

EFFECTS OF MEDIA MESSAGES ON DISORDERED EATING DEVELOPMENT
AMONG FEMALE COLLEGIATE DISTANCE RUNNERS

by

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Abstract

This study was an examination of the determinants of disordered eating development among female collegiate distance runners. More specifically, the study examined the impact of thinness-emphasizing and thinness-promoting messages disseminated by mass media and running-specific media, and how those messages affected disordered eating among a sample of female collegiate distance runners. It also examines current female collegiate distance runners' attitudes toward disordered eating, subjective norms from referent individuals close to female collegiate distance runners regarding disordered eating, and female collegiate distance runners' perceived behavioral control regarding disordered eating—which was divided into various internal and external control factors either inhibiting or facilitating disordered eating among them.

The study was qualitative in nature and assumed a multi-method approach. It included an online, anonymous, self-administered questionnaire among 166 current NCAA Division I female distance runners; four small, confidential focus groups with current NCAA Division I female distance runners from four different teams; and 16 in-depth interviews with professional distance runners, dietitians, coaches, physicians, and sports psychologists. The study sought to answer four research questions—each based on an element of the study's guiding theory, the theory of planned behavior (Ajzen, 1991). Overall, the study found media messages, attitudes, subjective norms, and various internal and external control factors all facilitated disordered eating among NCAA Division I female distance runners. Based upon these findings, the study offers recommendations for practitioners in the field of health communication, coaches, academic institutions with cross country and track teams, and female collegiate distance runners.

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Chapter 1 - Introduction

Disordered eating is a public health concern prevalent in Western industrialized nations (Hoeck, 1995) that may completely destroy the physical, mental, and emotional lives of those affected by it. In the United States, approximately 24 million people are believed to suffer from disordered eating (National Association of Anorexia Nervosa and Associated Disorders, Inc., 2011), although the actual figure is likely larger, as disordered eating is grossly underreported. Young women are more susceptible to and affected by disordered eating than any other population, as evidenced by the fact that 90 to 95 percent of sufferers are female, and 95 percent are between the ages of 12 and 25.8 (Hesse-Biber, Leavy, Quinn, & Zoino, 2006; NAANAD, 2011). Disordered eating is difficult to diagnose and treat, yet boasts the highest mortality rate of any mental illness (NAANAD, 2011). From the perspectives of those affected, disordered eating is described as self-induced torture; a prison sufferers erect themselves yet cannot escape. They suffer physically, mentally, and emotionally, yet the majority of them are reluctant to seek help (Cachelin & Striegel-Moore, 2005).

Disordered eating etiology is complex and multi-faceted in nature (Hildreth, 2008). Some literature exists which presents the case for disordered eating having a genetic component (Klump, Gobrogge, Perkins, Thorne, Sisk, & Breedlove, 2006; Slane, Burt, & Klump, 2011). Multiple psychological, environmental, and sociological factors combine in its development. Low self-esteem is widely regarded as the dominant premorbid personality trait (Byrne & McLean, 2002; Engel, Johnson, Powers, Crossby, Wonderlich, Wittrock, & Mitchell, 2003; Hulley & Hill, 2001). Depression (Abbate-Daga, Gramaglia, Marzola, Amianto, Zuccolin, & Fassino, 2011; Petrie, Greenleaf, Reel, & Carter, 2009) or other forms of psychopathology (Gapin & Petruzzello, 2011; Hellmich, 2006), dieting (Heatherton & Polivy, 1992; Hsu, 1997),

disturbed family relationships (Tozzi, Sullivan, Fear, McKenzie, & Bulik, 2003) and adverse sexual experiences (Palmer, Oppenheimer, Dingon, Chaloner, & Howells, 1990) may also trigger its onset. Personality traits such as introversion, conscientiousness, intelligence, and high achievement standards (Duker & Slade, 1988) are common among sufferers. All factors considered, disordered eaters are often (quite perplexingly) straight-A students and incredibly talented young women with admirable drive and focus.

Entertainment, news, and advertising media are often credited with the encouragement of body dissatisfaction and disturbed eating habits among females (Harrison, 2001; Williams, Thomsen, & McCoy, 2003). Internalization of the media's so-called "thin ideal" or "cult of thinness"—a bombardment of unrealistic beauty and body type ideals targeting young females—is believed to contribute to the formation of these unhealthy thoughts and behaviors (Engeln-Maddox, 2006; Hesse-Biber, et. al., 2006). The tragedy of this reality is that the media clearly possess an undeniable influence over females at risk for disordered eating development that is both powerful and undeniable. Some research suggests the media currently utilize that influence to perpetuate the problem rather than to prevent or mitigate it. The National Eating Disorders Association (NEDA, 2011) suggests this may be due in part to the fact that disordered eating is extremely difficult for the media to address. NEDA expresses concerns about addressing disordered eating in the media due to its graphic nature and the difficulty of presenting it in a manner that ensures it is not accidentally glorified; and, consequently, emulated by viewers.

While the media may face some difficulty in addressing the issue of disordered eating appropriately, history suggests they do possess the potential to address it appropriately in the future and have a positive impact. The media currently play and have historically played an integral role in many public health campaigns (Schiavo, 2007), often acting as an important

agent of awareness or motivation for behavior change. For example, the controversial *truth* multimedia anti-tobacco campaign aimed at adolescents is believed to have deterred tobacco usage among 450,000 teens between 2000 and 2004 (Farrelly, Nonnemaker, Davis, & Hussin, 2009). Efforts aimed at combating disordered eating are also emerging across various media, although not quite as prominently. Disordered eating has graced news headlines (Medical News Today, 2011) and surfaced in multimedia campaigns such as the 2004 *Dove* Campaign for Real Beauty, which portrayed images of women multivariate in age and body type promoting self-esteem and positive body image (Bissell & Rask, 2010). Documentaries, such as Jean Kilbourne's 1979-2010 Media Education Foundation *Killing Us Softly* films (Media Education Association, 2011) and NOVA's 2000 *Dying to be Thin* (NOVA, 2011) are additional media examples that bring disordered eating into focus and discuss its dangers. Today, disordered eating's media presence has made tremendous strides. It seems to have emerged from "the unfamiliar realm of isolated clinical cases to a place of importance in our public discourse and popular media" (Hesse-Biber, et. al., 2006, p. 209).

Problem Statement

While the media's advances in disordered eating coverage are certainly celebratory, they are far from perfect. The media have neglected to address a specific group of young women that is perhaps more affected by and at greater risk for disordered eating than any other population: female collegiate distance runners (Atlanta Journal Constitution, 2007).

It doesn't take much more than a few minutes at an NCAA Division I women's cross country meet to see that this group is adversely affected by the illness at a rate staggeringly higher than nearly any other population. A great majority of the runners dressed to compete are grossly underweight. Many lose consciousness before finishing races. Teammates can be spotted

watching the races, sidelined by anemia, stress fractures, or any of a number of medical complications associated with malnutrition. The sport is full of athletes who surface as freshman phenoms, then mysteriously fall off the charts or discontinue running as they get older. Among those who continue to compete, fighting disordered eating often becomes an all-consuming battle. Those who make a commitment to stay healthy and respect themselves face pressure to conform and to sacrifice their long-term consummate health for immediate results. They find themselves amid a world in which unhealthy behaviors are commonly overlooked, ignored, or justified within the context of their sport. In some cases, they are even encouraged and praised.

Recently, the media have brought attention to health concerns that specifically affect female athletes. For example, the American Academy of Orthopedic Surgeons and the National Athletic Trainers' Association recently collaborated on a public service announcement aimed at educating female athletes on ACL injury (*momsTeam*, 2011). The issue of disordered eating among female athletes has certainly not been ignored by the media. Starting in 1988, the NCAA initiated communication efforts aimed at addressing disordered eating among its female athletes, which included informational videos, symposiums, handbooks, posters, and public service announcements aired during NCAA programming, among other items (NCAA Nutrition and Performance History, 2011).

The media have addressed the issue as it relates to female distance runners. Two of their storied battles with disordered eating—Vanderbilt distance superstar Whitney Spannuth's (Grossman, 1996) and high school standout Alex DeVinny's (Scott, 2006)—graced news headlines, directing public attention in the direction of women's distance running briefly. *ESPN* currently has an online blog aimed at female cross country runners addressing specific various pertinent issues in their sport, disordered eating being one of them (Leet Smith, 2010). However

disordered eating still persists among female collegiate athletes, and at increasing rates (Dill, 2006). A survey of NCAA athletes suggests it is considered a “major area of concern” by NCAA female athletes across a wide range of sports today (NCAA Nutrition and Performance History, 2011).

The media’s communication efforts are not alone. Colleges and universities have identified disordered eating as an important issue among athletes, and advances have been made in the infrastructure at many individual institutions to prevent and/or mitigate it. Literature suggests that a reported 30 percent of NCAA Division I athletic programs have registered dietitians on staff (Rockwell, Nickols-Richardson, & Thye, 2001), and 50 percent of NCAA Division I athletic programs have eating disorder policies (Dill, 2006). However, no data are available to date on the usage or effectiveness of such individuals or programs, and studies have revealed that only 31 percent of coaches even broached the topic of disordered eating with their athletes, a statistic that offers little hope for success at the present moment (Troy, Hoch, & Stavrakos, 2006).

The purpose of this study was to examine the effect of various determinants on disordered eating development among female collegiate distance runners. Specifically, the study examined a sample of NCAA Division I female cross country runners’ attitudes, subjective norms, and perceived behavioral control. It also explored the topic among a sample of professional runners, coaches, dietitians, physicians, and sports psychologists. The study was informed by the theory of planned behavior (Ajzen, 1991), which purports that the aforementioned variables (i.e., attitudes, subjective norms, and perceived behavioral control) combine to influence behavioral intention; and, consequently behavior.

Ancillary purposes of the study include providing a comprehensive look at disordered eating in the NCAA Division I distance running environment; adding to the existing knowledge on both distance running and distance running as separate entities; contributing to theorizing and research; and informing the health communication field with information necessary for the construction of an intervention aimed at female collegiate distance runners.

Significance/Justification

The findings of this study are intended to inform the health communication field and provide necessary information and recommendations for the construction of future interventions targeting this population. The study adds to the existing knowledge on female collegiate distance runners' unique struggle with disordered eating. They are a population unlike any other, and a comprehensive study such as this must be performed for individuals outside this group to even vaguely understand the temptations they face with this deadly disease and/or initiate efforts to aid them.

NCAA Division I female distance runners are members of an elite culture few can relate to or understand without having experienced it. Like non-athlete college peers, they are susceptible to the stress of college life, which includes factors such as increased autonomy, social pressure, and academic stress. As athletes, their stress is amplified by athletic-specific factors, such as long practices, missing class for competitions, and mandatory meetings and events. However, their training environment is the factor believed to add an immense amount of pressure to be thin, which often results in disordered eating. Female collegiate distance runners are immersed every day in an environment that is often guilty of placing undue importance on food, eating, and body weight, and consequently equating thinness with athletic success. There is an undeniable relationship between these variables in their sport, thus making the pursuit of thinness

more attractive to them than to other populations and putting them at higher risk for disordered eating development.

A key significance of the study is that it is informed by personal experience. As a former female collegiate distance runner myself, the researcher has witnessed firsthand the damage disordered eating can have on both the affected runners and those close to them. She has observed how disordered eating becomes a social norm within individual teams and within the distance running environment as a whole. The researcher has felt the pressure to conform to it, and been ridiculed for refusing to. Upon examining the literature, she was surprised at how underrepresented our sport is in academia, when it is clearly in dire need of attention in this area. It is the researcher's sincere hope that this study sheds some light on the parallel cultures of distance running and disordered eating and that the research results are put to use by health communication practitioners, coaches, and institutions.

A second key significance of the study is that data were collected directly from current NCAA Division I female collegiate distance runners in the form of quotes, narratives, and experiences. The study assumed a qualitative approach to explore and understand the real issues at the root of the problem. Data were collected from NCAA Division I female distance runners in two stages. First, they completed online, self-administered questionnaires. Select members of four different NCAA Division I teams then voluntarily participated in small, confidential focus groups with the researcher. Coaches, dieticians, sports psychologists, and physicians also contributed data by voluntarily participating in one-on-one in-depth interviews. The reasoning behind utilizing a multi-method approach to data collection was to inform the study from diverse perspectives—including the perspectives of those closest to the issue—thus providing as

comprehensive and detailed a depiction of the distance running/disordered eating culture as possible.

The study is organized as follows: Chapter 2, which follows, is an exhaustive review of the literature, including existing research on the determinants of disordered eating development among this population, female collegiate distance runners' unique vulnerability to it, and the theoretical framework. Research questions are included in this chapter. Chapter 3 details the methodology. It includes a justification of the qualitative approach, a detailed description of the sample population, the sample selection method, the data collection method and the data analysis process. Chapter 4 includes the results of the study, which are based directly on the research questions presented in Chapter 2. They are divided by themes that emerged in the data analysis process. Chapter 5 includes a detailed discussion of the research findings presented in Chapter 4—also based on the research questions from Chapter 2—and includes theoretical implications of the findings. This chapter also includes conclusions, and recommendations for health communication practitioners, coaches, female collegiate distance runners, and institutions seeking to prevent and/or mitigate the issue of disordered eating among female collegiate distance runners. Recommendations for future research related to the topic and study limitations are also discussed. The primary intended audience of the study is health communication practitioners, and the primary population it is intended to benefit is female collegiate distance runners. On a broader scale, it is also intended to benefit distance runners at other competitive levels, as well as coaches, dietitians, athletic trainers, sports psychologists, and the distance running culture as a whole.

Chapter 2 - Review of the Literature

This study is an examination of the determinants of disordered eating development among female collegiate distance runners with the intention of informing the health communication field about this issue for the use of future campaigns and interventions. This chapter defines disordered eating and explicates it in detail, presenting its dangers as well as misconceptions that exist about it within the distance running community. It explicates how female collegiate distance runners as a population whole are uniquely affected by it, providing reasons why they are at such higher risk than other groups and describing how the culture of distance running and the culture of disordered eating are so physiologically, psychologically, and behaviorally parallel to one another.

It introduces readers to the debate on media effects and how this debate is applied in the field of health communication field to the issue of disordered eating. It includes a detailed look at the media's effects on disordered eating development among female collegiate distance runners. It then proceeds to present factors that act as moderators reinforcing media messages and encouraging disordered eating among female collegiate distance runners. These factors—which include attitudes, subjective norms, and perceived behavioral control—are presented within the context of the study's theoretical framework, which is also discussed in this chapter. Research questions based on the study's key constructs (i.e. media, attitudes, subjective norms, and perceived behavioral control) are presented in this chapter as well.

Disordered Eating

Disordered eating is an umbrella term for a psychological, physiological, and emotional illness characterized by “unhealthy weight control attitudes and behaviors” (Vardar, Vardar, & Kurt, 2007, p. 142) that “meet some but not all of the diagnostic criteria for anorexia nervosa and

bulimia nervosa” (Beals, 2004, p. 16). Disordered eating is more common than anorexia or bulimia (Currie, 2010), and carries a higher crude mortality rate (at 5.2%) than either of them (NAANAD, 2011). It is often referred to as a “subclinical eating disorder” (SCED) or Eating Disorder Not Otherwise Specified (EDNOS) by professionals (Sundgot-Borgen, 2005). While disordered eating is not at the clinical level, it is imperative it be addressed, since it is considered the primary precursor to clinical eating disorders (Drinkwater, Loucks, Sherman, Sundgot-Borgen, & Thompson, 2005; Milbrandt Marchand, 2007; Sundgot-Borgen & Torstveit, 2010; Thompson & Sherman, 2005; Vardar, et. al., 2007). Disordered eating causes many of the same negative health symptoms its clinical counterparts anorexia and bulimia, since disordered eaters engage in the same behaviors anorexics and bulimics do, but at below threshold levels. For example, Beals and Manore discovered in their 2000 study that female collegiate athletes engaging in disordered eating displayed the following psychological, physiological, and behavioral characteristics, all of which are diagnostic criterion for anorexia and/or bulimia: (a) preoccupation with food, energy intake, and body weight; (b) distorted body image and body weight dissatisfaction; (c) undue influence of body weight on self-evaluation; (d) intense fear of gaining weight even though at or slightly below (~5%) normal weight; (e) attempts to lose weight using one or more pathogenic methods (i.e., excessive exercise, self-induced vomiting, enemas, or laxative abuse, or diuretic abuse); (f) food intake governed by strict dietary rules, accompanied by extreme feelings of guilt and self-hatred upon breaking a rule; (g) absence of medical disorder to explain energy restriction, weight loss, or maintenance of low body weight; and (h) menstrual dysfunction (Beals & Manore, 2000).

Disordered eating is an integral part of the female athlete triad, a series of three interrelated health concerns to which female athletes are uniquely susceptible. The triad was first

defined by the American College of Sports Medicine in 1997 as disordered eating, amenorrhea (the absence of three or more consecutive menstrual cycles; ACSM, 1997), and osteoporosis (Lebrun, 2002; Cobb, Bachrach, Greendale, Marcus, Neer, Nieves, Sowers, Brown, Gopalakrishnan, Luetters, Tanner, Ward, & Kelsey, 2002; Dill, 2006; Thompson & Sherman, 2005). In 2007 the definition underwent revision (Kawaguchi, 2008; Zach & Smith Machin, 2011) and is currently defined as “a spectrum of interrelationships among energy availability, menstrual function, and bone mineral density” (Zach & Smith Machin, 2011, p. 552), in which energy availability refers to “a spectrum of eating issues that ranges from optimal energy availability to low energy availability, with or without an eating disorder” (Zach & Smith Machin, 2011, p. 552; ACSM, 2007). While disordered eating is no longer listed as a triad component, it reduces energy availability and plays an integral role in triad development in the female athlete.

Disordered eating etiology is both physiological and psycho-social in nature (Dosil, 2008; Vardar, et. al., 2007), while amenorrhea and osteoporosis are purely physiologically induced (Beals, 2004). Since amenorrhea and osteoporosis are both symptoms of prolonged disordered eating (Beals, 2004; Warren & Perlroth, 2001), the key to triad prevention and mitigation may lie in the disordered eating tier. Research supports this perspective, since it suggests “[i]ncreasing caloric intake to offset high energy demand may be sufficient to reverse menstrual dysfunction and stimulate bone accretion” (Warren & Perlroth, 2001, p. 3).

Some studies suggest that weight loss achieved by disordered eating and aerobic capacity are positively correlated (Beals, 2004; Fitzgerald, 2009; Fogelholm, 1994; Noden, 1994; Ingjer & Sundgot-Borgen, 1994), and that some female athletes can engage in disordered eating behaviors without suffering long-term negative health effects (Thompson, 1993). McManis

(2010) cites two University of Georgia research studies supporting this idea. In one, it was found a 5 percent weight gain decreased running performance by 5 percent in distance runners. In another, “it was determined that a 160-pound runner needs to exert 6.5 percent more effort to run the same pace as a 150-pound runner” (McManis, 2010). In general, it is widely believed that “in endurance sports such as long-distance running, leanness is related to performance for obvious physiological reasons...[since] runners who are several kilogrammes over their optimum performance weight will perform less well” (Currie, 2010, p. 64). As a result, many female athletes engage in disordered eating to enhance athletic performance, an expected benefit to which non-runners are not susceptible. This benefit carries much weight, as Martinsen, Bratland-Sanda, Eriksson, and Sundgot-Borgen (2010) found it to be the chief motivation for disordered eating among elite athletes, while physical appearance was the chief reason among age-matched controls.

Previous studies suggests “The high prevalence of disordered eating reported [among athletes] could be due to the increased awareness of low percentage of body fat as a performance variable” (Martinsen, et. al., 2010, p. 74). This awareness is often taken a step further, manifesting itself behaviorally as disordered eating with the intention of reaching “performance thinness” (Hellmich, 2006). Additionally, Troy, et. al. (2006) found “many coaches and athletes believe the lack of normal menses indicates a sign of successful training” (p. 24), and Torstveit and Sundgot-Borgen (2005) found some female athletes engage in unhealthy behaviors with the goal of delaying puberty to enhance performance. However, while disordered eating may provide endurance athletes with a competitive edge in the short term (Beals, 2004; Dosis, 2008; Fitzgerald, 2009; Fogelholm, 1994; Hellmich, 2006; Ingjer & Sundgot-Borgen, 1994; Noden,

1994; Sundgot-Borgen & Torstveit, 2010; Waltz, 2009), the phenomenon is more commonly associated with negative health outcomes and a decrement in athletic performance.

