.

“My motivation for participating is.....”

2. To compete with others.

40. To see how high I can place in races.

43. To get a faster time than my friends.

52. To beat someone I've never beaten before.

With regards to competition, do you feel any of these statements describe part of your motivation during participation? How so? You may use the statements as references while answering the question.

V. The fifth set of statements place value in RECOGNITION within the sport.

“I am motivated to participate...”

3. To earn respect of peers.

6. To earn the respect of people in general.
19. To make my family or friends proud of me.
45. [So] people look up to me.
48. [Because it] brings me recognition.
54. To get compliments from others.

Does the possibility of recognition effect your motivation to participate? What type of recognition have you received from others? How did that make you feel? You may use the statements as references while answering the question.

VI. The sixth set of statements are in regards to your AFFILIATION with triathlons.

“I am motivated to participate in triathlons...

7. To socialize with other triathletes.
12. To have something in common with other people.
16. To meet people.
24. To participate with my family or friends.
30. To share a group identity with other triathletes.
33. To visit with friends.

Does the social aspect of affiliation with a group affect your motivation? Are you a part of a training group? Why or Why not? (If yes) How does being a part of this group affect your level

of motivation and participation? You may use the statements as references while answering the question.

VII. The seventh set of statements relate to PSYCHOLOGICAL COPING mechanism associated with motivational reasons for participation.

“My motivation is connected to my coping ability so I am able...”

10. To become less anxious.

15. To become less depressed.

18. To distract myself from daily worries.

36. To have time alone to sort things out.

38. To concentrate on my thoughts.

39. To solve problems.

47. To blow off steam.

50. To get away from it all.

Do any of these psychological coping strategies motivate you to participate in triathlons? How do these statements relate to your psychological coping of everyday life? What problems have you resolved as a result of your motivation to participate? You may use the statements as references while answering the question.

VIII. The eighth set of statements are meant to understand how motivation effects your SELF ESTEEM

“I am motivated to participate in triathlons...

- 11. To improve my self esteem.
- 23. To feel more confident about myself.
- 29. To improve my sense of self-worth.
- 31. [Because] it is a positive emotional experience.
- 32. To feel proud of myself.
- 34. To feel a sense of achievement.
- 53. To feel mentally in control of my body.
- 56. To feel like a winner.

How has participation affected your self esteem? What role does your motivation to compete play in consideration of your achievement? How has your self-worth been related to your participation? You may use the statements as references while answering the question.

IX. The ninth set of LIFE MEANING statements are meant to provide a deeper element to your motivational pursuits of participating in triathlons.

“I am motivated to participate in triathlons....”

- 13. To add a sense of meaning to life.
- 20. To make my life more purposeful.
- 25. To make myself feel whole.

27. To make my life more complete.

31. [Because] it is a positive emotional experience.

32. To feel proud of myself.

34. To feel a sense of achievement.

53. To feel mentally in control of my body.

56. To feel like a winner.

What is the meaning of life in reference to participation? What purpose does participation serve?

You may use the statements as references while answering the question.

## Appendix J

### Interview Contact Form



Contact name (or pseudonym): \_\_\_\_\_ Visit \_\_\_\_\_ Skype \_\_\_\_\_

Contact date:

Today's date:

Written by:

Site:

1. What were the main issues or themes that struck you in this participant?
2. Summarize the information you got (or failed to get) on each of the target questions you had for this participant.
3. Anything else that struck you as salient, interesting, illuminating or important in this participant?
4. What new (or remaining) target questions do you have in considering the next participant?