Research has linked disordered eating with negative energy balance, glycogen depletion, increased lactate production, fatigue, loss of lean body mass, reduced cardiac output and function, electrocardiographic abnormalities, hypothyroidism, hypothalamic dysfunction, gastrointestinal complications, endocrine abnormalities, menstrual dysfunction, musculoskeletal injury, kidney dysfunction, decreased basal metabolic rate (BMR), infertility, premature osteoporosis, nutrient deficiencies (especially iron and calcium deficiencies), and frequent infection, illness, and injury (Beals, 2004; Beals, 2000b; Beckvid-Henriksson, Schnell, & Linden Hirschberg, 2000; Dill, 2006; Dosil, 2008; Dworin, 2011; Girard Eberle, 2005; Greenleaf, Petrie, Carter, & Reel, 2009; Leet Smith, 2010; Sundgot-Borgen, 2010; Thompson & Sherman, 2005; Warren & Perlroth, 2001), all of which have substantially negative effects on overall health and specifically on athletic performance. Additionally, disordered eating involving purging via self-induced vomiting, enemas, laxatives, or diuretic abuse is associated with dehydration, electrolyte imbalance, and disruption of the body's natural acid-base balance (Beals, 2004), which negatively affects health and athletic performance as well.

Perhaps most importantly, disordered eating causes severe psychological disturbances and distress in athletes. The constant stress and discomfort of “denying hunger, obsessing about food, agonizing over body weight, and fearing high body weight is [described as] exhausting” (Sundgot-Borgen & Torstveit, 2010, p. 118). It is so stressful, in fact, that 5.4 percent of athletes with eating disorders in Sundgot-Borgen's 1994 study reported attempting suicide as a result of complications of disordered eating. Studies show many collegiate athletes discontinue competing prior to the termination of their athletic eligibility and/or completely drop out of college due to

disordered-eating-induced distress (Hellmich, 2006). Studies suggest disordered eating-related stress often extends far past the end of an athlete's career (Beals, 2004; Dill, 2006; Brownell & Steen, 1992; Rholin, 2011; Sudi, 2004; Sundgot-Borgen, 2004; Waltz, 2009; Vardar, et. al., 2007), as many of them find "weight concerns, dieting, and use of abnormal eating behaviors" become not only "a focus of their athletic existence" (Sundgot-Borgen & Torstveit, 2010, p. 113), but find their post-athletic existence "ravaged by starvation, binge eating, and frenetic compulsive exercise" (Dill, 2006, p. 11) as well. Indeed, female athletes have been found to experience much difficulty interrupting eating disordered behaviors "at the end of a competitive cycle" (Dosil, 2008, p. 43).

Disordered Eating Among Female Collegiate Distance Runners

Previous studies suggests disordered eating may be prevalent in as much as 70 percent of female collegiate distance runners nationwide (Noden, 1994), and clinical eating disorders may be prevalent in nearly one fifth (19.3%) of NCAA female cross country runners (Ricker, 2008). At one point, an NCAA survey indicated that disordered eating was more prevalent in women's cross country than in any other sport (AJC, 2007).

Previous studies suggest that NCAA Division I female cross country runners' status as athletes (Beals, 2000b; Byrne & McLean, 2002; Currie, 2010; Dill, 2006; Dosil, 2008; Engel, et. al., 2003; Hulley & Hill, 2001; Sundgot-Borgen, 2005; Sundgot-Borgen & Torstveit, 2004; Zach & Smith Machin, 2011), as female athletes (Beals, 2000b; Carter, 2009; Dill, 2006; Dosil, 2008; Engel, et. al., 2003; Greenleaf, et. al., 2009; Martinsen, et. al., 2010; McManis, 2010; Norring & Palmer, et. al., 2005; Otis, 1997; Sudi, 2004; Sundgot-Borgen & Torstveit, 2010; Sundgot-Borgen & Torstveit, 2004; Thompson & Sherman, 2005; Vardar,et. al., 2007), as female college students (Cheney, 2011; Fitzsimmons-Craft, 2011; Greenleaf, et. al., 2009; NAANAD, 2011), as

collegiate athletes (Dill, 2006; Engel, et. al., 2003; Greenleaf, et. al., 2009; Picard, 1999; Rice Lave, 2010; Thompson & Sherman, 2005), as Division I collegiate athletes (Dill, 2006; Hellmich, 2006; Waltz, 2009); as elite distance runners (Hulley & Hill, 2001; Dosil, 2008; Hellmich, 2006; Sundgot-Borgen, 2005; Sundgot-Borgen & Torstveit, 2010; Sundgot-Borgen, 1994; Thompson, 2007), as athletes competing in an endurance sport (Currie, 2010), and as athletes competing in a “thinness-emphasizing” or “leanness-dependent” sport (Beals, 2000b; Bissell, 2004; Byrne & McLean, 2002; Carter, 2009; Dosil, 2008; Milbrandt Marchand, 2007; NAANAD, 2011; Sundgot-Borgen & Torstveit, 2010; Sundgot-Borgen & Torstveit, 2004; Thompson & Sherman, 2005) places them at much higher risk for eating disorder development than the general population (Sundgot-Borgen, 1994).

The culture of distance running and the “culture” of disordered eating parallel each other very closely. So closely, in fact, that multiple early studies (Blumenthal, et. al., 1984; Goldfarb, 1984; Owens, Phil, & Slade, 1987; Powers, Schocken, & Boyd, 1998; Wheeler, Wall, Belcastro, Conger, & Cumming, 1986; Yates, Leehey, & Shisslak, 1983) cross-examine characteristics of healthy runners those of with eating disorder patients due to the immense amount of similarities between them. The findings from these studies were so striking that researchers went so far as to label distance running “An Analogue of Anorexia” (Blumenthal, et. al., 1984; Weight & Noakes, 1987; Yates, et. al., 1983). Today, research acknowledges the fact that distance runners and disordered eaters share many common psychological (Beals, 2004; Blumenthal, Toole, & Chang, 1984; Byrne & McLean, 2002; Carter, 2009; Deas, Power, Collin, Yellowlees, & Grierson, 2011; Dosil, 2008; Flett & Hewitt, 2006; Hausenblas & Carron, 1999; Heffner, 2006; NAANAD, 2011; Noden, 1994; Owens, et. al., 1987; Rousset, Kipman, Ades, & Gorwood, 2004; Yates, et. al., 1983), physiological (Beals, 2004; Beckvid-Henriksson, et. al., 2000; Powers, et. al., 1998;

Sundgot-Borgen & Torstveit, 2010; Warren & Perlroth, 2001) and behavioral (Beals, 2004; Carter, 2009) characteristics, many of which are just a part of running culture...and many of which double as premorbid traits for disordered eating.

Role of Health Communication Campaigns

Health communication is a growing field that includes “the study and use of communication strategies to inform and influence individual and community decisions that enhance health” (Schiavo, 2007, p. 3). Health communication research is conducted with the intention of informing health communication campaigns to address issues (Kreps & Bonaguro, 2009). Campaigns can be focused at the group, dyadic, organizational, or societal level (Kreps & Bonaguro, 2009, p. 389). Campaign goals can include informing and influencing decisions, motivating individuals to change behaviors, increasing knowledge and/or understanding of health-related issues, empowering people, and exchanging/interchanging information in a two-way dialogue (Schiavo, 2007).

There is often a disconnect between the messages disseminated by campaigns and the behaviors individuals choose. Previous research suggests that health communication campaigns must be “audience-centered, research-based, multidisciplinary, strategic, process oriented, cost-effective, creative in support of strategy, audience and media specific, relationship building, and aimed at behavioral or social change” (Schiavo, 2007, p. 12) in order to be effective despite this disconnect. Some campaigns have proven very successful. As Kreps & Bonaguro (2009) state, “Perhaps the greatest positive impact that health communication research has had on society is the development and implementation of health-promotion campaigns” (p. 389). Health communication campaigns involving peer education, for example, have proven very successful

in health promotion (Harden, Weston, & Oakley, 1999; Orme & Starkey, 1999; Parkin & McKeganey, 2000), specifically among college students (Sloane, 2010).

However, although health communication campaigns have proven to be successful among some groups, it appears no campaign currently exists targeting female collegiate distance runners. Although the NCAA has attempted to address the issue of disordered eating among collegiate female athletes—including female collegiate distance runners—in the past, none is in place now. Scattered individual efforts to combat disordered eating among female distance runners exist, including personal blogs by professional runners Lauren Fleshman (AskLaurenFleshman.com, 2012) and Camille Herron (Camille Herron, 2012). However, at the present moment, a large-scale health communication campaign regarding this issue is not in place.

Effects of Media Messages on Disordered Eating

There is a long-standing debate in the field of communication over whether media messages have an effect on human behavior (Austin, 2002). On one end of the spectrum stand the “media pessimists” (Newson, 1994) who believe in the “media effects” paradigm. Within this paradigm, the media messages are believed to influence human behavior. On the other end stand the “media skeptics” (Cumberbatch, 1995) believing in the “social action” paradigm. Within this paradigm, individuals are considered to be the authors of their own behavior rather than passive “victims,” so to speak, of social influence—including media influence. The debate between the two paradigms is evidenced in academia across a plethora of disciplines (e.g., psychology, sociology, communication, etc), and has also upheld a presence in the news (Browne & Hamilton-Giachritsis, 2005). Two popular examples of the media effects debate include whether violent media content encourages violent behavior (Browne & Hamilton-Giachritsis, 2005;

Cumberbatch, 1995; Gentile, Mathieson, & Crick, 2011; Kanlin, Edwards, Wang, Kroenberger, Hummer, Mosier, Dunn, & Matthews, 2011; Newson, 1994; Paik & Comstock, 1994; Wood, Wong, & Chachere, 1991), and whether sexual media content encourages sexual behavior (Brown, Guo, Jackson, Kenneavy, & Pardun, 2006; Rodriguez, 2011). In both cases, substantial research exists supporting both sides of the debate.

Not surprisingly, the media effects debate has also been applied in the field of health communication to the issue of disordered eating. Substantial research exists supporting the media effects paradigm in this debate. Advocates of the paradigm argue that eating disorders and disordered eating are not only psychiatric in nature, but are “symptomatic of a social problem...promoted partly by the economic and social institutions that profit from the ‘cult of thinness’ promoted by the mass media” (Hesse-Biber, et. al., 2006, p. 208). Advocates of this paradigm believe that the advertising, weight-loss, diet-food, fitness, and cosmetic surgery industries in Western industrialized cultures are all aware of and profiting from this social ideal (Hesse-Biber, et. al., 2006), and that they work collaboratively to sell an ideal body type which is believed to be possessed naturally by only 5% of American females (NAANAD, 2011). Research suggests a gender bias exists, since content analyses suggest more emphasis is placed on females’ bodies than on men’s bodies across media (Archer, Iritani, Kimes, & Barritos, 1983). Females also receive more messages to be slim and stay slim than do men (Ogden & Munday, 1996). Advocates of this paradigm hold the media responsible for equating thinness with success, beauty, value, love, health, and control, so “the experience of eating food can often turn into a series of ‘moral decisions’” (Hesse-Biber, et. al., 2006, p. 213), rather than a conscious health behavior. The interrelationship between food, eating, weight, and morality is an attitude not uncommon among clinical eating disorder patients (Duker & Slade, 1988).

Social comparison theory supports the media effects paradigm, as it posits, “people look to images they perceive to be attainable and realistic, and subsequently make comparisons among themselves...and idealized images” (Bissell, 2004, p. 457; Bola, 2008). This results in some media consumers making negative upward social comparisons with media images (Engeln-Maddox, 2005). This phenomenon—known as “internalization of the thin ideal”—implies the media consumer is “not only aware of the thin ideal, but has ‘bought into’ it” (Juarasico, Forman, Timko, Hervert, Butryn, & Lowe, 2011, p. 2011). This is problematic because it is often taken a step further and the female who has internalized the ideal may become “willing to modify her behaviors [including her eating behaviors] to meet these societal standards” (Juarasico, et. al., 2011, p. 207). This is evidenced by the fact that much research suggests internalized thinness-depicting and thinness-promoting media messages may result in body dissatisfaction, self-objectification, appearance anxiety, and negative affect among females (Harper & Tiggemann, 2008; Harrison, 2000; Harrison, 2001; Hesse-Biber, et. al., 2006; Schroff & Thompson, 2006). Oftentimes, these negative feeling—said to result from internalization of the thin ideal—go so far as to manifest themselves behaviorally as food restriction (Bissell, 2004; Bola, 2008; Groesz, Levine, & Murnen, 2002; Ogden & Munday, 1996; Tozzi, et. al., 2003) or binge eating (Bola, 2008) in females. Specifically, internalization of the thin ideal has been found to be a significant predictor of 4 dimensions of disordered eating in NCAA Division I female athletes (Bissell, 2004).

In recent years, social media has become an important part of life and influence on human behavior, including disordered eating behavior. An underground pro-anorexia and pro-bulimia (dubbed “pro-ana” and “pro-mia”) culture has emerged among social media and blog users (Borzekowski, Schenk, Wilson, & Peebles, 2010; Dias, 2003; Giles, 2006; Tierney, 2006;

Whitehead, 2010). Pro-ana and pro-mia sites are increasing in popularity, as site moderators and online administrators of pro-ana and pro-mia groups have registered over one million users per week on some of their websites (Whitehead, 2010). The sites, described as “multimedia journal entries” (Heffernan, 2006, p. 17) consisting mostly of “photomontages of skeletal women,” (Heffernan, 2008, p. 16) are quickly becoming famous for facilitating, encouraging, and supporting disordered eating behavior as well (Whitehead, 2010). It is not uncommon for site visitors to be explicitly encouraged to “try intense practices, such as vomiting and fasting, with an emphasis on achieving extremely thin or skeletal appearances” (Borzekowski, et. al., 2010, p. 1526), or feel left out of an exclusive culture if they don’t. Pro-ana and pro-mia sites contain photos—called “thinspiration” or “thinspo”—of women with thin body types that users and site facilitators aspire to achieve (Borzekowski, et. al., 2010). The sites are “educational” as well, as Peng (2008) cites a 2006 study that found 96 percent of teens diagnosed with eating disorders that visited pro-eating disorder websites had learned new dieting and purging techniques from them.

The sites have been met with much opposition, and are no longer allowed to operate on certain domains, such as Yahoo (Dias, 2003; Tierney, 2006), due to the harmful nature of their content. Many have also been removed from Facebook, since the groups “violate the site’s terms of use by promoting self-harm or harm to others” (Peng, 2008). Research on the sites suggests young females are the primary audience (Csipke & Horne, 2007) and young females are “most likely to have come across [the sites] via the internet itself or the media” (Csipke & Horne, 2007, p. 202). Research suggests individuals exposed to the “alarmingly easy to access and understand” (Borzekowski, et. al., 2010, p. 1531) pro-ana and pro-mia websites experience higher levels of body dissatisfaction, decreased quality of life, and longer durations of eating

disorders (Borzekowski, et. al., 2010) than those not exposed. Sites are also believed to help maintain disordered eating habits and discourage sufferers from recovery (Csipke & Horne, 2007). The sites, therefore, may counter popular sociological understandings of collective identity mobilization as having categorically positive consequences for its members” (Whitehead, 2010, p. 595). Csipke and Horne (2007) add to this fact, stating, “Having a strong internet community to which you belong reinforcing your identity as an anorectic or a bulimic may make it difficult to break away and seek recovery” (p. 203). While no research currently exists on the effects of pro-ana and pro-mia websites on athletes, they are not unrepresented on the sites, as Borzekowski, et. al., (2010) claim approximately 12% of pro-ana and pro-mia “thinspo” photographs are of athletes.

Effect of Sports Media and Running-Specific Media

Research indicates that thinness-depicting and thinness-promoting media messages have effects such as body dissatisfaction, self-objectification, appearance anxiety, and negative affect—not only among females (Harper & Tiggemann, 2008; Harrison, 2000; Harrison, 2001; Hesse-Biber, et. al., 2006; Schroff, 2006)—but specifically among NCAA Division I female athletes (Bissell, 2004) and female cross country and track athletes (Ricker, 2008), who are exposed to them like anyone else. However, female collegiate distance runners are also exposed to sports media and running-specific media, which often promote leanness as well (Harrison, 2003). Thus, the media’s general thin-ideal is further reinforced by these media, which speak to athletes and runners at an even more familiar and personal level. Since Bissell (2004) suggests social comparison theory pits individuals against media images they perceive to be “attainable and realistic,” (p. 457), it follows that athletes may compare themselves to what they see in sports media. This is dangerous, since exposure to lean sports media is positively related to self-

objectification, drive for thinness, anorexia, and bulimia (Bissell & Zhou, 2004; Harrison, 2003) in female viewers, and has been marginally linked to disordered eating symptomatology in NCAA Division I female athletes (Bissell, 2004).

Content analyses reveal that women's athletics receive far less media coverage than do men's athletics (George, Hartley, & Paris, 2001; Koivula, 1999). When female athletes do receive media coverage, the coverage they receive is less focused on their athleticism and more focused on their socially prescribed gender roles (Koivula, 1999; Knight & Guiliano, 2002). For example, they are often framed "in terms of their social position, for example, as girlfriends, wives, or mothers" (Koivula, 1999, p. 591) rather than as athletes or competitors. Female athletes are typically represented as women first and athletes second, since the media often focus on their hair, nails, clothing, appearance (Knight & Guiliano, 2002), individual body parts, such as legs (George, 2001), and gender-appropriate personality traits such as dependency and submissiveness (Koivula, 1999). Stories on female athletes often allude to or explicitly refer to "attractiveness, emotionality, femininity, and heterosexuality...[while] male athletes featured by the media are depicted as powerful, independent, dominating, and valued" (Knight & Guiliano, 2002, p. 217). Female athletes are, therefore, pressured to "emphasize their femininity, especially if they want to gain sponsorship" (George, 2001, p. 99), an added pressure male athletes do not experience. Research suggests this inequity may exist since the public perception of what a female athlete is or should be is more "malleable and open to alteration" than that of a male athlete (Knight & Guiliano, 2002, p. 224). Regardless of the reason, female athletes are typically depicted as thin, attractive, and feminine in sports and running-specific media; therefore, it not only follows that the public expects this ideal of female athletes (Knight & Guiliano, 2002), but

that female athletes may alter their behavior—specifically, adopting unhealthy dietary practices—in an attempt to emulate it (Bissell, 2004).

Existing literature provides a very comprehensive view of the media’s effect on disordered eating development among females. However, to date, minimal research (Ricker, 2008) has examined how the media has specifically impacted female distance runners. The first research question this study sought the answer, therefore, is:

RQ 1: Do the media facilitate disordered eating among NCAA Division I female distance runners?

Factors Moderating the Effects of Media Messages on Disordered Eating

Some previous studies are more in line with the social action paradigm, suggesting media messages are not the sole agents of behavioral influence; rather, multiple moderating factors come into play between the media message that is disseminated and the individual receiving it that also alter behavioral intention (Browne & Hamilton-Giachritsis, 2005; Groesz, et. al., 2002; Shrum, 2004). Research emphasizes the role of social and environmental factors (Browne & Hamilton-Giachritsis, 2005, p. 702)—“including athletics” (Groesz, et. al., 2002, p. 2)—to explain individual differences in the way media messages affect behavior. As Schum (2004) states, “Assessing only the direct relations between mass media...and an individual's disordered eating behavior will likely not provide one with the full picture; rather, the impact of these messages is much more complex, with the needs and desires of the individual likely playing a large role” (p. 294).

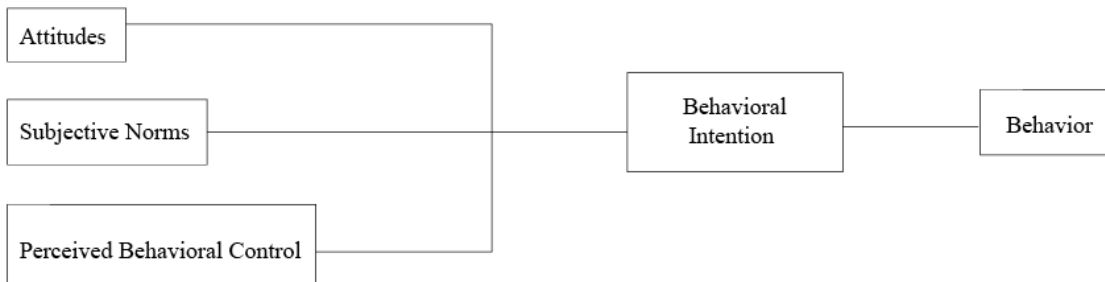
Research currently exists on many of the factors influencing disordered eating development among female distance runners. However, while these factors have previously been studied as independent constructs influencing eating behavior, they are presented here as

moderating factors (specifically, reinforcing factors) strengthening the media’s original effects on disordered eating behavior among this population. What follows is a review of the literature on these factors, which include attitudes, subjective norms, and perceived behavioral control. The factors are presented within the context of the study’s theoretical framework.

Theoretical Framework: Theory of Planned Behavior

The theory of planned behavior (Ajzen, 1991) is a conceptual framework for the study of human action (Ajzen, 2002). It suggests individuals act “in accordance with their *intentions* and perceptions of control over the behavior, while intentions are influenced by *attitudes* toward the behavior, *subjective norms*, and perceptions of *behavioral control*” (Ajzen, 2001, p. 43). It details the determinants of an individual’s decision to enact a particular volitional behavior based upon informational and motivational influences on behavior (Conner, 1998). The theory originated with Dulany’s (1968) theory of propositional control, which later developed into the theory’s more well-known predecessor, the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1985). The theory of planned behavior—which informs this study—is visually depicted in *Figure 1* below:

Figure 1: Theory of Planned Behavior (Ajzen, 1991)



The theory of planned behavior is considered an extension of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), since it interposes the variable of perceived behavioral control between intention and behavior (Conner & Sparks, 2005); a variable that is absent in the theory of reasoned action. The addition of perceived behavioral control “extends the boundary condition of pure volitional control specified by the theory of reasoned action,” (Madden, Ellen, & Ajzen, 1992, p. 4) to both volitional and non-volitional factors in the theory of planned behavior, thus increasing the theory’s potential for application to both motivational and nonmotivational behaviors (Conner & Sparks, 2005; Doll & Ajzen, 1992; Fishbein & Ajzen, 1975). Literature suggests the theory of planned behavior is more effective since it explains significantly more variance than does the theory of reasoned action (Madden, et. al., 1992).

Under the theory, attitudes, subjective norms, and perceived behavioral control operate as three conceptually independent determinants of intention (Doll & Ajzen, 1992). As a general rule, “the more favorable the attitude and subjective norm with respect to a behavior, and the greater the perceived behavioral control, the stronger should be an individual’s intention to perform the behavior under consideration” (Doll & Ajzen, 1992, p. 755). Intention, therefore, is the one immediate antecedent of volitional behavior (Schifter & Ajzen, 1985), as it “represents a person’s motivation in the sense of her or his conscious plan, decision or self-instruction to exert effort to perform the target behavior” (Conner & Sparks, 2005, p. 171). The theory posits that stronger intentions yield stronger likelihood of behaviors; assuming “nonmotivational factors,” such as the “availability of requisite opportunities and resources” exist (Schifter & Ajzen, 1985, p. 844). The three proximal determinants of intention (i.e., attitudes, subjective norms, and perceived behavioral control) are weighted empirically (Conner & Sparks, 2005). Their weights

vary as a function of the behavior and the population being studied, as individual differences exist in the weights placed on different determinants (Conner & Sparks, 2005). External variables, such as demographics, personality, environment, moral norms, anticipated regret, self-identity, past behavior, accessibility, direct experience, involvement, certainty, ambivalence, affective-cognitive consistency, temporal stability, and mindfulness (Chatzisarantis & Hagger, 2007; Conner & Sparks, 2005; Ajzen, 2001) also may vary based upon behavior and population differences, and are believed to serve as moderators that maximize or minimize relationships between intentions and behaviors and “help elucidate the range of conditions under which the theory works” (Conner & Sparks, 2005, p. 212).

The theory of planned behavior is commonly used in health communication and the study of health behavior (Godin & Kok, 1996). It has been used to examine exercise habits (Blue, 1995; Courneya, Friederich, Arthur, & Bobick, 1999; Hagger, Chatzisarantis, & Biddle, 2002; Hausenblas & Carron, 1997), condom use (Agnew, 1998; Albarracin, Johnson, Fishbein, & Muellerlelie, 2001; de Wit, Stroebe, de Vroome, Sandfort, & van Griensven, 2000; Ross & McLaws, 1992; Sheeran & Taylor, 1999), dietary practices (Armitage & Conner, 1999; Kristal, Bowen, Curry, Shattock, & Henry, 1990; Paisley & Sparks, 1998), sun protective behaviors (Hillhouse, Alder, Drinnon, & Turrisi, 1997; Terry & Hogg, 1996), health screening behaviors (Norman & Conner, 1993; Steadman, Rutter, & Field, 2002), illegal drug use (McMillan & Conner, 2003; Tricker & Connolly, 1997), weight loss (Schifter & Ajzen, 1985), alcohol consumption/binge drinking (Morrison, Gilmore, Simpson, & Wells, 1996; Trafimow, 1996), smoking (Hill, Boudreau, Amyot, Dery, & Godin, 1997; Norman & Conner, 1999), and smokeless tobacco use (Gottlieb, Gingiss, & Westein 1999), among other behaviors. A “vast majority” of these and other applications to the health communication field have been able to

explain “considerable variation in intentions and actions across behaviors” (Conner & Sparks, 2005, p. 182).

Attitudes

Many reviews of the theory of planned behavior and theory of reasoned action deem attitudes the “best predictor of intentions” (Conner & Sparks, 2005, p. 185). Attitudes are operationalized in the theory of planned behavior as “the overall evaluations of the behavior by the individual” (Conner & Sparks, 2005, p. 173); and, more specifically, the “degree to which [the individual] has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Doll & Ajzen, 1992, p. 755). Attitudes are believed to develop reasonably from the beliefs that people hold about the object of the attitude and its positive or negative attributes (Doll & Ajzen, 1992). Positive attitudes and strong attitudes (Ajzen & Fishbein, 1972; Conner & Sparks, 2005; Doll & Ajzen, 1992) are more likely to result in behavior than are negative or weak attitudes. Under the theory, attitudes are a function of and may be indirectly measured by the perceived likelihood that performance of the behavior in question will lead to a particular outcome, the evaluation of that outcome, and/or the outcome’s value to the individual (Ajzen & Fishbein, 1973; Conner & Sparks, 2005). Put simply, “for an individual, the attractiveness of a given act is a function of the summed products of the subjective probabilities and utilities he assigns to the act’s outcomes” (Ajzen, & Fishbein, 1972, p. 2).

In order to influence behavior, an attitude must become “automatically activated” (i.e. “become salient in the behavioral situation”), influence the way the object and the situation are perceived, and then predispose favorable or unfavorable feelings toward the object or behavior (Doll & Ajzen, 1992, p. 763). Attitudes based on direct experience are believed to be “better defined, are held with greater confidence, are more stable over time, and are more accessible in

memory” (Doll & Ajzen, 1992, p. 754). Direct experience attitudes are believed to exert a strong biasing effect on behavioral situations; and, consequently, are more likely to predispose an individual to engage in a behavior (Doll & Ajzen, 1992).

Attitudes as Reinforcing Factors

A study of the literature reveals that some research supports distance runners engaging in disordered eating as a means of achieving optimum athletic performance (Beals, 2004; Currie, 2010; Fitzgerald, 2009; Fogelholm, 1994; Noden, 1994; Ingjer & Sundgot-Borgen, 1994; McManis, 2010). On the opposite end of the spectrum exists research opposing it for mental, physical, and emotional health reasons (Beals, 2004; Beals, 2000b; Beckvid-Henriksson, et. al., 2000; Dossil, 2008; Dworin, 2011; Greenleaf, et. al., 2009; Sundgot-Borgen, 2010; Thompson & Sherman, 2005; Warren & Perlroth, 2001). This evidences attitudinal ambivalence among academics on the topic.

Previous studies suggest all athletes battle the idealistic sociocultural belief that athletes should embody physical perfection (Sundgot-Borgen, 2005; Sundgot-Borgen & Torstveit, 2010). Torstveit and Sundgot-Borgen (2005) state there is an expectation within the culture of distance running for the runner to “look like an anorectic” (indeed, Ricker’s 2008 study confirmed collegiate cross country and track athletes felt an “underlying expectation for runners to be a certain size or weight” [p. 27]). Torstveit, and Sundgot-Borgen elaborate to say that internalization of this belief may “trigger disordered eating” (Torstveit, et. al., 2005, p. 108) among them.

It is imperative any individual seeking to help eating disordered female collegiate distance runners understand their attitudes, since they are considered by the theory as a key determinant to behavioral intention. However, to date, very little research (Ricker, 2008) has

addressed female collegiate distance runners' attitudes on the topic. The second research question this study sought to answer, therefore, is:

RQ 2: Do NCAA Division I female distance runners' attitudes facilitate disordered eating?

Subjective Norms

Subjective norms are operationalized by the theory of planned behavior as the “influence of the social environment on behavior” (Ajzen & Fishbein, 1973, p. 43). More specifically, subjective norms represent real or perceived social pressure from ‘significant others’ to perform or not perform a behavior (Conner, 1998; Conner & Sparks, 2005; Doll & Ajzen, 1992), in which “significant others” are defined as “individuals or groups whose preferences about a person’s behaviors in this domain are important to him or her” (Conner & Sparks, 2005, p. 173). Subjective norms may be measured by and are “a function of beliefs...about the normative expectations of salient referent individuals or groups” (Doll & Ajzen, 1992. p. 755), the likelihood that specific salient groups or individuals think the person should or should not perform the behavior, and the person’s motivation to comply with referent others’ expectation(s) (Ajzen & Fishbein, 1973; Conner & Sparks, 2005). Motivation to comply with referents can be viewed as either the motivation to comply with the referent himself (Ajzen & Fishbein, 1973) or the motivation to comply with the referent’s particular demands (Ajzen & Fishbein, 1973). Individuals, therefore, who wish to comply with referents yet disagree with referents’ demands may refrain from engaging in a behavior (Conner & Sparks, 2005).

Referent groups and individuals vary with the behavioral situation, and multiple referents may need to be considered for any single action in question (Ajzen & Fishbein, 1973). Conner and Sparks (2005) cite Terry and Hogg’s 1996 finding that “group measures were more predictive of intentions when they employed a measure of group identification” (Conner &

Sparks, 2005, p. 188). For example, a female distance runner would be more likely to engage in disordered eating if she perceived it not as an individual behavior, but a “behavioral prototype” of her teammates and/or of distance runners in general (Conner & Sparks, 2005). Positive evaluations of and perceived similarity to behavioral prototypes are believed to increase behavioral intention and “may represent another way in which social influence and comparison processes operate” (Conner & Sparks, 2005, p. 189; Gibbons & Gerrard, 1997).

Subjective Norms as Reinforcing Factors

Research suggests that subjective norms have the smallest effect of the three determinants to behavioral intention in the majority of behavioral situations (Armitage & Conner, 2001; Sheppard, Hartwick, & Warshaw, 1988; Van den Putte, 1991). However, a review of the literature suggests the opposite may be true when examining disordered eating behavior among female collegiate distance runners. Disordered eating is considered a “social problem” (Hesse-Biber, et. al., 2008, p. 208), since a woman’s perception of her body is based partly on what she perceives others to believe about it (Davison & McCabe, 2005; Fitzsimmons-Craft, 2011). This is evident in the case of female collegiate distance runners, whose disordered eating behaviors often first surface from within the team environment (Dosil, 2008) as a rational response to a real or perceived pressure to achieve the body type they believe their sport-specific referent(s) demand (Byrne & McLean, 2002; Greenleaf, et. al., 2009; Rice Lave, 2010). Female collegiate distance runners have been described as being “immersed in a social context that focuses on their bodies’ appearance and performance” (Greenleaf, et. al., 2009, p. 489) and equates thinness with success (Dosil, 2008). Therefore, since involvement in athletics is a factor of both intrapersonal components (i.e., self-discovery and decision-making) and interpersonal components (i.e.,

relationships) (Iso-Ahola, 1995), it is imperative one considers behavior within the athletic context as at least a partial product of social influences.

Coaches have been identified by literature as one of the most salient referents for female collegiate distance runners in regards to disordered eating (Beals, 2004; Carter, 2009; Currie, 2010; Dosit, 2008; Engel, et. al., 2003; Hellmich, 2006; Jacobsen, Sobonya, & Ransone, 2001; Jowett & Ntoumanis, 2004; McManis, 2010; Milbrandt Marchand, 2007; Muscat & Long, 2008; Noden, 1994; Rockwell, et. al., 2001; Sundgot-Borgen & Torstveit, 2010). Collegiate coaches inherently possess much influence over athletes (Jowett & Ntoumanis, 2004), who have left home and are seeking guidance and support from influentials other than parents (Dill, 2006; Greenleaf, et. al., 2009), especially during the freshman year (Juarasico, et. al., 2011). As Engel, et. al. (2003) state, “A casual remark from a coach can have devastating effects on an athlete’s beliefs and behaviors regarding eating” (p. 334), since “girls and young women tend to remember absolutely everything a coach ever said to them” (Hellmich, 2006). However, coaches’ primary focus is training athletes; therefore, they are not always adept in disordered eating prevention. Troy, et. al. (2006) surveyed a group of high school and college coaches in a “major Midwestern metropolitan area” (p. 22), and found only 8 percent of them could properly identify all 3 components of the female athlete triad. Only 13 percent reported some knowledge of calcium requirements among female athletes, only 16 percent reported asking female athletes about their menstrual cycles, and only 31 percent reported broaching the topic of disordered eating (Troy, et. al., 2006).

Research shows nutritional misinformation on the part of the coach (Beals, 2004), explicit requests or demands from the coach to reduce weight for competition (Engel, et. al., 2003; Hellmich, 2006), and/or the practice of thinness-emphasizing behaviors like taking body

weight or body fat measures as part of training (Carter, 2009; Currie, 2010; Dosil, 2008; Greenleaf, et. al., 2009) are a few examples of coach-initiated actions that previous studies suggest may facilitate disordered eating among female distance runners. Pressure from coaches is believed to increase in college (Hellmich, 2006), since athletes may have a scholarship on the line, or may want to receive a scholarship, attain a varsity spot, or be chosen to travel to meets (Hellmich, 2006). Body weight and body fat measures imposed by coaches may promote a culture of “body-checking” among teammates, which “includes constant checking of general appearance and specific body parts to assess weight and shape...[that is] repetitive, idiosyncratic, and self-maintaining in nature [as well as] more common among eating-disordered women” (Haase, Mountford, & Waller, 2011, p. 465). Research on coach-to-athlete relationships suggests positive general outcomes may result from “emotionally close” relationships in which both coach and athlete feel “cared for, liked, valued, and [trusted]” (Jowett & Ntoumanis, 2004, p. 246). On the contrary, “lack of closeness, co-orientation, and complementarity [between athletes and coaches] are linked with interpersonal conflict” (Jowett & Ntoumanis, 2004, p. 246), and negative general outcomes.

Teammates (Beals, 2004; Dosil, 2008; Dworin, 2011; Engel, et. al., 2003; Hellmich, 2006; Milbrandt Marchand, 2007; Noden, 1994; Picard, 1999; Rice Lave, 2010; Sundgot-Borgen & Torstveit, 2010) have been identified by literature as some of the most salient referents for female collegiate distance runners regarding disordered eating behavior as well, since disordered eating is common among teammates at the collegiate distance running level. Peter Farrell, track coach at NCAA Division I Princeton University, attests to this statement, revealing approximately 70 percent of his female distance runners have engaged in some kind of disordered eating at some point during their collegiate athletic careers (Noden, 1994). Literature

suggests disordered eating may be perceived as a “normative behavior” practiced among teammates (Engel, et. al., 2003, p. 342), and pressure from teammates (either real or imagined) “may lead some athletes to believe that it is the norm to use extreme measures to stay thin” (Engel, et. al., 2003, p. 335).

Disordered eating may also be perceived by female collegiate distance runners as a behavioral alternative to training, since “[i]t is not uncommon for a female athlete to compare herself with teammates and try to emulate the body weights and shapes of athletes she holds in high esteem” (Beals, 2000b, p. 24) and may even be “admired as [a] potential successful training strateg[y] by teammates struggling to gain a competitive edge” (Waltz, 2009). Teammates who do not conform face the risk of losing acceptance from teammates and experiencing isolation at times (Rice Lave, 2010). Rice Lave (2010) quotes Shannon Rowbury, a 2008 Olympic 1500m runner as saying, “When I went to college especially, there were a lot of women on my [Division I cross country] team and in the NCAA that had eating issues and I really kind of had to dissociate myself from them as much as possible...it was too hard for me to have to be in that situation.” Additionally, Schroff and Thompson (2006) found that peer groups of adolescent females that include no overweight females (such as a cross country team) are more likely to center conversations on appearance and dieting than are age-matched peer groups that include one or more overweight females. Such conversations and the importance assigned to them are “significantly associated with body dissatisfaction, eating problems, and self-esteem.”

Non-distance-runner female peers are considered salient referents regarding disordered eating as well. Research suggests that “transitioning to the college environment is sometimes associated with stress and anxiety because of greater personal responsibility and maturation, perceived loss of social support, and increased academic demands” (Greenleaf, et. al., 2009, p.

489), and this pressure “can create an atmosphere in which college women respond with pathogenic eating behaviors” (Greenleaf, et. al., 2009, p. 490). Peer influences outside of the team environment, therefore, may play a role in disordered eating development among female collegiate distance runners, since research suggests “91% of women surveyed on a college campus had attempted to control their weight through dieting” (NAANAD, 2011), “25% of college-aged women engage in bingeing and purging as a weight management technique” (NAANAD, 2011), and “subthreshold levels of eating disordered behaviors have been reported at rates of up to 67% for college women...indicating that disordered eating is relatively ‘normative’ for this group” (Fitzsimmons-Craft, 2011, p. 1225). Therefore, research suggests that college women are a “vulnerable population for whom identity formation and peer interaction are of the utmost importance” (Fitzsimmons-Craft, 2011, p. 1233), and that “weight, disordered eating, and body image dissatisfaction increas[e] during the freshman year” of college (Juarasico, et. al., 2011, p. 201). Research suggests individual levels of body concern, dieting, and extreme weight loss behaviors between peers of this age can be predicted by peers’ respective levels of body concern, dieting, and extreme weight loss behaviors (Hutchinson & Rapee, 2007).

Finally, research acknowledges sports dieticians, athletic trainers, sports psychologists (Beals, 2004; Carter, 2009; Dill, 2006; Jacobsen, et. al., 2001; Rockwell, et. al., 2001; Troy, et. al., 2006; Vaughan, 2004), strength and conditioning coordinators (Jacobsen, et. al., 2001), and members of athletic departments (Dill, 2006; Vaughan, King, & Cottrell, 2004) as salient referents on the topic as well.

Multiple referent individuals and groups have been identified in previous studies as salient in this behavioral situation. Academics have recognized that subjective norms are a key construct of behavioral influence, and have examined the effect of some referents on disordered

eating development among female collegiate distance runners. This study seeks to attain consistency with the literature and examine if subjective norms formed from these referent groups facilitate disordered eating among NCAA Division I female distance runners. The third research question this study sought to answer, therefore, is:

RQ 3: Do subjective norms of salient referents facilitate disordered eating among NCAA Division I female distance runners?

Perceived Behavioral Control

Perceived behavioral control is an individual's "perceived ease or difficulty of performing a behavior" (Ajzen, 2002; Conner & Sparks, 2005; Doll & Ajzen, 1992), and is composed of two elements: self-efficacy and controllability (Ajzen, 2002). It may be measured by and is a function of control beliefs, which consider "whether one has access to the necessary resources and opportunities to perform the behaviors successfully, weighted by the perceived power of each factor" (Conner & Sparks, 2005, p. 175). Control beliefs include both internal control factors, such as personal skills or deficiencies, and external control factors, such as opportunities and barriers (Conner & Sparks, 2005), thus capturing the "perceived facilitating and inhibiting effects of all accessible control factors" (Ajzen, 2002, p. 671), rather than volitional control factors only. Control beliefs consider both the frequency of each factor and its potential inhibiting or facilitating power (Conner, 1998; Conner & Sparks, 2005). The inclusion of perceived behavioral control in the theory of planned behavior, therefore, "provides information about the potential constraints on action as perceived by the actor, and explains why intentions do not always predict behavior" (Conner & Sparks, 2005, p. 171).