## Appendix K

### MOMS-T Survey Items Descriptive Statistics

Source of Motivation	N	mean	SD	min	max
control_weight	120	4.700	1.986	1	7
compete_others	120	3.242	1.932	1	7
earn_respect_peers	120	2.617	1.691	1	7
reduce_weight	119	4.176	2.154	1	7
improve_speed	119	5.244	1.600	1	7
earn_respect_people	119	2.395	1.514	1	7
socialize_triathletes	120	4.567	1.814	1	7
improve_health	119	5.983	1.372	1	7
compete_self	119	6.160	1.112	1	7
less_anxious	118	3.119	2.089	1	7
improve_selfesteem	120	3.308	2.161	1	7
common_others	120	2.625	1.710	1	7
meaning_life	120	3.708	2.047	1	7
prolong_life	118	5.025	1.883	1	7
less_depressed	119	2.798	2.048	1	7
meet_people	119	3.790	1.961	1	7
more_fit	119	6.059	1.188	1	7
distract_worries	119	3.261	2.064	1	7
famfriends_proud	118	2.754	1.719	1	7
life_purpose	119	3.580	1.977	1	7

Source of Motivation	N	mean	SD	min	max
leaner_look	119	4.773	1.955	1	7
tri_faster	120	5.425	1.504	1	7
more_confident	120	4.192	2.104	1	7
participate_famfriends	119	3.185	2.083	1	7
feel_whole	118	2.737	1.874	1	7
reduce_heartattack	120	4.500	2.268	1	7
life_complete	119	3.286	1.953	1	7
improve_mood	119	3.807	2.001	1	7
improve_self_worth	117	2.752	1.916	1	7
share_identity	119	3.311	1.817	1	7
positive_emotionexper	120	5.392	1.546	1	7
proud_myself	120	5.500	1.534	1	7
visit_withfriends	119	3.286	2.017	1	7
feel_achievement	120	5.733	1.401	1	7
push_limits	120	6.125	1.206	1	7
time_alone	119	3.513	2.016	1	7
stay_physicallyfit	120	5.800	1.370	1	7
concentrate_thoughts	120	3.567	1.886	1	7
solve_problems	117	3.145	1.899	1	7
place_in_race	120	3.175	2.053	1	7
sense_belonging_nature	120	2.783	1.834	1	7

Source of Motivation	N	mean	SD	min	max
physically_attractive	120	4.600	1.920	1	7
faster_than_friends	120	2.267	1.592	1	7
prevent_illness	119	4.807	1.941	1	7
people_admire	118	2.424	1.697	1	7
beat_time	119	3.933	2.170	1	7
blow_steam	120	3.458	2.025	1	7
recognition	118	2.263	1.577	1	7
time_alone_world	120	3.033	1.974	1	7
get_away	119	3.050	1.913	1	7
body_perform_better	120	5.450	1.539	1	7
beat_new_person	117	2.034	1.531	1	7
mental_control	118	4.364	2.024	1	7
compliments_others	120	2.167	1.525	1	7
peace_with_world	120	2.950	1.918	1	7
feel_like_winner	120	3.783	2.231	1	7

## Appendix L

### Themes and Regulators

themes	regulator of SDT
weight regulation	external
physically attractive	external
nutrition	external/introjection
competition	external/introjection
inspiration	identification
medals	introjection
confidence	introjection
fear	introjection
finishing the course	integration
improvement	integration
accomplishment	integration
physical awareness	integration
coping mechanism/ strategy	integration
spirituality	intrinsic
family	intrinsic/external
camaraderie	intrinsic
encouragement	external
feeling complete	intrinsic
catching the bug	integration

themes	regulator of SDT
transitions	identification
aging	integration



## **Vita**

Candace Safiya Brown was born in St. Louis, Missouri, United States. She obtained her Bachelor of Science in Human Development and Family Studies, with a concentration in Aging and Adulthood from Pennsylvania State University in 2000. She then obtained two Master degrees, the first in Education with a concentration in Adult Learning and Development from Cleveland State University, in 2002, and the second, a Master of Arts degree in Gerontology from the University of Southern California, in 2009. Candace received the Deans Doctoral Student Fellowship Award (2010), Commonwealth Award in Allied Health (2011) and the AD Williams Scholarship Award, (2011, 2012, 2013) while completing her doctorate at Virginia Commonwealth University.