Control operates on a continuum in which "easily executed behaviors" exist on one end, while behavioral goals "demanding resources, opportunities, and specialized skills [exist] at the

other end” (Conner & Sparks, 2005, p. 173). As a general rule, “The more resources and opportunities individuals believe they possess, and the fewer obstacles or impediments they anticipate, the greater should be their perceived control over the behavior” (Doll & Ajzen, 1992, p. 756). Research on the theory of planned behavior suggest individuals with high perceived behavioral control are more likely to engage in a given behavior, even if their perceptions are unrealistic (Schifter & Ajzen, 1985, p. 850), and that “To the extent that people are realistic in their judgments of a behavior’s difficulty, a measure of perceived behavioral control can serve as a proxy for actual control and contribute to the prediction of the behavior in question” (Ajzen, 2002, p. 666; Conner & Sparks, 2005). Direct experience (Doll & Ajzen, 1992), past experience (Schifter & Ajzen, 1985)—specifically, past success (Schifter & Ajzen, 1985)—desirability of the behavior in question (Conner & Sparks, 2005), and “anticipated impediments and obstacles” (Schifter & Ajzen, 1985, p. 844) are believed to moderate individuals’ behavioral intentions. Perceived behavioral control becomes “increasingly important as volitional control over the behavior declines” (Doll & Ajzen, 1992, p. 755).

Perceived Behavioral Control as a Reinforcing Factor

Research suggests various internal control factors may moderate female collegiate distance runners’ tendency to engage in eating disordered behaviors. In “situations where strong concerns about body weight are common and active women are engaging in unhealthy weight-control practices, psychologically vulnerable participants may be at an increased risk for the development of a clinical eating disorder” (Beals, 2000b, p. 26). In Milbrandt Marchand’s 2004 study, female athletes identified as “high risk” were more accepting of teammates’, coaches’, or society’s influence on eating habits than were “low-risk” athletes. This is consistent with the literature, which suggests women who suffer from anxiety, depression (Petrie, 2009; Thome &

Espelage, 2004; Waltz, 2009), stress (Petrie, 2009), identity diffusion (Gapin & Petruzzello, 2011), have obsessive-compulsive traits, social physique anxiety, negative perfectionism attitudes (Hellmich, 2006; Sundgot-Borgen, 2005; Vardar, et. al., 2007), experience low levels of body esteem and body dissatisfaction (Engel, et. al., 2003; Greenleaf, et. al., 2009; Petrie, 2009), have negative affect, internalization, cognitive distortions (Greenleaf, 2009), feel shame/guilt (Petrie, et. al., 2009), and/or display neuroticism and introversion (Miler, Schmidt, Vaillancourt, McDougal, & Laliberte, 2006) are more prone to disordered eating patterns. Research also shows that runners with stronger “athletic identity,” or affiliation with the athlete role (Brewer, Van Raalte, & Linder, 1993), are at greater risk for a multitude of unhealthy behaviors, including “unhealthy eating behaviors” (Gapin & Petruzzello, 2011, p. 1003), since running provides most or all of their sense of self and feeling of control over circumstances (Gapin & Petruzzello, 2011)

External factors may also moderate female collegiate distance runners’ tendency to engage in eating disordered behaviors. Sport-induced factors, such as the fact that female collegiate distance runners participate in a “thinness-emphasizing” or “leanness-dependent” sport (Beals, 2000b; Bissell, 2004; Byrne & McLean, 2002; Carter, 2009; Dosil, 2008; Milbrandt Marchand, 2007; NAANAD, 2011; Sundgot-Borgen & Torstveit, 2010; Sundgot-Borgen, 2004; Thompson & Sherman, 2005) that requires them to wear “revealing athletic uniforms” (Bissell, 2004; Carter, 2009 p. 307; Currie, 2010; Greenleaf, et. al., 2009; Hellmich, 2006) and oftentimes measure body weight or body fat as part of training (Carter, 2009; Currie, 2010; Dosil, 2008; Greenleaf, et. al., 2009) may have an effect. Additional sport-induced factors—including “pressure of reducing weight, fear of failing, injury, or overtraining” may intensify subjective norms’ effect on disordered eating behaviors among female athletes (Vardar, et. al., 2007, p. 143) as well. Additionally, existing literature suggests external control factors related to

infrastructure at the institutions for which distance runners compete moderate eating behaviors as well (Dill, 2006; Rockwell, et. al., 2001). Also, coaches, physicians, physical therapists, and athletic trainers are not always adept at identifying components of the female athlete triad, nor are they comfortable with or competent at addressing triad determinants (Troy, et. al., 2006).

This examined NCAA Division I female collegiate distance runners' perceptions on various control factors and their effects on eating disordered behavior. The fourth and final research question this study sought to answer, therefore, is:

RQ 4: What control factors facilitate disordered eating among NCAA Division I female distance runners?

Chapter 3 - Methodology

This study examined the effects of media messages, attitudes, subjective norms, and perceived behavioral control on the dietary practices and development of disordered eating among NCAA Division I female distance runners. This chapter explicates in detail the research sample, the recruitment method, and the methodology employed in the data collection and analysis process. It draws from existing literature on methodology with the intent of both lending credibility to and providing justification for the researcher's decisions.

Multi-Method Qualitative Approach

This study had three distinct methods of data collection, all qualitative in nature. First, current female distance competing on NCAA Division I cross country teams participated in an online, anonymous, self-administered questionnaire. Next, select runners volunteered to participate in small, confidential focus groups. Finally, the researcher performed confidential, one-on-one, in-depth interviews with professional female distance runners, coaches, physicians, sports psychologists, and dietitians. A multi-method approach was utilized because previous research suggests it balances some methods' weaknesses (Bloor, Frankland, Thomas, & Stewart, 2001), captures a fuller range of information (Bloor, et. al., 2001), and checks for consistency among different data sources, thus increasing the study's credibility and validity (Berg, 1998).

This study assumed a qualitative approach to examine the determinants of disordered eating development among female collegiate distance runners, since qualitative research is often utilized in the social sciences (Marshall & Rossman, 2010), in communication research (Lindlof & Taylor, 2002), and specifically within the field of health communication research (Gribch, 1999; Liamputtong Rice & Ezzy, 1999; Lindlof & Taylor, 2002). This approach was selected since it functions as a means of gathering data that is "pragmatic, interpretive, and grounded in

the lived experiences of people” (Marshall & Rossman, 2010, p. 2), a method quite appropriate for studying a health issue considered both complex and “social” in nature (Hesse-Biber, et. al., 2006, p. 208).

This study was phenomenological (Marshall & Rossman, 2010; Svenaeus, 2000; Svenaeus, 2002), meaning it sought “to explore, describe, and analyze the meaning of individual lived experience...[in a manner that] typically involves several long, in-depth interviews with individuals who have experienced the phenomenon of interest” (Marshall & Rossman, 2010, p. 19)—in this case, disordered eating. Such an approach to studying health behavior is considered “normative, since it will fundamentally rely on the individual’s interpretation and evaluation of his situation and not only on a biological investigation of his body” (Svenaeus, 2002, p. 87). While it is not what one typically assumes as a means of conducting health-related research, it is still considered a valuable part of health-related research processes (Svenaeus, 2002). The phenomenological approach is appropriate for the phenomenon of disordered eating, which is a mental illness with psychological (Byrne & McLean, 2002; Engel, et. al., 2003) and sociological (Harrison, 2001; Williams, et. al., 2003) roots. Additionally, since the phenomenon of disordered eating among female collegiate distance runners is a complex experience, it is better captured through inquiry and narrative than numbers.

Sample Description & Recruitment Method

As stated above, this study examined the issue from many different perspectives, making for a very diverse research sample. The first and second stages of the data collection—the questionnaire and focus groups—examined current NCAA Division I female distance runners. The third stage of data collection—the in-depth interviews—examined professional distance runners, physicians, sports psychologists, coaches, and dietitians. The research sample is diverse

with the intent of providing a broad range of perspectives and information on the phenomenon. Additionally, the researcher desired the professional opinions of those who are close to the issue, yet are not directly affected by it, thus having an outside perspective. These individuals were believed to have a more removed—yet highly educated—view on the issue. Existing literature supports the researcher’s intent to engage these individuals in the research process, suggesting that when assuming a phenomenological approach, it is imperative one examines any individuals who have experienced the phenomenon of interest (Marshall & Rossman, 2010).

Recruitment of Current NCAA Female Collegiate Distance Runners

A criterion sample of current NCAA Division I female distance runners was recruited to participate in the questionnaires and focus groups through e-mails to their coaches. Female collegiate distance runners were selected as a research sample because they are the group directly experiencing the issue. The researcher extracted coaches’ e-mail addresses—which were publicly available on college and university athletic websites—from 75 of the top NCAA Division I teams. Upon attainment of the addresses, the researcher disseminated an e-mail explicating the study’s purpose and procedure and requesting coaches allow their female distance runners to participate...first by completing the questionnaire and then by opting to participate in a small, confidential focus group. Approximately one week after the initial e-mail was sent, coaches received a follow-up e-mail reiterating the study’s purpose, asking again for permission for athletes to participate, and containing a URL from which athletes could access the online, anonymous, self-administered questionnaire. Coaches were asked to forward this e-mail to their athletes.

Approximately two weeks after the second e-mail was sent, coaches received a third e-mail in which they were briefed again on the purpose and procedure of the research study. In this

e-mail, coaches were asked speak with the athletes on their teams to determine if any interest existed in volunteering to participate in small, confidential focus groups on the same topic. The researcher requested that coaches provide any interested athletes with her e-mail address. Those interested in participating in focus groups engaged in e-mail communication with the researcher regarding date, time, and location (if necessary) of the focus group. Multiple e-mails were sent, as persistency is recommended when conducting online, survey-based research (Dillman, Smyth, & Christian, 2006). Teams within a reasonable geographic distance from the researcher participated in in-person focus groups, while those further from the researcher participated in focus groups via Skype.

Female collegiate distance runners were selected as a research sample because they are the group directly experiencing the issue. This method of recruitment was elected since existing literature suggests that research studies—especially those examining sensitive topics such as disordered eating—carry the “potential of revealing vital secrets...violating privacy, harming reputations, exposing ‘uncomfortable realities,’ and depicting behavior in ways that offend participants” and that “vulnerability on behalf of the subject, apprehension, and suspicion...have the ability to cripple [a] study” (Lindlof, 1995, p. 103). For this reason, recruitment through an intermediary (Bloor, et. al., 2001) was utilized, so that participants’ identities were anonymous, even to the researcher. While this often creates a situation in which the intermediary—in this case—coaches—act as an “unwanted screening device” affecting the composition and possibly even the existence of the research sample, the researcher elected this method to protect the identities and emotional well being of those involved in the study.

Overall, the questionnaire was taken by 166 current female collegiate distance runners, 156 of whom partially completed it and 97 of whom participated to completion. Four focus

groups were conducted—two among members of Midwestern teams, one with a team on the east coast, and one in the west. Each focus group contained between four and six participants. In-depth interviews were conducted among eight professional distance runners, two physicians, one sports psychologist, three dietitians, and two coaches.

Recruitment of other Key Individuals

The criterion sample of professional distance runners, physicians, sports psychologists, dietitians, and coaches was recruited through two different methods. The researcher contacted some of them through e-mail, by telephone, and through social media. Others were recruited through a snowball method, in which those interviewed “recruit[ed] eligible members of their own existing social network to take part in the research” (Bloor, et. al., 2001). At the conclusion of the data collection process, participants in both focus groups and in-depth interviews were asked to provide names and contact information of anyone they believed would be knowledgeable about the topic. These individuals were then contacted directly by the researcher through e-mail, by telephone, and through social media.

Self-Administered Questionnaire

The first method of data collection used in the study was an online, anonymous, self-administered questionnaire completed by current NCAA Division I female distance runners. The questionnaire—included in the Appendix—asked participants questions about their media exposure, as well as the effects that media, attitudes, subjective norms, and various control factors had on their food- and body-related thoughts, emotions, and behaviors. The questionnaire included 15 questions, 2 of which asked respondents to rank items, 2 of which asked respondents to select an attitude on a Likert scale, and 10 of which were open-ended questions in which they typed responses into a text box. Question 15, “Is there anything else you would like to share or

feel is important or meaningful to this study?,” provided participants with the opportunity to add any opinions on the phenomenon that are not covered by the other questions. Of the 166 current NCAA Division I female collegiate distance runners that accessed the questionnaire, 94 percent of them consented and advanced to the questions; 64.5 percent of them advanced past the ranking questions (which were presented first); and 58.4 percent of them completed the questionnaire in its entirety. Perhaps the ranking question was more complex than was desirable and therefore caused respondents to discontinue participation.

This research method was selected because questionnaire research is believed to reveal “the distribution of behaviors, attitudes, and attributes in a population” (Lindlof, 1995, p. 121). Responses provided a very comprehensive look at the issue of disordered eating among female collegiate distance runners. Existing literature on the study of disordered eating suggests perceived anonymity in assessments of disordered eating behaviors and attitudes among female undergraduate students creates a response bias (Anderson, Simmons, Milnes, & Earleywine, 2007; Lavender & Anderson, 2009) in which enhanced disclosure occurs with written assessments as opposed to oral assessments (Anderson, et. al., 2007; Keel, Scott, Davis, & Mitchell, 2002; Perry, Morgan, Reid, Brunton, O-Brien, & Lacey, 2002; Lavender & Anderson, 2009). The questionnaire—which consisted mostly of open-ended response questions—provided respondents with the freedom to express as much or as little as they would like on the topics while remaining anonymous, even to the researcher.

Focus Groups

The second method of data collection used in this study was small, confidential focus groups containing between four and six current NCAA Division I female distance runners. Each focus group was composed of runners from the same team, since Kitzinger (2005) suggests

utilizing pre-existing social groups for focus group participants because they “provide one of the contexts within which ideas are formed and decisions made” (p. 105). Multiple groups were conducted in order to capture a wider range of experiences (Bloor, et. al., 2001), and control for team-specific cultures that may be abnormal.

A focus group question guide was constructed based on trends that emerged from questionnaire responses, since focus groups may be used as a contemporary extension of other research methods, aiding in interpretation and elaboration (Bloor, et. al., 2001). Not all focus group questions were exactly the same, but all followed the study’s research questions and sought to address the key constructs. Again, participants were asked to discuss their media exposure, as well as the effects that media, attitudes, subjective norms, and various control factors had on their food- and body-related thoughts, emotions, and behaviors, but this time in a social-oriented atmosphere. One focus group met in person, while the other three were conducted on Skype. All focus groups were audio recorded and digital files were transcribed verbatim after the completion of the focus groups.

While the questionnaire explored the breadth of the issue of disordered eating among female collegiate distance runners, focus groups were utilized because previous studies suggest they are able to explore the depth. The focus group is believed to “explor[e] people’s knowledge and experiences and...examine not only what people think, but *how* they think and *why* they think that way” (Kitzinger, 1995, p. 299), therefore making it an excellent means of exploring the determinants to an individual’s behavior. Focus groups are unique in that “group processes can help people to explore and clarify their views in ways that would be less easily accessible in a one to one interview,” and allow participants to “explore the issues of importance to them, in

their own vocabulary, generating their own questions and pursuing their own priorities” (Kitzinger, 1995, p. 299).

It is this stage of the data collection process in which the personal experience of the researcher worked to the study’s advantage. Ellington (2009) stated that in social research, “validity...is grounded in the claim that the researcher has *been there*—wherever “there” might be.” Lindlof (1995) states,

“The researcher has a demanding ontological position to cope with: He or she has declared it is his or her professional business to enter another’s life world with the intention of ‘seeing’ as the other sees, and then to inscribe such experiences in professional genres of written work. Anything that makes the transition to the research setting an easier one is all to the good” (p. 112).

Bloor, et. al., (2001) emphasize the value in the researcher having knowledge of the underlying issues related to the research topic, and Lindlof (1995) stated, “it is natural for an interpersonal relationship to develop between researcher and participant,” (116) adding that if the relationship fostered is positive, the research results will benefit.

In-Depth Interviews

The third and final method of data collection used in this study was one-on-one, confidential, in-depth interviews with coaches, dieticians, physicians, sports psychologists, and professional distance runners. Interviews were conducted both in person and via telephone. Questions varied given the occupation of the individual being interviewed and his or her experience with the issue. In-depth interview questions followed the study’s research questions and sought addressed as many of the study’s key constructs as possible. All interviews were

audio recorded and digital files were transcribed verbatim after the completion of the focus groups.

In-depth interviews were utilized among these key individuals because previous studies deem in-depth interviews as a means of studying individuals' experiences and gaining their perspectives on issues (Lindlof & Taylor, 2002). They have been utilized in health communication research (Britten, 1995), as they “aim to go below the surface of the topic being discussed, explore what people say in as much detail as possible, and uncover new areas or ideas” (Britten, 1995, p. 252). Although previous research suggests that written and oral research methods elicit similar disordered eating-related responses on “unambiguous behavioral responses” (Fairburn & Beglin, 1994, p. 363), it also suggests that interviews are more effective for measuring complex features, such as feelings and narratives (Fairburn & Beglin, 1994), both of which are integral in studying this phenomenon.

Data Analysis

At the conclusion of the study, the researcher utilized coding to analyze and interpret the study's results, relate them back to the theoretical framework, and draw conclusions about the key constructs (i.e., media, attitudes, subjective norms, and perceived behavioral control). Transcriptions of focus groups, transcriptions of in-depth interviews, and questionnaire responses—which were available online to the researcher—were read by the researcher. They were then sorted by the key constructs. Within each key construct, responses were analyzed for emerging themes. Responses that were repeatedly mentioned were extracted and sorted into these themes. Conclusions were drawn from the interpretation of organized data; for, as Patton (2002) said, “Interpretation means attaching significance to what was found, making sense of the

findings, offering explanations, drawing conclusions, extrapolating lessons, making inferences, considering meanings, and otherwise imposing order” (p. 480).

Chapter 4 – Findings

The aim of this study was to examine the effect of various determinants on disordered eating development among female collegiate distance runners. Specifically, the study examined current NCAA Division I cross country runners' attitudes, subjective norms, and perceived behavioral control as determinants to their behavioral intention. This chapter presents the key findings gathered from the online, self-administered questionnaire disseminated among current NCAA Division I distance runners, the focus groups performed among current NCAA Division I distance runners, and the one-on-one in-depth interviews performed among coaches, professional distance runners, physicians, dieticians, and sports psychologists. The results are organized by emerging themes. Each theme is supported by statements and direct quotes made by current distance runners either on the questionnaire or in one of the four focus groups. Additional supporting statements from key individuals made in in-depth interviews are also included with each emerging theme.

Sources Influencing Disordered Eating

In the questionnaire, current distance runners were asked to rank various sources of information on health and the ideal body type in order of importance. The results are presented in *Table 1* on the following page, which includes their responses to the ranking question on the questionnaire:

Table 1 <i>Sources of Information on Health and the Ideal Body Type</i>	
Health-Related Info	Ideal Body Type-Related Info
1. Dietitian	1. Teammates
2. Physician	2. Magazines
3. Coaches	3. Coaches
4. Teammates	4. Dietitian
5. Magazines	4. Physician
6. Newspapers	5. Movies
7. Blogs	6. Social Media
8. Television	7. Television
9. Social Media	8. Blogs
10. Movies	9. Newspapers

Table 1 – Sources of Information on Health and the Ideal Body Type

An analysis of *Table 1* reveals that—with the exception of magazines ranking second most important as a source of information on the ideal body type—subjective norms from referent individuals have a greater impact on female collegiate distance runners than do media.

Media Influence on Disordered Eating

In the questionnaires, respondents were asked rank various sources of information on both health and on the ideal body type in order of importance. Six of the choices were media sources (i.e., magazines, newspapers, blogs, television, social media, and movies). With the exception of magazines ranking as the second most important source of information on the ideal body type, media sources trailed referent individuals (i.e., teammates, coaches, physicians, and dietitians) in both categories, thus indicating that female collegiate distance runners believe media sources are less influential than interpersonal social influence.

Questionnaire respondents were also asked to recall any media-based health messages they felt emphasized healthy body types, as well as messages they felt emphasized unhealthy body types. Their responses to both prompts were exhaustive and included a wide range of media

outlets. Respondents listed items such as the *Dove* Campaign for Real Beauty and Nike advertisements promoting healthy body image among female athletes as examples of healthy media messages, and items such as “pro-ana”/“pro-mia” websites and unhealthily thin models as examples of unhealthy media messages. Their responses reflect the ambiguity present across a wide range of media in our society. Female collegiate distance runners are no different than anyone else in the sense that they are exposed to a plethora of conflicting media messages about food, eating, weight, and body image.

Always present in the media is the “thin ideal,” for which it is so often criticized. The thin-ideal is commonly held responsible for the development of disordered eating development among females (Juarasico, et. al., 2011) and even female athletes (Bissell, 2004). Some respondents revealed feeling affected by these messages. This is evidenced by their statements, which included:

“The image of the ‘perfect’ women in the media definitely is a little discouraging, knowing that no matter what I will never look like that.”

“[The media] emphasize unhealthy body types or suggest that there is a certain body type that everyone has to live up to if they want to be accepted.”

The majority of focus group respondents acknowledged the existence of the thin-ideal, yet felt as though it was not a strong influence on their food- and body-related thoughts, emotions, and behaviors. A dietitian expanded upon this belief by saying that the media “affects what we view as normal and makes things that are not normal appear normal.” She used an illustration from her field. Patients used to come in at 90 percent of their expected body weight, she said, because they were perceived as too thin. Now, she regularly sees patients come in at 75 percent of their

expected body weight. She attributed this to the media constantly reducing the weight and appearance we perceive as “too thin.”

Expanding upon the media’s thin-ideal is the promotion of the running thin-ideal in running specific media, such as the popular magazines, *Runner’s World* and *Running Times*. Such magazines contain many articles on topics related to food and weight loss. Focus group participants were questioned regarding the influence of running-specific media on their food- and body-related thoughts, emotions, and behaviors. Many respondents expressed beliefs suggesting that running-specific media may act an agent further perpetuating the thin-ideal and influencing eating behavior. This is reflected in their statements, which included:

“I get frustrated reading running magazines sometimes because I feel like the majority of the articles are about food and weight loss.”

“In running media, there are often pictures of extremely lean athletes. This makes me feel as if I am not a real athlete if I am not as lean.”

One professional runner expressed disappointment in running media’s treatment of professional female distance runners for this reason. She said:

Professional runners in the media are often only depicted in their peak physical shape—at meets like worlds, etc.—times when all of their muscles and veins are popping out and they’re likely at the lowest weight they are all year. It’s a problem that the media doesn’t celebrate the performance athlete in her off-season, such as the winter, when they may be 10 or so pounds heavier than they are when they’re in peak performance shape. I’m disappointed in some of the images they’ve chosen of me for this reason. It’s not an accurate depiction of me.

The same professional runner also stated that Nike specifically requested to use her as a model in some advertisements because she looks healthy and is a good role model for younger girls.

Another professional runner stated that running magazines like *Runner's World* cater to a wide readership, and part of being healthy is consuming running-specific media with that fact in mind. "The *Runner's World* articles on eating and weight loss may be beneficial to some readers, but they do not meet the needs of NCAA athletes," she said.

Increased Importance of Food, Eating, and Body Image

In the questionnaires and focus groups, female collegiate distance runners were asked how they felt about food, eating, and body image, and whether those feelings had changed for them since joining their college teams. A common theme that emerged from their responses was the belief that food, eating, and body image greatly increased in importance when they began competing at the Division I collegiate level. Overall, respondents reported a greater focus on and a heightened awareness of the interrelationship between what they ate, how they looked, and how they performed on the track and/or cross country course.

The increased focus on food and eating was believed to be an innate part of distance running culture. As one questionnaire respondent said, "Eating is different for distance runners than it is for anyone else." The centrality of food and eating in distance runners' everyday lives is demonstrated by statements made by questionnaire respondents. Statements included:

"I am much more aware of what I am eating now than ever before."

"Eating has become a more direct focus in my training."

"Since joining the team, I have realized how big of a component food is in our lives as distance runners."

Some distance runners accepted that food and eating increased in importance at the NCAA Division I level. They took advantage of their new environment, viewing it as an opportunity to learn more about distance running-specific nutrition, and learned how to properly fuel their bodies both before and after races and workouts. As one current runner said:

I am now more conscious of the types of food I put into my body because I want it to function at its best. I am definitely eating healthier foods now than I ever was before, which will benefit my health and eating habits for a lifetime.

These runners were able to find a healthy balance and maintain proper perspective on nutrition despite pressure to do otherwise. Focus group participants espousing this viewpoint on food and eating were described as less likely to engage in eating disordered behavior.

However, many distance runners struggled with the increased importance placed on food and eating at the NCAA Division I level. They described the experience of eating with words like “anxiety,” “stress,” “fear,” “guilt,” “shame,” and “confusion.” Eating was described by one as “a battle,” and food was described by another as an “enemy.” Statements from such distance runners included:

“I am in a constant struggle to determine if food is fuel or something bad to put in my body.”

“Thoughts about food are all consuming and stressful for me every day.”

“[The collegiate running environment] has messed up my thoughts on food...most likely permanently.”

In focus groups, runners with this perspective and teammates described as having this perspective were described as more likely to engage in eating disordered behavior than were healthy-minded runners. This is an easy trap to fall into, as one professional runner said, “It’s

hard to not let running and eating and weight get out of perspective in college. There is so much emphasis on it.” As one coach said, “There is so much emphasis on running successfully and so many messages about nutrition and weight. It’s easy to see how a connection can be made and then taken a little too far...even with good intentions.”

Likewise, the increased focus on body image (namely, upon being “thin and fit”) is also believed to be an innate part of distance running culture. As one questionnaire respondent said, “Upon entering college, I became more aware of a certain standard for how you should look if you want to be fit.” A professional distance runner validated this by saying, “Distance running is definitely a sport where [thin body types] are emphasized.” Focus group participants discussed how obsessed female distance runners can be with their own bodies and the bodies of other female distance runners, whether teammates, competition, or professionals. They reported a keen awareness of physical change, especially of weight gain. As one professional runner said, “Runners can be so perceptive...when people gain weight. It’s not healthy at all. [Distance runners] can point out people’s weight gain, even if it’s only a couple of pounds.” Runners discussed how “being expected to work out in spandex and a sports bra” and “race in a tiny uniform that shows everything” creates an environment in which body image becomes elevated. Questionnaire respondents and focus group participants reported a heavy emphasis on having a toned core and lean legs—two trademark characteristics of what they called a “runner’s body.” One focus group participant said:

A lot of things in our sport go back to our bodies and the way we look. From the uniforms we wear to the fact that you compete on there on a track—just you, exposed the whole race to spectators—to the fact that we either win or lose because of our pure physical ability.

Much like with the concept of food and eating, runners reported both healthy and unhealthy reactions to the increased emphasis on body image at the NCAA Division I level. As one questionnaire respondent stated, “My body has become much more fit and muscular as a result of increased training in college. I like the way that I look and feel good when I run.” Runners with this type of perspective and teammates described as having this type of perspective were described as less likely to engage in eating disordered behavior.

However, many runners described opposite reactions to the increased importance of body image at the NCAA Division I level. “I will never be able to look like some of the girls on my team or in my conference, which frustrates me,” one runner said, “I was never self-conscious about my body until I was in this environment.” Others described similar experiences. Overall, being “surrounded by a group of extremely fit women ” and “training with conference champions and some Olympians” made some runners doubt their bodies and feel insecure about them, even if they were performing well. They expressed difficulty accepting their body types while in the context of the team environment.

A dietitian who works specifically with eating disorder patients and has seen many athletes—including many female distance runners—shared her perspective on how elevating these topics can lead to disordered eating. She said that an important element in determining whether someone is eating disordered is the “number of waking hours spent thinking about food, weight, exercise, appearance, grooming, and prep...absolutely anything related to body image, food and weight.” She said that the demands of athletes’ sports place them in an environment in which they automatically spend more time and focus on these activities than non-eating disordered non-athletes. She said, “It’s a fascinating thing to figure out when this turns into more

than just ‘How am I fueling? How am I getting what I need?’ Somewhere along the way, it can become something that distracts an athlete from her life.”

The Distance Runner Thin-Ideal

In the questionnaires and focus groups, female collegiate distance runners were asked if they felt they needed to be thin in order to be competitive at the NCAA Division I level in cross country. When presented with this statement as a Likert-type question in the questionnaire, 44.3 percent of respondents either strongly agreed or agreed with it, while 26.1 percent strongly disagreed or disagreed. This belief that distance runners must be thin in order to be successful emerged as a common theme among current runners and was supported by statements from professionals in in-depth interviews.

The belief that thinness equates success is rooted in the culture of distance running. A physician says, “I see a lot of women distance runners who feel that they need to be at really low weight to perform well.” One dietitian described this belief as an “ethos in distance running,” and another said that it has “been in running for a long time.” This is supported by questionnaire and focus group statements from current NCAA Division I runners, which included:

“It’s common knowledge that you should be skinny to be a distance runner. Whether someone says it to you or not, you should probably be pretty lean if you want to be competitive.”

“There’s an association at this level for sure that being lean is necessary to be tough.”

“I think it’s very frustrating to be in a sport where it’s almost impossible to be both competitive and be at a healthy weight. That’s just the reality of it.”

“I love my body, but I know it needs to be smaller than it naturally is to be as fast

as I can.”

Runners described a tendency to hold themselves to a separate ideal than do non-runners; an ideal that requires them to be much more thin. This is evidenced by statements made in the questionnaire, which included:

“Everyone says I’m very skinny, but in the running community I’m just average.”

“I don’t really care much for the world outside of running, so I tend to gauge my ideal self off of the runner body type. What would be normal in the outside world would be over-race-weight.”

“I want people to be able to pick me out and know that I’m a distance runner.”

The cultural belief that thinness equates success can start at a very young age, as stated by a dietitian. She described an experience in which a high-school aged female distance runner with osteoporosis in her femur and back resulting from the female athlete triad told her, “You just don’t get runners. In running, everyone is thin...everyone is amenorrheic. It’s just the way runners are. There’s nothing wrong with me.” A coach who runs a summer camp for elite female runners ages 12-18 echoed this. “You’d be shocked,” she said, “We have kids come to my camp and say, ‘Wait...you mean we actually eat? This is a running camp and we actually get to eat?’”

The “distance runner thin-ideal” is strong because it is not only cultural, but also empirical in nature. A professional distance runner said, “People equate thinness with speed. And that’s because there are some girls that will do very well and they’re very thin.” Questionnaire respondents and focus group participants described how many of the most successful collegiate runners were also the thinnest. For instance, one respondent stated, “The best runners in the NCAA for the most part are smaller and lean.” Another said, “Even though the goal is to look strong not skinny, it’s always the skinny ones that succeed.” Still another said, “Those that make

it to the national races and finals tend to be extremely skinny and unhealthy looking. Not all look that way, but a great majority do.”

In focus groups, current distance runners expressed their frustration over feeling they needed to be thin to be competitive. They described getting passed in races by girls who were thinner than them and feeling like they needed to be that way to be competitive with them. Some discussed fear of the pursuit of thinness, since they believed it to be a sacrifice of health. Many felt that they could not achieve the level of thinness they perceived necessary to achieve success without restricting calories, a sacrifice not all of them were willing to make.

The troubling thing about this belief is that—according to both previous studies and many of the interviewed individuals—it isn’t true. This is reflected by the fact that all eight professional runners interviewed said that the overwhelming majority of female distance runners who advance from the college environment and into the professional field are not eating disordered. This is supported by statements professional runners made, which included:

“There are a lot of people in our sport that come and go, and tons of it has to do with the fact that they don’t have a healthy perspective on eating.”

“College is almost about surviving, since there is a lot more disordered eating at that level. With the pros, you see it a whole lot less.”

“I couldn’t name one [college teammate] that I would say ate healthfully. I can’t name one. It very much disturbed me, but out of my group I was the only one that ran post-collegiately.”

All professionals—professional runners included—attested to the physical, mental, and emotional damage disordered eating has on the body. Every professional interviewed

acknowledged the existence of the running thin ideal, yet expressed opposition to using disordered eating as a means to achieve it. As one dietitian said:

You just can't run more than you're eating for. I'm not sure how [the running thin ideal] got started, but that's definitely the ethos in distance running. Unfortunately, it doesn't seem to be based in anything factual.

Teammate Influence on Disordered Eating

Another common theme was the influence of teammates on eating. In the questionnaires and focus groups, female collegiate distance runners were asked how their teammates' bodies, words, and/or behaviors influenced their food- and body-related thoughts, emotions, and/or behaviors. Consistent with previous studies (Dosil, 2008; Dworin, 2011; Hellmich, 2006; Rice Lave, 2010; Sundgot-Borgen & Torstveit, 2010), teammates were described as referents bearing significant influence on female collegiate distance runners' food- and body-related thoughts, emotions, and behaviors. Teammates were ranked as the most important source of information on ideal body types by questionnaire respondents. At fourth, they also ranked highly on questionnaire respondents' list of sources on health information.

Focus group participants explained that teammates have a lot of influence on female collegiate distance runners due to the immense amount of time they spend together. Respondents described their teammates as their "family," "best friends," and "main social group," acknowledging that much of their college experiences were shaped and defined by them. A professional runner said, "I think teammates [have more influence than other factors] because you're always together. You're cooking together, traveling together, eating together...you're always together."

Some questionnaire and focus group respondents indicated that their teammates had direct, positive influences on their eating. This is evidenced by their statements, which included: “The leaders of my female distance team pretty much would not tolerate unhealthy words or behaviors. The obsessive fixation on food was not talked about. We were there to train and have fun,” and “Our team is very good about eating and being open to all foods. I feel like my team has helped me develop a better relationship with food.” Focus group participants described this type of team situation as safe, comfortable, and free of judgment. Respondents in this environment felt less social pressure to engage in eating disordered behaviors.

On the other hand, some questionnaire and focus group participants indicated their teammates had direct, negative influences on their eating. This is evidenced by their statements, which included:

“When I came in as a freshman, I didn’t know anything. I looked at the other girls to see what they were doing. I saw them hardly eating, so I did the same. I figured that’s what I needed to do to be good, too.”

“When a teammate makes a comment about a girl from another team being fat and wanting to beat them because they are so fat, it makes me wonder if they think I am fat too.”

“I have lost some of who of I am because of the influence of my team and the pressure to reach this unrealistic thinness to be a better runner or a good runner.”

Focus group and questionnaire respondents described this type of team situation as “beyond difficult,” “stressful,” competitive,” and “unhealthy.” A professional runner looking back on her college experience of living with teammates said, “I think that it takes a couple of years or a really strong person to forget what everyone else is doing and do your own thing.”

Respondents described further, severe distress resulting from situations in which they were not only training and competing with eating disordered teammates, but also living and eating with them as well. They described feeling “judged,” “uncomfortable,” and “scared.” Some described taking steps to avoid contact with their roommates, especially in regards to eating and the kitchen. Ironically, some described turning to overeating or very unhealthy eating as a means of coping with the stress of living and eating with eating disordered teammates. They described this behavior as a means of “mak[ing] up for their under eating” or “proving them wrong,” though some respondents were quick to acknowledge that this eating behavior was unhealthy and disordered as well, often seeming almost perplexed by it.

A coach explained that this and other kinds of unhealthy situations not abnormal; rather, they are highl likely to develop if disordered eating is not handled correctly on a team. “It’s difficult when you put other people on the team in the middle,” she says, “As a coach, you want to create an environment where nobody else has to bear the burden of the situation as their own detriment.” She said people with eating disordered teammates can “tend to bear that weight in a heavy way...feeling like they are a crucial intermediary for someone struggling with a disorder.” She said there should be professional intermediaries in place to “take the weight off of [the runners’] shoulders so they can compete and not worry.”

Coach Influence on Disordered Eating

Another common theme was the influence of coaches on eating. In the questionnaires and focus groups, female collegiate distance runners were asked how their coaches influenced their food- and body-related thoughts, emotions, and/or behaviors. Consistent with previous studies (Carter, 2009; Currie, 2010; Dosil, 2008; McManis, 2010; Sundgot-Borgen & Torstveit, 2010), coaches were described as referents bearing significant influence on female collegiate distance

runners' food- and body-related thoughts, emotions, and behaviors. Coaches were ranked as the third most important source of information on both health and ideal body types by questionnaire respondents.

Focus group participants explained that coaches have a lot of influence on female collegiate distance runners' eating due to the uniqueness of their relationship. Coaches were described as "authority figures" that runners want to obey, impress, and please. Respondents also described their coaches as individuals who understand the demands of NCAA Division I collegiate distance running, a very rare characteristic. Some described coaches as fulfilling "father," "grandfather," and "friend" roles in their lives, thus evidencing a relationship of care and trust. A coach validated this, stating, "There is a lot of pressure on coaches. We end up taking on all kinds of informal roles...that's just the nature of distance running." Also, as with teammates, respondents indicated that coaches also have influence due to the large amount of time coaches and athletes spend together.

Some respondents described coaches as having a direct, positive influence on their eating. This is supported by focus groups and questionnaire statements, which included:

"Our coach emphasizes long-term health and consistency over shortcuts that may get you one good season, but not a good career."

"He is interested in my health and making sure that I am taking care of myself so I can compete well. He's never made me feel like I need to cut calories or lose weight in order to be good."

Some of them described coaches implementing policies—formal or informal—at the team and individual level to prevent, mitigate, or avoid the problem, as evidenced by the following statements:

“Our coach has said that it does not matter if you are a Big Ten champion, All-American, national champion, or whatever...if you’re not keeping yourself healthy or eating correctly, he will bench you because health is more important than running.”

“Our coach does not accept eating disorders on our team. If there was an issue, then I would have to be healthy again in order to run.”

On the other hand, some respondents described coaches as having a negative influence on their eating. For instance, they were described as unhealthy influences, as evidenced by the statements, “Our coaches do not hide their beliefs that to be competitive at this level you have to be lean,” and “I don’t think my coach cares about how healthy I am as long as I run well. I think he would rather see me run well at an unhealthy weight than run poorly at a healthy weight.” One questionnaire respondent said, “He has admired or praised girls that have suddenly lost weight and ignores girls who have put on weight.” Others described “hypocritical” coaches who said they did not tolerate disordered eating, yet let it go unmentioned if a runner was performing well at an unhealthy low weight or while engaging in eating disordered behavior. A dietitian said that she’s seen “a lot of coach behavior that’s not very encouraging,” then proceeded to list specific behaviors, such as “eat[ing] meals with their athletes to make sure they’re not overeating” and “do[ing] body fat composition tests where the athletes have to say their percentages out loud in front of everyone as a form of intimidation.”

Another dietitian said that this kind of behavior is not abnormal, as it can develop rationally out of a coach’s desire to win. “It can be hard for coaches to refer athletes to us [to address disordered eating] because they have a vested interest in them performing well.” A physician validated this by saying, “Their coaching job is dependent on the success or failure of the team. I don’t want to say that they don’t care [about their athletes’ well being]...but I think

some coaches really don't care." He said, "It's the same thing for them as it is for the athletes that we're trying to help. They want the success, and some of them will go over the edge in order to achieve it."

Dietitian, Athletic Trainer, and Sports Psychologist Influence on Disordered Eating

In the questionnaires and focus groups, female collegiate distance runners were asked which "non-running-related people" influenced their food- and body-related thoughts, emotions, and/or behaviors. Consistent with previous studies (Beals, 2004; Carter, 2009; Dill, 2006; Jacobsen, et. al., 2001; Troy, et. al., 2006; Vaughan, 2004), dietitians and sports psychologists were ranked as important sources of information on health and the ideal body type. While athletic trainers did not appear on the list of individuals to rank, dietitians and physicians ranked first and second respectively on the list of sources of health information. In regards to information on ideal body types, they tied for third.

One theme that emerged from the focus group data was the lack of talk regarding the influence of dietitians and physicians, despite their high ranking on the questionnaire. Questionnaire respondents neglected to mention the influence of these individuals—or other individuals, such as athletic trainers and sports psychologists—when prompted to list "non-running-related people." Discussion in focus groups revealed that institutions with such resources do not always adequately utilize or promote them. When asked in focus groups, respondents had varying attitudes regarding these resources. Some said that they were "helpful when used, but hardly ever used." The consensus of one focus group was that their team dietitian "didn't understand the needs of distance runners," and another group expressed a negative stigma associated with seeing their dietitian since "Coach usually only sends the overweight people to

meet with her. If you're asked to see her, it's cause you've done something wrong." Likewise, respondents communicated a negative stigma associated with seeing the sports psychologist.

Regardless, dietitians, sports psychologists, and physicians participating in in-depth interviews expressed willingness to help female collegiate distance runners in this area. "I want to be someone that they can trust and talk to," said one sports psychologist, "I want them to know that I have an interest in their success as an athlete, but I won't be pressuring them in ways that their coaches might be." A physician echoed this, saying, "I do care if runners run well and perform to their expectations after all of the training that they go through...but I also care that they are healthy enough to move on [after their athletic careers]." A dietitian said, "In our culture, people only seek out healthcare when there's a problem...but we should work on preventing things instead of just treating them after the damage is done." Ideally, she said, "dietitians, coaches, athletic trainers, and other key individuals should agree upon a few basic principles in regards to eating and nutrition and work collaboratively as a team to address the issue," thus taking away the stigma of "having to go see someone" if there's a problem.

Internal Factors Influencing Disordered Eating

Questionnaire respondents were asked to list factors that they believed either facilitated or inhibited disordered eating among them. A theme that emerged from their responses was the influence of internal factors on disordered eating. Consistent with previous studies on disordered eating, items such as personality traits, mindset, and psychological disturbances all surfaced as potential contributing factors (Beals, 2000b; Hellmich, 2006; Gapin & Petruzzello, 2011; Greenleaf, et. al., 2009; Miler, 2006; Petrie, 2009; Sundgot-Borgen, 2005; Vardar, et. al., 2007).

Many questionnaire respondents listed "perfectionism" and "pressure on self" as aggravating factors for disordered eating. When asked to list factors that facilitate disordered

eating, professional runners also commonly listed both perfectionism and pressure on self. They also built upon the list by including items such as “trying to be the best at everything,” “obsessing about doing everything perfectly,” “having a ‘more is always better’ mentality,” having a “hard work ethic,” having “determination,” having “drive,” having a “Type-A personality,” and having “low confidence, poor self-esteem, and lack of autonomy.” A mindset of fear was also listed by both collegiates and professionals. Specifically, “fear of failure,” “fear of change,” and “fear of fat” were listed as aggravating factors. A coach agreed with many of these personality and mentality factors, stating that they are often tied to restrictive eating habits, “but not in a good way...it can easily spiral out of control.”

Psychological disturbances and other underlying issues were also a common theme related to internal factors. Focus group respondents discussed how depression and Obsessive-Compulsive Disorder (OCD) characteristics functioned as aggravating factors for disordered eating. A coach validated this point by explicating how people with OCD characteristics are “drawn to this sport because it’s a very repetitive type of sport [and] their personality type thrives on the repetitiveness.” A dietitian expanded upon this, saying, “There are always underlying deeper issues that contribute to the outside behavior that we see as eating disorders and disordered eating. There is always something deeper going on, whether that be stress, depression, or other life items that happen.” Another dietitian described how running and food restriction can begin as coping mechanisms for deeper issues and therefore become both addictive and difficult to overcome.

On the other hand, questionnaire respondents listed “self-esteem,” “self-awareness” and “self-contentment” among internal factors inhibiting disordered eating. In focus groups, they discussed the value of being able to differentiate their needs, body types, and performance goals

from their teammates' needs, body types, and performance goals, and being able to acknowledge that different body types can be successful at distance running. Respondents also discussed the value of placing health in higher esteem than performance, being strong enough to resist peer pressure, keeping eating and body image in proper perspective, realizing that the athletic experience isn't about pleasing others, educating oneself about nutrition, and employing media literacy when consuming media—both running-specific and otherwise. A professional runner supported these statements by sharing her experience, “I embraced the body I had. I focused on me and tried not to compare myself to anyone else. My focus was running fast and not what I looked like compared to anyone else.”

External Factors Influencing Disordered Eating

When asked to list factors that they believed either facilitated or inhibited disordered eating among them, many questionnaire respondents also listed external factors, thus making it an emerging theme as well. Aspects of female collegiate distance runners' college environment, stressors unique to student-athletes, and both their university and team infrastructure were all listed as potential contributing factors.

Aspects of the college environment—specifically stressors experienced in the freshman year—were discussed as influential factors. Respondents discussed the stress of being independent for the first time, being challenged academically in harder classes, being responsible for their diet for the first time, being separated from parents, and trying to establish an identity in a new place. A coach stated change can trigger problems, especially in the younger years of college when “you haven't developed...skills to handle it yet.”

Student-athletes face additional stressors that their non-athlete peers don't face. Questionnaire and focus group respondents described being in an environment in which they

were “surrounded by people that are extremely fit...where your body is constantly being judged,” and “your teammates are struggling with body image,” and “you’re expected to train in nothing but a sports bra and spandex.” They expressed anxiety over formal weigh-ins, body fat testing, injury, gaining weight, losing weight, pleasing coaches, being in an intensely competitive environment, failing to perform to expectations, and losing a scholarship. They described experiencing difficulty scheduling meals around practice times, discovering which foods help their bodies perform their best, and eating healthily enough in their dorm cafeteria. They stated if they lived off-campus, they often lacked the proper funding for a well-balanced diet. They described constantly missing class and tests due to their travel schedules, and having commitments that regular students don’t, such as daily practice, lifting, study hours, team meetings, team philanthropy events, and drug testing. A dietitian said, “[When athletes come to us], we try to help them relax. We know this is their sport and it’s important, and that pressures—including pressures to be thin—are almost innate within their sport.”

University and team infrastructure were also discussed as influential factors. Questionnaire and focus group respondents expressed the potential positive impact of having an infrastructure of disordered eating support at colleges and universities. Interviews with professionals supported the need for such infrastructure. One dietitian, for example, shared an example of a successful university infrastructure:

The University of Wisconsin at Lacrosse implemented a program where every time an athlete came in to the medical center with anything, they got educated on all of the health issues that they were considered at risk for, eating disorders being one of them. And they dropped their injury rate by about 80 percent...and their eating disorder rates dropped likewise. There’s evidence that things like this can be successful.

A coach spoke on the importance of having a team infrastructure based on communication, trust, and a mutual understanding that health is important. She expressed her belief that runners need access to an individual they can meet with and feel they trust. “Communication is key,” she said, “Everybody is going to be struggling with something. But if you have someone you can talk with, you’re going to be moving in the right direction and be okay.”

Chapter 5 – Discussion, Conclusion, and Recommendations

The aim of this study was to examine the effect of various determinants on disordered eating development among female collegiate distance runners. Specifically, the study examined current NCAA Division I cross country runners' attitudes, subjective norms, and perceived behavioral control as determinants to their intent to engage in disordered eating. This chapter includes a detailed discussion of each research question, based upon both findings from this study and previous literature. In addition, the chapter provides conclusions drawn from the study and recommendations for practitioners in the health communication field, coaches, and institutions, and female collegiate distance runners.

Effect of Media Messages on Disordered Eating

RQ 1: Do the media facilitate disordered eating among NCAA Division I female distance runners?

Previous studies indicate the media facilitate disordered eating behavior among females (Juarasico, et. al., 2011) and female athletes (Bissell, 2004), due to the thinness-depicting and thinness-emphasizing messages they promote. Questionnaire and focus group responses from current runners were in line with these studies, as they suggested thinness-emphasizing media messages do have some influence on their food- and body-related thoughts, emotions, and behaviors; and could, therefore, facilitate disordered eating among them. In-depth interview responses confirmed this fact by suggesting these messages play an integral role in shaping perceptions of “normal” and “abnormal” in regards to food, eating, weight, and body image.

However, these were not the only media messages believed to influence female collegiate distance runners' food- and body- related thoughts, emotions, and behaviors. On top of the thinness-depicting media messages to which non-runners are exposed, female collegiate distance

runners also described receiving messages from running-specific media (such as the popular running magazines, *Runner's World* and *Running Times*) to be thin and lose weight.

Questionnaire and focus group responses suggest these messages take the thin-ideal to a level that is much more personal and close to them, and that they could also further aggravate disordered eating among them. This finding is consistent with previous studies, which indicate that leanness in sports media facilitates eating disordered behaviors among athletes (Bissell & Zhou, 2004; Harrison, 2003).

Overall, the results of this study suggest that subjective norms from the media do contribute to female collegiate distance runners' overall perception of both health and the ideal body type; however, media norms are believed to be less influential than interpersonal social norms from individuals like teammates and coaches.

Effect of Attitudes on Disordered Eating

RQ 2: Do NCAA Division I female distance runners' attitudes facilitate disordered eating?

Several themes emerged from the runners' responses that demonstrated their attitudes towards disordered eating. Themes related to attitude included the increased importance of food, eating, and body image at the NCAA Division I level in distance running; the distance runner thin-ideal; and the relationship between running, eating, weight, and morality. All three were found to facilitate disordered eating among female collegiate distance runners. These findings are consistent with previous studies based on the theory of planned behavior (Ajzen, 1991) deem attitude the "best predictor of intentions" (Conner & Sparks, 2005, p. 185).

Reviews of the theory of planned behavior suggest that attitudes are a function of the perceived likelihood that the performance of a behavior will lead to a particular outcome, and that outcome's value to the individual (Conner & Sparks, 2005). In the case of running and

disordered eating, respondents expressed their belief that engaging in eating disordered behavior leads to success in their sport. As a result, many NCAA Division I distance runners cause their bodies irreparable damage by engaging in disordered eating due to the perceived benefit of athletic success they believe it offers them. Although many of them admitted to abstaining from disordered eating and/or acknowledged it as unhealthy, the belief—which was found to be both cultural and empirical in nature—still existed among them as both a perceived truth and a temptation experienced by those desiring success. In-depth interview participants acknowledged the existence of this belief among female collegiate distance runners and recognized its attractiveness to them.

Unfortunately, this belief—which is so readily accepted—is not grounded in truth. While it is true that some collegiate runners may experience short-term athletic success as a result of eating disordered behavior, the behavior is clearly not sustainable. Those who persist in eating disordered behavior develop serious health problems that actually act as detriments to their athletic performance and their physical, mental, and emotional health. It is surprising that so many runners buy into this belief when there is little evidence that it offers them long-term success as athletes.

Effect of Subjective Norms on Disordered Eating

RQ 3: Do subjective norms of salient referents facilitate disordered eating among NCAA Division I female distance runners?

Reviews of the theory of planned behavior (Ajzen, 1991) suggest subjective norms have the smallest effect of the three determinants to behavioral intention in the majority of behavioral situations (Armitage & Conner, 2001; Van den Putte, 1991). However, since disordered eating is

considered a social behavior, subjective norms from salient referents do play an integral role in its development (Hesse-Biber, et. al., 2008). The results of this study confirm this fact.

Consistent with previous studies, respondents described teammates (Dosil, 2008; Dworin, 2011; Hellmich, 2006), coaches (Carter, 2009; Currie, 2010; Sundgot-Borgen & Torstveit, 2010), sports dieticians, athletic trainers, and sports psychologists (Carter, 2009; Dill, 2006; Rockwell, et. al., 2001) as salient referents influencing their eating behavior. They discussed how their closeness with and intense amount of exposure to these referents had significant influence on their food- and body-related thoughts, emotions, and behaviors. They reported a wide range of normative expectations from these individuals—both healthy and unhealthy. This study found that subjective norms—especially subjective norms from teammates and coaches—facilitated disordered eating in situations where normative expectations were unhealthy, where referents thought distance runners should engage in disordered eating, and where distance runners were motivated to comply with (unhealthy) referents' expectations.

Effect of Perceived Behavioral Control on Disordered Eating

RQ 4: What control factors facilitate disordered eating among NCAA Division I female distance runners?

The theory of planned behavior (Ajzen, 1991) posits that various internal and external control factors contribute to influence behavioral intention. The results of this study were consistent with this fact, as various internal and external control factors were found to contribute to the facilitation of disordered eating among female collegiate distance runners.

Female collegiate distance runners live and train in an environment rich with external control factors that previous studies have deemed as facilitators of disordered eating. Consistent with previous studies, they described stress related to transitioning to college (Greenleaf, et. al.,

2009), establishing their identity (Brewer, 1993; Gapin & Petruzzello, 2011), being in a situation in which body image and performance are a focus (Greenleaf, et. al., 2009), being surrounded by more teammates who are struggling with disordered eating than athletes in any other NCAA sport (AJC, 2007), being expected to train and race in revealing attire (Bissell, 2004), and having to participate in body weight or body fat measures as part of their training (Carter, 2009; Currie, 2010) as some of them. Lack of infrastructure on the team or university level was discussed as an external factor facilitating disordered eating as well.

On top of this, many female collegiate distance runners also possess internal control factors that previous studies deem facilitators of disordered eating. For example, perfectionism (NAANAD, 2011), pressure on self (Dosil, 2008), obsessive-compulsive traits (Hellmich, 2006), fear of failure (Vardar, et. al., 2007), depression (Petrie, 2009), and low self-esteem and low body satisfaction (Greenleaf, et. al., 2009) were all mentioned by both current runners and key individuals as internal factors facilitating disordered eating.

Conclusion

Disordered eating is a major health concern among current NCAA Division I female collegiate distance runners, as it may be present in over 70 percent of them (Noden, 1994). Previous studies have shown that—of all NCAA athletic teams—women’s cross country teams were found to have the highest prevalence of disordered eating among them (AJC, 2007). Statements from current NCAA runners, professional female distance runners, coaches, physicians, dietitians, and sports psychologists confirm the prevalence and severity of the issue.

Research on public health issues is constantly being conducted with the intent of informing the health communication field for campaign construction. Campaigns are implemented among a wide range of populations to address many different health issues, often

proving to be very successful at informing and influencing decisions, motivating individuals to change behaviors, increasing knowledge and/or understanding of health-related issues, empowering people, and exchanging/interchanging information in a two-way dialogue. However, it appears no campaigns currently exist targeting this group. While positive messages addressing the issue of disordered eating and eating disorders are present across in the media, the messages that do exist do not target NCAA Division I distance runners specifically. This is problematic, since the results of this study indicate—not only that they are misinformed and engaging in disordered eating at extremely high rates—but that they all but ignore any preventative messages that they feel do not speak to and understand them as distance runners. As a result, the issue of disordered eating among female collegiate distance runners—which is clearly very serious—is presently being all but ignored in the media by the health communication field. With few exceptions, the problem persists unaddressed.

The results of this study indicate that the thinness-depicting and thinness-emphasizing media messages to which female collegiate distance runners are exposed—both in general media and in running-specific media—set an original perception among them of what is normal in regards to food, eating, weight, and body image. This perception is then further reinforced by a plethora of factors uniquely experienced by them due to their status as NCAA Division I female collegiate distance runners. The attitudes currently present in the distance running environment—such as the belief that one must be thin in order to be successful at elite levels, or that one must restrict calories in order to be thin—are one contributing factor. Pressure (either real or imagined) from coaches and teammates further reinforce their perception. Finally, multiple internal control factors—such as distance runners' personality types and propensity towards psychological disturbances—further reinforce their unhealthy perception, as do external

control factors, such as college-related stress or sport-specific stress experienced within the context of collegiate distance running.

Overall, the results of this study found both media messages and key moderating factors (i.e. attitudes, subjective norms, and perceived behavioral control) to have an effect on female collegiate distance runners perceptions of food, eating, and their bodies, and contribute to the development of disordered eating among them. Statements from current NCAA runners, professional female distance runners, coaches, physicians, dietitians, and sports psychologists confirm this finding. However, overall, the study found the influence of the key moderating factors to have a stronger effect on disordered eating development than the original media messages themselves.

Recommendations for Practitioners in Health Communication

This study provides valuable recommendations for practitioners in the health communication field. The results of this study indicate that any intervention among female collegiate distance runners with the intention of preventing and/or mitigating disordered eating should include the media, as media messages were found to influence female collegiate distance runners food- and body-related thoughts, emotions, and behaviors. Specifically, any campaign should include magazines, since they were ranked highly by distance runners as a source of information on the ideal body type. Media messages should also target female collegiate distance runners specifically, since the results of this study suggest they are likely to ignore media messages that they feel do not speak to and understand them as runners.

The results of this study also indicate that any campaign should also move beyond the realm of mass media, since media-based norms were the least influential on disordered eating development among this population. Interventions should include interpersonal communication,

since the results indicate subjective norms from key individuals are integral in shaping eating behavior. If possible, it may be beneficial for campaigns to involve peer education from teammates, since peer education has been found to be very successful (Parken & McKeganey, 2000; Sloane, 2010), and since the results of this study indicate that teammates are valuable referents on food- and body-related issues. Additionally, a valuable goal of intervention should be attitude change, since the results of this study suggest many female collegiate distance runners' current attitudes towards disordered eating—specifically towards the relationship between thinness and athletic success—are unhealthy and are currently facilitating disordered eating among them. Intervention goals could also include the re-shaping of some internal control factors, such as the encouragement of self-esteem, self-acceptance, and autonomy, since the result of this study found these to be protective factors against disordered eating.

Recommendations for Coaches

This study also provides valuable recommendations for coaches of female collegiate distance runners. First, coaches should familiarize themselves with female collegiate distance runners' attitudes towards disordered eating. Coaches should work to correct the current attitude toward the runner's thin ideal by communicating with their athletes about the health risks associated with disordered eating and the negative impact disordered eating can have on their immediate athletic performance and long-term athletic career. They should also do their best to create an environment in which running, eating, and weight are in proper perspective, since the results of this study show that disproportion in these areas can facilitate disordered eating.

In regards to subjective norms, coaches should recognize the influence that they have as trusted authority figures whom athletes seek to please; and, consequently, be careful with their words and behaviors when around them. Coaches should establish expectations for their athletes

regarding health, eating, and body image. These should be clearly communicated to athletes so no ambiguity exists regarding what is healthy, unhealthy, acceptable, or unacceptable on the team. Coaches should also be wary of teammates' influence on one another, since the results of this study indicate subjective norms from teammates may facilitate disordered eating.

Specifically, coaches should be cautious of certain teammates living and eating together, as these were described as situations that may facilitate a wide range of unhealthy reactions, including disordered eating.

Finally, in regards to perceived behavioral control, coaches should work collaboratively with the resources (i.e., physicians, dietitians, sports psychologists, and athletic trainers) available to them. If possible, these individuals should combine and create a set of expectations by which they expect athletes to abide, since this was described as an environment that discouraged disordered eating. If possible, coaches could also adjust some external control factors related to the training environment. For example, coaches could allow the option of wearing more conservative practice attire or competition uniforms, if possible. Additionally, coaches employing methods such as weigh-ins or body fat percentage tests could allow athletes the option of not participating, since the results of this study indicate that such factors may facilitate disordered eating.

Recommendations for Institutions

This study also provides valuable recommendations for colleges and universities with track and cross country teams. Colleges and universities seeking to prevent or mitigate disordered eating among female distance runners should employ a wide range of professionals, including (but not limited to) dietitians, athletic trainers, physicians, and sports psychologists. The results of this study indicate that institutions with infrastructure in which multiple

professionals work collaboratively in an effort to prevent and/or mitigate disordered eating are successful in doing so. Institutions may employ dietitians, athletic trainers, and physicians to educate runners about the health risks and performance detriment associated with disordered eating, since the results of this study indicate current runners' positive attitudes toward the runner's thin ideal facilitate disordered eating. These individuals also have the medical expertise to serve as external factors aiding in mitigation if disordered eating develops. Institutions may also employ sports psychologists to help runners deal with the stress of various internal control factors (such as depression and underlying issues) and external control factors (such as the stress associated with college, athletics, or living with eating disordered teammates), since the results of this study indicate these factors—if not addressed—may facilitate disordered eating.

Recommendations for Female Collegiate Distance Runners

This study provides valuable recommendations for female collegiate distance runners currently competing on NCAA Division I cross country and track teams. The results of this study indicate that there are many external control factors that female collegiate distance runners have no power to change. They are immersed in an environment that encourages disordered eating much more strongly than most environments. However, a few specific protective recommendations for female collegiate distance runners can be drawn from the study's findings.

First, female collegiate distance runners have the ability to alter some internal control factors. For example, they should follow the example of professional distance runners who “survived” the collegiate running environment by embracing the bodies they had; putting food, eating, running, weight, and body image into proper perspective; educating themselves on the health risks associated with the thin ideal; espousing a higher esteem of health than of performance; and learning to differentiate their needs, body types, and performance goals from

the needs, body types, and performance goals of their teammates. The results of the study suggest that decreasing both perfectionistic self-expectations and the importance of subjective norms—especially from teammates and coaches—may be beneficial to female collegiate distance runners seeking to avoid disordered eating. Adopting media literacy when consuming media—running-specific and otherwise—may also act as a protective factor.

Recommendations for Future Research

This study provides a comprehensive overview of the issue of disordered eating among female collegiate distance runners, and sets the stage for the potential undertaking of quite a few intriguing research studies. For example, researchers could examine each moderating variable independently, perhaps with a mixture of qualitative and quantitative research methods. A long-term ethnographic study (such as the following of a team over the course of a season or a year) could also provide much insight. A study similar to the present one could also be interesting if conducted among coaches alone. If possible, it may be interesting to do a research study among media professionals who disseminate running-specific media, or to perform a content analysis of running-specific media. In regards to the health communication field, it may be of value to perform a study testing female collegiate distance runners' response to different kinds of media-based health stimuli, so as to effectively design a campaign targeting them. Finally, many of the conversations that occurred in focus groups and in-depth interviews suggested that NCAA Division I female collegiate distance runners have difficulty with disordered eating in various forms after the completion of their athletic careers. This is consistent with previous studies (Pholin, 2011; Waltz, 2009; Vardar, et. al., 2007), and would make for an interesting qualitative study as well.

Limitations

This study was not without its limitations. First, all of the data gathered were self-reported, so there is room for deception or refusal to disclose information. This is a particularly valid limitation in the study, since disordered eaters are notorious for their unwillingness to honestly disclose their thoughts, behaviors, and emotions regarding their disorder. A second limitation of the study is that current NCAA Division I female distance runners were recruited by their coaches, who acted as intermediaries. As a result, coaches played the role of “screening devices,” who controlled which runners would receive an invitation to participate in the questionnaires and focus groups and which runners would not. As a result, some valuable voices may not have been heard. A third and final limitation of the study was the time constraint. The researcher was in contact with many different individuals; however, not all interviews were able to occur within the research timeframe. Many key individuals expressed interest in participating in an in-depth interview, yet were unable to do so due to the lack of time.

References

- Abbate-Daga, G., Gramaglia, C., Marzola, E., Amianto, F., Zuccolin, M. & Fassino, S. (2011). Eating disorders and major depression: Role of anger and personality. *Depression Research and Treatment, 2011*. Retrieved from: <http://www.hindawi.com/journals/drt/2011/194732/>
- Abraham, C., Clift, S., and Grabowski, P. (1999). Cognitive predictors of adherence to malaria prophylaxis regimens on return from a malarious region: A prospective study. *Social Science and Medicine, 48*, 1641-1654.
- Agnew, C. (1998). Modal versus individually-derived behavioural and normative beliefs about condom use: Comparing measurement alternatives of the cognitive underpinnings of the theories of reasoned action and planned behaviour. *Psychology and Health, 13*, 271-287.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Psychology, 32(4)*, 665-683.
- Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52*, 27-58.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50(2)*, 179-211.
- Ajzen, I. & Fishbein, M. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. *Journal of Personality and Social Psychology, 21(1)*, 1-9.
- Ajzen, I. & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behaviors. *Journal of Personality and Social Psychology, 27(1)*, 41-57.
- Ajzen, I. & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Albarracin, D., Johnson, B.T., Fishbein, M., and Muellerleile, P.A. (2001). Theories of reasoned

- action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin*, 127, 142-161.
- American College of Sports Medicine. (1997). The female athlete triad: Disordered eating, amenorrhea, and osteoporosis. *Medicine and Science in Sports and Exercise*, 29, i-ix.
- American College of Sports Medicine. (2007). The female athlete triad. *Medicine and Science in Sports and Exercise*, 39(10), 1867-1882.
- Beals, K.A. (2004).
- Anderson, A.A., Simmons, A.M., Milnes, S.M., & Earleywine, M. (2007). Effect of response format on endorsement of eating disordered attitudes and behaviors. *International Journal of Eating Disorders*, 40(1), 90-93.
- Archer, D., Iritani, B., Kimes, D.D., & Barritos, M. (1983). Five studies of sex differences in facial prominence. *Journal of Personality and Social Psychology*, 45, 725-735.
- Armitage, C.J. & Conner, M. (1999b). Distinguishing perceptions of control from self-efficacy: Predicting consumption of a low fat diet using the theory of planned behavior. *Journal of Applied Social Psychology*, 29, 72-90.
- Armitage, C.J. & Conner, M. (2001). Efficacy of a minimal intervention to reduce fat intake. *Social Science and Medicine*, 52, 1517-1524.
- AskLaurenFleshman.com (2012). Ask Lauren Fleshman.com: Become a wise athlete. Retrieved from: <http://asklaurenfleshman.com/>
- Atlanta Journal Constitution. (3 November, 2007). Eating disorders run rampant in girls cross country. Retrieved from: http://www.pale-reflections.com/news_view.asp?id=35
- Austin, T. (2002) Media effects: A never-ending debate. *Introduction to Media Study*. Retrieved

from: <http://www.suss.ex.ac.uk/users/mak23/Media>

- Beals, K.A. (2004). *Disordered Eating Among Athletes: A Comprehensive Guide for Health Professionals*. Champaign: Human Kinetics.
- Beals, K.A. (2000 A). Behavioral, psychological, and physical characteristics of female athletes with subclinical eating disorders. *International Journal of Sport Nutrition and Exercise Metabolism*, 10(2), 128-143.
- Beals, K.A. (2000 B). Subclinical eating disorders in female athletes. *Journal of Physical Education, Recreation, and Dance*, 71(7), 23-29.
- Beckvid-Henriksson, G., Schnell, C., & Linden Hirschberg, A. (2000). Women endurance runners with menstrual dysfunction have prolonged interruption of training due to injury. *Gynecologic and Obstetric Investigation*, 49(1), 41-46.
- Benjamin, H.J. (2007). The female adolescent athlete: Specific concerns. *Pediatric Annals*, 36(1), 719-726.
- Berg, B. L. (1998). *Qualitative research methods for the social sciences*. Boston: Allyn & Bacon.
- Bissell, K.L., (2004). Sports model/sports mind: The relationship between entertainment and sports media exposure, sports participation, and body image distortion in Division I female athletes. *Mass Communication and Society*, 7(4), 453-473.
- Bissell, K. & Rask, A. (2010). Real women on real beauty: Self-discrepancy, internalization of the thin-ideal, and perceptions of attractiveness and thinness in Dove's Campaign for Real Beauty. *International Journal of Advertising*, 29(4), 643-668.
- Bissell, K.L. & Zhou, P. (2004). Must see TV or ESPN: Entertainment and sports media exposure and body image distortion in college women. *Journal of*

- Communication, 54, 5-21.*
- Bloor, M., Frankland, J., Thomas, M., & Stewart, K., Eds. (2001). *Focus Groups in Social Research: Introducing Qualitative Methods*. London: Sage.
- Blue, C.L. (1995). The predictive capacity of the theory of reasoned action and the theory of planned behavior in exercise research: An integrated literature review. *Research in Nursing and Health, 18*, 105-121.
- Blumenthal, J.A., Toole, L.C., & Chang, J.L. (1984). Is Running an Analogue of Anorexia? *Journal of the American Medical Association, 254 (4)*, 520-523.
- Bola, S.K. (2008). Effect of thin media images on the food consumption and affect of binge eaters: Examining the role of social comparison. *Masters Abstracts International, 46(2)*, 1139.
- Borzekowski, D.L.G., Schenk, S., Wilson, J.L., & Peebles, R. (2010). E-ana and e-mia: A content analysis of pro-eating disorder websites. *American Journal of Public Health, 100(8)*, 1526-1534.
- Brewer, B.W., Van Raalte, J.L., & Linder, D.E. (1993). Athletic identity: Hercules' muscles or Achilles heel? *International Journal of Sport Psychology, 24*, 237-254.
- Britten, N. (1995). Qualitative research: Qualitative interviews in medical research. *British Medical Journal, 311*, 251-253.
- Brown, J.D., Guo, G., Jackson, C., Kenneavy, K.L., & Pardun, C.J. (2006). Sexy media matter: exposure to sexual content in music, movies, and magazines predicts black and white adolescents' sexual behavior. *Pediatrics, 117(4)*, 1018.
- Browne, K.D. & Hamilton-Giachritsis, C. (2005). The influence of violent media on children

- and adolescents: A public-health approach. *The Lancet*, 365 (9460), 702-711.
- Brownell, K.D. & Steen, S.N. (1992). Weight cycling in athletes: Effects on behavior, physiology, and health. In K.D. Brownell, J.H. Wilmore, & J. Rodin (Eds.), *Eating, Body Weight, and Performance in Athletes: Disorders of Modern Society* (pp. 159-171). Philadelphia: Lea and Febiger.
- Byrne, S. & McLean, N. (2002). Elite Athletes: Effects of the Pressure to be Thin. *Journal of Science and Medicine in Sport*, 5(2), 80-94.
- Cachelin, F.M. & Striegel-Moore, R.H. (2005). Help seeking and barriers to treatment in a community sample of Mexican American and European American women with eating disorders. *International Journal of Eating Disorders*, 39(2), 154-161.
- Camille Herron (2012). Camille Herron: 2:37 marathoner. Lives like a monk. Races like an animal. Retrieved from: <http://camilleherron.com/>
- Carter, J.E. (2009). Disordered Eating in College Student-Athletes. In Edward F. Etzel (Ed.), *Counseling and Psychological Services for College Student-Athletes*. Morgantown: Fitness Information Technology, Incorporated.
- Chatzisarantis, N.L.D. & Hagger, M.S. (2007). Mindfulness and the intention-behavior relationship within the theory of planned behavior. *Personality and Social Psychology Bulletin*, 33, 663-677.
- Cheney, A.M. (2011). "Most girls want to be skinny": Body (dis)satisfaction among ethnically diverse women. *Qualitative Health Research*, 21(10), 1347-1359.
- Cobb, K. L., Bachrach L.K., Greendale, G., Marcus, R., Neer, R.M., Nieves, J., Sowers, M.F., Brown, B.W. Jr, Gopalakrishnan, G., Luetters, C., Tanner, H.K., Ward, B., & Kelsey, J.R. (2003). Disordered Eating, Menstrual Irregularity, and Bone

- Mineral Density in Female Runners. *Medicine and science in Sports Medicine*, 35(5), 711-719.
- Conner, M. & Armitage, C.J. (2002). *The Social Psychology of Food*. Buckingham: Open University Press.
- Conner, M. & Armitage, C. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Psychology*, 28(5), 711-719.
- Conner, M. & Sparks, P. (2005). "Theory of planned behaviour and health behaviour." In M. Conner & P. Norman (Eds.), *Predicting Health Behaviour: Research and Practice With Social Cognition Models* (pp. 170-223). Buckingham, UK: Open University Press.
- Courneya, K.S., Friededreich, C.M., Arthur, K., & Bobick, T.M. (1999). Understanding exercise motivation in colorectal cancer patients: A prospective study using the theory of planned behavior. *Rehabilitation Psychology*, 44, 68-84.
- Csipke, E. & Horne, O. (2007). Pro-eating disorder websites: Users' opinions. *European Eating Disorders Review*, 15, 196-206.
- Cumberbatch, G. (1995). *Media violence: Research evidence and policy implications*. Strasbourg: Council of Europe Steering Committee on the Mass Media.
- Cumberbatch, G. (2000). Only a game? *New Scientist*, 166, 44-45.
- Currie, A. (2010). Sport and eating disorders: Understanding and managing the risk. *Asian Journal of Sports Medicine*, 1(2), 63-68.
- Davison, T.E., & McCabe, M.P. (2005). Relationship between men's and women's body image and their psychological, social, and sexual functioning, *Sex Roles*, 52, 463-475.
- De Bruin, A.P., Oudejans, R.R.D., Bakker, P.C., & Woertman, L. (2011). Contextual body image and athletes' disordered eating: The contribution of athletic body image to

- disordered eating in high performance women athletes. *Eating Disorders Review*, 19, 201-215.
- De Witt, J.B.F., Stroebe, W., de Vroome, E.M.M., Sandfort, T.G.M., & van Griensven, G.J.P. (2000). Understanding AIDS preventative behavior in homosexual men: The theory of planned behavior and the information-motivation-behavior-skills model prospectively compared. *Psychology and Health*, 15, 325-340.
- Deas, S., Power, K., Collin, P., Yellowlees, A., & Grierson, D. (2011). The relationship between eating, perceived parenting, and perfectionistic schemas. *Cognitive Therapy and Research*, 35, 414-424.
- Denzin, N. & Lincoln, Y. (Eds.) *Handbook of Qualitative Research* (pp. 105-117). London: Sage
- Dias, K. (2003). The ana sanctuary: Women's pro-anorexia narratives in cyberspace. *Journal of International Women's Studies*, 4(2), 31-45.
- Dill, L.L. (2006). Eating disorder policies among NCAA Division I intercollegiate athletic programs. Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University.
- Dillman, D.A., Smyth, J.D., & Christian, L.M. (2009). *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method*, 3rd ed. Hoboken: John Wiley.
- Doll, J. & Ajzen, I. (1992). Accessibility and stability of predictors in the theory of planned behavior. *Journal of Personality and Social Psychology*, 63(5), 754-765.
- Dosil, Joaquin. (2008). *Eating Disorders in Athletes*. West Sussex: John Wiley & Sons Ltd.
- Drinkwater, B., Loucks, A., Sherman, R., Sundgot-Borgen, J., & Thomson, R. (2005). International Olympic Committee Medical Commission Working Group Women in Sport. Position Stand on the Female Athlete Triad. Extracted from

- http://multimedia.olympic.org/pdf/en_report_917.pdf.
- Duker, M. & Slade, R. (1988). *Anorexia Nervosa and Bulimia Nervosa: How to Help*.
Buckingham: Open University Press.
- Dulany, D.E. (1968). Awareness, rules, and propositional control: A confrontation with S-R behavior theory. In D. Horton & T. Dixon (Eds.) *Verbal behavior and S-R Behavior Theory*, New York: Perntice-Hall.
- Dworin, C.H. (2011, January 5). Eating Disorders On Campus Get Scrutinized.
Newsweek Education Online.
- Eating Disorder Statistics. *National Association of Anorexia Nervosa and Associated Disorders, Inc*. Retrieved from: <http://www.anad.org/get-information/about-eating-disorders/eating-disorders-statistics/>
- Engel, S.G., Johnson, C., Powers, P.S., Crosby, R.D., Wonderlich, S.A., Wittrock, D.A., & Mitchell, J.E. (2003). Predictors of disordered eating in a sample of elite Division I college athletes. *Eating Behaviors*, 4(4), 333-343.
- Engeln-Maddox, R. (2005). Cognitive responses to idealized media images of women: The relationship of social comparison and critical processing to body image disturbance in college women. *Journal of Social and Clinical Psychology*, 24(8), 1114-1138.
- Engeln-Maddox, R. (2006). Buying a beauty standard or dreaming of a new life? Expectations associated with media ideals. *Psychology of Women Quarterly*, 30(3), 258-266.
- Fairburn, C.G. & Beglin, S.J. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, 16(4), 363-370.
- Farrelly, M.C., Nonnemaker, J., Davis, K.C., & Hussin, A. (2009). The influence of the national

- truth campaign on smoking initiation. *American Journal of Preventative Medicine*, 36(5), 379-384.
- Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*, Reading, MA: Addison-Wesley.
- Fitzgerald, M. (2009). *Racing Weight: How to Get Lean for Peak Performance*. Boulder: Velo Press.
- Fitzsimmons-Craft, E.E. (2011). Social psychological theories of disordered eating in college women: Review and integration. *Clinical Psychology Review*, 31, 1224-1237.
- Flett, G.L. (2007). Positive versus negative perfectionism in psychopathology: A comment on Slade and Owens' Dual Process Model. *Behavior Modification*, 30(4), 472-495.
- Flett, G. L. & Hewitt, P.L. (2005). The Perils of Perfectionism in Sports and Exercise. *Current Directions in Psychological Science*, 14(1), 14-18.
- Fogelholm, M. (1994). Effects of body weight reduction on sports performance. *Sports Medicine*, 4. 259-267.
- Frey, L.R., & Cissna, K.N., Eds. (2009). *Routledge Handbook of Applied Communication Research*. New York: Routledge.
- Fulkerson, J.A., Keel, P.K., Leon, G.R., & Dorr, T. (1999). Eating-disordered behaviors and personality characteristics of high school athletes and non-athletes. *International Journal of Eating Disorders*, 26(1), 73-79.
- Gapin, J.J. & Petruzzello, S.J. (2011). Athletic identity and disordered eating in obligatory and non-obligatory runners. *Journal of Sports Sciences*, 29(10), 1001-

1010.

- Gentile, D.A., Mathieson, L.C., & Crick, N.R. (2011). Media violence associations with the form and function of aggression among elementary school children. *Social Development, 20(2)*, 213-232.
- George, C., Hartley, A., & Paris, J. (2001). Focus on communication in sport: The representation of female athletes in textual and visual media. *Corporate Communications, 6(2)*, 94-101.
- Gibbons, F.X. & Gerrard, M. (1997). Health images and their effects on health behaviour. In B.P. Buunk and F.X. Gibbons (Eds.) *Health, Coping and Well-Being: Perspectives from Social Comparison Theory*, Hillsdale: Lawrence Erlbaum, 63-94.
- Giles, D. (2006). Constructing identities in cyberspace: The case of eating disorders. *British Journal of Social Psychology, 45*, 463-477.
- Girard Eberle, S. (2005 September). Disordered eating and runners: A troubled combination. *Running Times Magazine*. Retrieved from:
<http://runningtimes.com/Print.aspx?articleID=3769>
- Godin, G. & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion, 11(2)*, 87-98.
- Goldfarb, L.A., & Plante, T.G. (1984). Fear of Fat in Runners: An Examination of the Connection Between Anorexia Nervosa and Distance Running. *Psychological Reports, 55(1)*, 296.
- Gottlieb, N.H., Gingiss, P.L., Weinstein, R.P. (1992). Attitudes, subjective norms and models of use for smokeless tobacco among college athletes: Implications for prevention and cessation programming. *Health Education Research, 7(3)*, 359-368.

- Greenleaf, C., Petrie, T.A., Carter, J., & Reel, J.J. (2009). Female collegiate athletes: Prevalence of eating disorders and disordered eating behaviors. *Journal of American College Health, 57*(5), 489-495.
- Gribch, C.F., Ed. (1999). *Qualitative Research in Health: An Introduction*. London: Sage.
- Groesz, L.M., Levine, M.P., & Murnen, S.K. (2001). The effect of experimental presentation of thin media messages on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*(1), 1-16.
- Grossman, W. (19 July, 1996). Running on empty: Track star Whitney Spannuth, second from left, thought losing weight was a game until her doctor told her she had the blood chemistry of a person who was starving. *The Virginian Pilot*. Retrieved from: <http://www.highbeam.com/doc/1G1-73167963.html>
- Guba, E & Lincoln, Y. (1994). Competing paradigms in qualitative research. In N. Denzin & Y. Lincoln (Eds.) *Handbook of Qualitative Research* (pp. 105-117). London: Sage
- Haase, A.M., Mountford, V., & Waller, G. (2011). Associations between body checking and disordered eating behaviors in nonclinical women. *International Journal of Eating Disorders, 44*, 465-468.
- Hagger, M., Chatzisarantis, N., and Biddle, S. (2002). A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport and Exercise Psychology, 24*, 3-32.
- Harden, A., Weston, R., & Oakley, A. (1999). *A Review of the Effectiveness and Appropriateness of Peer-Delivered Health Promotion Interventions for Young People*. London: Social Science Research Unit, Institute of Education, University of London.
- Harper, B. & Tiggemann, M. (2008). The effect of thin-ideal media images on women's

- self-objectification, mood, and body image. *Sex Roles*, 58, 649-657.
- Harrison, K. (2001). Ourselves, our bodies: Thin-ideal media, self-discrepancies, and eating disorder symptomatology in adolescents. *Journal of Social and Clinical Psychology*, 20(3), 289-323.
- Harrison, K. (2000). The body electric: Thin-ideal media and eating disorders in adolescents. *Journal of Communication*, 50, 119-143.
- Harrison, K. & Frederickson, B.L. (2003). Women's sports media, self-objectification, and mental health in black and white adolescent females. *Journal of Communication*, 53, 216-232.
- Hausenblas, H. & Carron, A. (1999). Eating disorder indices and athletes: An integration. *Journal of Sport and Exercise Psychology*, 21, 230-258.
- Hausenblas, H.A., Carron, A.V., and Mack, D.E. (1997). Application of the theories of reasoned action and planned behavior to exercise behavior: A meta-analysis. *Journal of Sport and Exercise Psychology*, 19, 36-51.
- Heatherton, T.F. & Polivy, J. (1992). Chronic dieting and eating disorders: A spiral model. In J.H. Crowther, S.E. Hobfall, M.A.P. Stephens, & D.L. Tennenbaum (Eds.), *The Etiology of Bulimia Nervosa: The Individual and Familial Context* (pp. 133-155). Washington, D.C.: Hemisphere.
- Heffernan, V. (25 May, 2008). Narrow minded: A genre of web video flaunts extreme thinness. Is it art or dangerous propaganda? *New York Times Magazine*, 16-17.
- Heffner, J.L. (2006). The Effect of Competitive Motivation on the Attentional Focus of Distance Runners. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 67(1-B), 544.

- Hellmich, N. (5 February, 2006). Athletes' hunger to win fuels eating disorders. *USA Today Online*. Retrieved from: http://www.usatoday.com/news/health/2006-02-05-women-health-cover_x.htm
- Hesse-Biber, S., Leavy, P., Quinn, C.E., & Zoino, J. (2006). The mass marketing of disordered eating and eating disorders: The social psychology of women, thinness, and culture. *Women's Studies International Forum*, 29, 208-224.
- Hildreth, C.J. (2008). Family, peer, and media predictors of becoming eating disordered. *Journal of the American Medical Association*, 300(6), 634.
- Hill, A.J., Boudreau, F., Amyot, E., Dery, D., & Godin, G. (1997). Predicting the stages of smoking acquisition according to the theory of planned behavior. *Journal of Adolescent Health*, 21(2), 107-115.
- Hillhouse, J.J., Adler, C.M., Drinnon, J. & Turrisi, R. (1997). Application of Ajzen's theory of planned behavior to predict sunbathing, tanning salon use, and sunscreen use intentions and behaviors. *Journal of Behavioral Medicine*, 20, 365-378.
- Hoek, H.W. (1995). The distribution of eating disorders. In K.D. Brownell & C.G. Fairburn (Eds.) *Eating Disorders and Obesity: A Comprehensive Handbook* (pp. 207-211). New York: Guilford.
- Hostetter, K.S. & Drummond, J.L. (2010). The need for qualified intervention for the female athlete triad syndrome patient. *Athletic Therapy Today*, 15(3), 29-33.
- Hsu, L.K.G. (1997). Can dieting cause an eating disorder? *Psychological Medicine*, 27, 509-513.
- Hulley, A.J., & Hill, A.J. (2001). Eating Disorders and Health in Elite Women Distance Runners. *International Journal of Eating Disorders*, 30(3), 312-317.
- Hutchinson, D.E. & Rapee, R.M. (2007). Do friends share similar body image and eating

- problems? The role of social networks and peer influences in early adolescence. *Behaviour Research and Therapy*, 45, 1557-1577.
- Hutchinson, D.E., Rapee, R.M., & Taylor, A. (2009). Body dissatisfaction and eating disturbances in early adolescence: A structural modeling investigation examining negative affect and peer factors. *The Journal of Early Adolescence*, 30(4), 489-517.
- Ingjer, F. & Sundgot-Borgen, J. (1991). Influence of body weight reduction on maximal oxygen uptake in female elite athletes. *Scandinavian Journal of Medicine and Science in Sport*, 1. 141-146.
- Iso-Ahola, S.E. (1995). Intrapersonal and Interpersonal Factors in Athletic Performance. *Journal of Medicine and Science in Sports*, 5, 191-199.
- Jacobsen, B.H., Sobonya, C., & Ransone, J. (2001). Nutrition practices and knowledge of college varsity athletes: A follow-up. *Journal of Strength and Conditioning Research*, 15(1), 63-68.
- Jowett, S. & Ntoumanis, N. (2004). The Coach-Athlete Relationship Questionnaire (CART-Q): Development and Initial Evaluation. *Scandinavian Journal of Medicine and Science in Sports*, 14, 245-257.
- Juarascio, A.S., Forman, E.M., Timko, C.A., Herbert, J.D., Butryn, M., & Lowe, M. (2011). Implicit internalization of the thin ideal as a predictor of increases in weight, body dissatisfaction, and disordered eating. *Eating Behaviors*, 12, 207-213.
- Kanlin, A.J., Edwards, C.R., Wang, Y., Kronenberger, W.G., Hummer, T.A., Mosier, K.M., Dunn, D.W., & Mathews, V.P. (2011). The interacting role of media violence exposure

- and aggressive-disruptive behavior in adolescent brain activation during an emotional Stroop task. *Psychiatry Research: Neuroimaging*, 192(1), 12-19.
- Kawaguchi, J.J. (2008). Redefining the female athlete triad. *Athletic Therapy Today*, 13(1), 11-12.
- Keel, P.K., Scott, C., Davis, T.L., & Mitchell, J.E. (2002). Assessment of eating disorders: Comparison of interview and questionnaire data from a long-term follow-up study of bulimia nervosa. *Journal of Psychosomatic Research*, 53(5), 1043-1047.
- Khidekel, M. (2010). Unhappy Meal. *Teen Vogue*, 10(3), p. 152.
- Kitzner, J. (1995). Qualitative research: Introducing focus groups. *British Medical Journal*, 311, 299-302.
- Klump, K.L., Gobrogge, K.L., Perkins, P.S., Thorne, D., Sisk, C.L., & Breedlove, M. (2005). Preliminary evidence that gonadal hormones organize and activate disordered eating. *Psychological Medicine*, 36, 539-546.
- Knight, J.L., & Guiliano, T.A. (2002). He's a Laker, she's a "looker": The consequences of gender-stereotypical portrayals of male and female athletes by the print media. *Sex Roles*, 45, 217-229.
- Koivula, N. (1999). Gender stereotyping in televised media sports coverage. *Sex Roles*, 33, 543-557.
- Kreps, G.L. & Bonaguro, E.W. (2009). Health communication as applied communication theory. In L.R. Frey & K.N. Cissna (Eds.) *Routledge Handbook of Applied Communication Research*. New York: Routledge. pp. 380-404.
- Kristal, A.R., Bowen, D.J., Curry, S.J., Shattock, A.L. & Henry, H.J. (1990). Nutrition knowledge, attitudes, and perceived norms as correlates of selecting low-fat diets. *Health*

- Education Research*, 5(4), 467-477.
- Lavender, J.M. & Anderson, A.A. (2009). Effect of perceived anonymity in assessments of eating disordered behaviors and attitudes. *International Journal of Eating Disorders*, 42, 546-551.
- Lebrun, C.M. & Rumball, J.S. (2002). Female Athlete Triad. *Sports Medicine and Arthroscopy Review*, 10, 23-32.
- Leet Smith, J. (14 October, 2010). The darkside of the sport: Eating disorders. *ESPNHS: Track and XC Online*. Retrieved from: <http://rise.espn.go.com/track-and-xc/illinois/2010-xc/Janet-Leet-Smith-6.aspx>
- Liamputtong Rice, P. & Ezzy, D. (1999). *Qualitative Research Methods: A Health Approach*. Oxford: Oxford University Press.
- Lincoln, Y. S. & Guba, E. (1985). *Naturalistic Inquiry*. Beverly Hills, CA: Sage
- Lindlof, T.R. (1995). *Qualitative Communication Research Methods*. Thousand Oaks, CA: Sage.
- Lindlof, T. R., & Taylor, B. C. (2002). *Qualitative Communication Research Methods* (2nd ed.), Thousand Oaks, CA: Sage.
- Madden, T.J., Ellen, P.S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and Social Psychology*, 18(1), 3-9.
- Manore, M., Ciadella Kam, L., & Loucks, A.B. (2007). The female athlete triad: Components, nutrition issues, and health consequences. *Journal of Sports Sciences*, 25(1), 61-71.
- Marshall, C. & Rossman, G.B., Eds. (2010). *Designing Qualitative Research: 5th Edition*. Thousand Oaks: Sage.
- Martin, G.C., Wertheim, E.H., Prior, M., Smart, D., Sanson, A., & Oberklaid, F. (2000).

- A longitudinal study of the role of childhood temperament in the later development of eating concerns. *International Journal of Eating Disorders*, 27, 150-162.
- Martinsen, M., Bratland-Sanda, S., Eriksson, A.K., & Sundgot-Borgen, J. (2010). Dieting to win or to be thin? A study of dieting and disordered eating among adolescent elite athletes and non-athlete controls. *British Journal of Sports Medicine*, 44(1), 70-76.
- Media Education Association (2011). Killing us softly 3: Advertising's image of women. *Media Education Foundation*. Retrieved from:
<http://www.mediaed.org/cgi-bin/commerce.cgi?preadd=action&key=206>
- McManis, S. (2010, January 4). For the endurance athlete, calories do matter. *The Capital*. Retrieved from <http://www.hometownannapolis.com/news/LIF/2010/02/07-23/For-the-endurance-athlete-calories-do-matter.html>.
- McMillan, B. & Conner, M. (2003). Applying an extended version of the theory of planned behavior to illicit drug use among students. *Journal of Applied Social Psychology*, 33, 1662-1683.
- Medical News Today (2011). Eating disorders news. Retrieved from:
<http://www.medicalnewstoday.com/sections/eatingdisorders/>
- Milbrandt-Marchand, S. (2007). Disordered eating behaviors among collegiate athletes. Unpublished doctoral dissertation. University of Rhode Island.
- Miler, J.L., Schmidt, L.A., Vaillancourt, T., McDougal, P., & Laliberte, M. (2006). Neuroticism and introversion: A risky combination for disordered eating among a non-clinical sample of undergraduate women. *Eating Behaviors*, 7, 69-78.
- momsTEAM: The Trusted Source for Sports Parents. (2011). Reducing ACL injuries among

- female athletes target of new PSA. Retrieved from: <http://www.momsteam.com/health-safety/reducing-acl-injuries-among-female-athletes-target-of-new-psa>
- Monro, F. & Huon, G. (2005). Media-portrayed idealized images, body shame, and appearance anxiety. *International Journal of Eating Disorders*, 38(1), 85-90.
- Morrison, D.M., Gillmore, M.R., Simpson, E.E. & Wells, E.A. (1996). Children's decisions about substance use: An application and extension of the theory of reasoned action. *Journal of Applied Social Psychology*, 26, 1658-1679.
- Morse, B. (2008). Female Distance Runners and Disordered Eating. *Mind Matters: The Wesleyan Journal of Psychology*, 3, 29-38.
- Muscat, A.C. & Long, B.C. (2008). Critical comments about body shape and weight: Disordered eating of female athletes and sport participants. *Journal of Applied Sport Psychology*, 20(1), 1-24.
- National Association of Anorexia Nervosa and Associated Disorders, Inc. (2012). Eating Disorder Statistics. Retrieved from: <http://www.anad.org/get-information/about-eating-disorders/eating-disorders-statistics/>
- NCAA Nutrition and Performance History. (2011). *National Collegiate Athletic Association*. Retrieved from: http://www.ncaa.org/wps/portal/ncaahome?WCM_GLOBAL_CONTEXT=/ncaa/NCAA/Academics+and+Athletes/Personal+Welfare/Nutritionperformance/history
- Newson, E. (1994). Video violence and the protection of children. *The Psychologist*, 7, 272-274.
- Noden, M. (1994). Dying to Win. *Sports Illustrated*, 81(6).
- Norman, P. & Conner, M.T. (1993). The role of social cognition models in predicting attendance at health checks. *Psychology and Health*, 8, 477-462.

- Norman, P., Conner, M. & Bell, R. (1999). The theory of planned behavior and smoking cessation. *Health Psychology, 18*, 89-94.
- Norring C., Palmer B., eds. (2005). *EDNOS: Eating Disorders Not Otherwise Specified*. London: Routledge.
- NOVA (2011). Dying to be thin. Retrieved from: <http://www.pbs.org/wgbh/nova/body/dying-to-be-thin.html>
- Ogden, J. & Munday, K. (1996). The Effect of Media on Body Dissatisfaction: The Role of Gender and Size. *European Eating Disorders Review, 4*(3), 171-182.
- Orme, J. & Starkey, F. (1999). Peer drug education: The way forward? *Health Education, 99*, 8-16.
- Otis, C.L., Drinkwater, B., Johnson, M., Loucks, A., & Wilmore, J. (1997). American college of sports medicine position stand. The female athlete triad. *Medicine and Science in Sports and Exercise, 29*, i-ix.
- Owens, R.G., Phil, D., & Slade, P.D. (1987). Running and anorexia nervosa: An empirical study. *International Journal of Eating Disorders, 6*(6), 771-775.
- Paik, H., & Comstock, G. (1994). The effects of television violence on antisocial behavior: A metaanalysis. *Communication Research, 21*, 516-546.
- Paisley, C.M. & Sparks, P. (1998). Expectations of reducing fat intake: The role of perceived need within the theory of planned behavior. *Psychology & Health, 13*(2), 341-353.
- Palmer, R.L., Oppenheimer, R., Dingon, A., Chaloner, D.A., & Howells, K. (1990). Childhood Sexual Experiences With Adults Reported by Women With Eating Disorders: An Extended Series. *The British Journal of Psychiatry, 156*, 699-703.
- Parken, S. & McKeganey, N. (2000). The rise and rise of peer education approaches. *Drugs:*

Education, Prevention, and Policy, 7. 293-310.

Patton, M. Q. (2002). *Qualitative research and evaluation methods (3rd ed.)*. Thousand Oaks, CA: Sage.

Patton, M. Q. (1990). *Qualitative evaluation and research methods (2nd ed.)*. Newbury Park, CA: Sage.

Peng, T. (22 November, 2008). Out of the shadows: After meeting for years on anonymous and secret Web sites, pro-anorexia groups are now moving to more public forums like Facebook. *Newsweek*. Retrieved from <http://www.thedailybeast.com/newsweek/2008/11/22/out-of-the-shadows.html>

Perry, L., Morgan, J. Reid, F., Brunton, J., O'Brien, A., & Lacey, H. (2002). Screening for symptoms of eating disorders: Reliability of the SCOFF screening tool with written compared to oral delivery. *International Journal of Eating Disorders*, 32(4), 466-472.

Petrie, T.A., Greenleaf, C., Reel, J.J. & Carter, J.E. (2009). An examination of psychosocial correlates of eating disorders among female collegiate athletes. *Research Quarterly for Exercise and Sport*, 80(3), 621-632.

Picard, C.L. (1999). The Level of Competition as a Factor for the Development of Eating Disorders in Female Collegiate Athletes. *Journal of Youth and Adolescence*, 28(5), 583-594.

Powers, P.S., Schocken, D.D., & Boyd, F.R. (1998). Comparison of habitual runners and anorexia nervosa patients. *International Journal of eating disorders*, 23(2), 133-143.

Rholin, M. (2011, July 28). Leaving the sport, gaining an eating disorder. *Los Angeles Times*. Retrieved from: <http://articles.latimes.com/2011/jul/28/sports/la-sp-0729->

eating-disorders-20110729

- Rice Lave, T. (2010). The Runner's Witness: Eating Disorders and Young Runners. *Running Times Magazine*.
- Ricker, K.L. (2008). Influences of eating disorders and behaviors on college cross country and track runners. Unpublished master's thesis, Wright State University.
- Rockwell, M.S., Nickols-Richardson, S.M., & Thye, F.W. (2001). Nutrition knowledge, opinions, and practices of coaches and athletic trainers at a Division I university. *International Journal of Sport Nutrition and Exercise Metabolism*, 11(2), 174-185.
- Rodriguez, V.M. (2011). Do body image and gender role attitudes mediate the relationship between media exposure and sexual risk behavior in college students? Unpublished master's thesis. Virginia Commonwealth University.
- Ross, M.W. & McLaws, M.L. (1992). Subjective norms about condoms are better predictors of use and intention to use than attitudes. *Health Education Research*, 7(3), 335-339.
- Rousset, I., Kipman, A., Ades, P., & Gorwood, P. (2004). Personality, Temperament, and Anorexia Nervosa. *Annales Medico-Psychologiques*, 162(3), 180-188.
- Schiavo, R. (2007). *Health Communication: From Theory to Practice*. San Francisco: Wiley.
- Schifter, D.E. & Ajzen, I. (1985). Intention, perceived control, and weight loss: An application of the theory of planned behavior. *Journal of Personality and Social Psychology*, 49(3), 843-851.
- Schroff, H. & Thompson, K.J. (2006). Peer influences, body-image dissatisfaction, and eating dysfunction in adolescent girls. *Journal of Health Psychology*, 11(4), 533-551.
- Scott, P. (2006, September 14). When being varsity-fit masks an eating disorder. *New*

- York Times*. Retrieved from: <http://www.nytimes.com/2006/09/14/fashion/14Fitness.html>
- Sheppard, B.H., Hartwick, J. & Warshaw, P.R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15, 325-343.
- Sheeran, P. & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology*, 29, 1624-1675.
- Slane, J.D., Burt, A., & Klump, K.L. (2011). Genetic and environmental influences on disordered eating and depressive symptoms. *International Journal of Eating Disorders*, 44(7), 605-611.
- Sloane, B.C. & Zimmer, C.G. (2010). The power of peer health education. *Journal of American College Health*, 41(6), 241-245.
- Steadman, L. Rutter, D.R., & Field, S. (2002). Individually elicited versus modal normative beliefs in predicting attendance at breast screening: Examining the role of belief salience in the theory of planned behaviour. *British Journal of Health Psychology*, 7, 317-330.
- Sudi, K. (2004). Anorexia Athletica. *Nutrition*, 20, 657-661.
- Sundgot-Borgen, J. (2005). Atypical eating disorders in female athletes. In Norring, C. & Palmer, B. (Eds.) *EDNOS: Eating Disorders Not Otherwise Specified: Scientific and Clinical Perspectives on the Other Eating Disorders*. New York: Routledge.
- Sundgot-Borgen, J. (1994). Eating disorders in female athletes. *Sports Medicine*, 17, 176-188.
- Sundgot-Borgen, J. & Torstveit, M.K. (2010). Aspects of disordered eating continuum in elite high-intensity sports. *Scandinavian Journal of Medicine and Science in*

- Sports*, 20(2), 112-121.
- Sundgot-Borgen, J. & Torstveit, M.K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sports Medicine*, 14(1), 25-32.
- Svenaesus, F. (2000). *The Hermeneutics of Medicine and the Phenomenology of Health: Steps Toward a Philosophy of Medical Practice*. Norwell: Kluwer.
- Svenaesus, F. (2002). The phenomenology of health and illness. *Philosophy and Medicine*, 68(1), 87-108.
- Terry, D.J. & Hogg, M.A. (1996). Group norms and the attitude-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin*, 22, 776-793.
- Thome, J., & Espelage, D.L. (2004). Relations among exercise, coping, disordered eating, and psychological health among college students. *Eating Behaviors*, 5, 337-351.
- Thompson, R.A. & Sherman, R.T. (2005). NCAA coaches handbook: Managing the female athlete triad. Indianapolis: IN: The National Collegiate Athletic Association. Retrieved from:
http://www.ncaa.org/wps/wcm/connect/2db7d8004e0db26bac18fc1ad6fc8b25/fe_male_athlete_triad.pdf?MOD=AJPERES&CACHEID=2db7d8004e0db26bac18fc1ad6fc8b25
- Thompson, R.A. & Sherman, R.T. (1999). "Good athlete" traits and characteristics of anorexia nervosa: Are they similar? *Eating Disorders: Journal of Treatment and Prevention*, 7(3), 181-190.
- Thompson, R.A. & Sherman, R.T. (1993). *Helping Athletes with Eating Disorders*.

Champaign, IL: Human Kinetics.

- Thompson, S.H. (2007). Characteristics of the female athlete triad in collegiate cross country runners. *Journal of American College Health, 56*(2), 129-136.
- Tierney, S. (2006). The dangers and draw of online communication: Pro-anorexia websites and their implications for users, practitioners, and researchers. *Eating Disorders, 14*, 181-190.
- Tracy, K. & Mirivel, J.C. (2009). The practice and practical value of taping, transcribing, and analyzing talk. In L.R. Frey & K.N. Cissna (Eds.) *Routledge Handbook of Applied Communication Research*. New York: Routledge. pp. 153-177.
- Trafimow, D. (1996). The importance of attitudes in the prediction of college students' intentions to drink. *Journal of Applied Psychology, 26*, 2167-2188.
- Tricker, R. & Connolly, D. (1997). Drugs and the college athlete: An analysis of the attitudes of student athletes at risk. *Journal of Drug Education, 27*(2), 105-119.
- Troy, K., Hoch, A.Z., & Stavrakos, J.E. (2006). Awareness and comfort in treating the female athlete triad: Are we failing our athletes? *Wisconsin Medical Journal, 105*(7), 21-24.
- Torstveit, M.K. & Rosenvinge, J.H. (2008). Prevalence of eating disorders and the predictive power of risk models in female elite athletes: a controlled study. *Scandinavian Journal of Medicine and Science in Sports, 18*, 108-118.
- Torstveit, M.K., & Sundgot-Borgen, J. (2005). Participation in leanness sports but not training volume is associated with menstrual dysfunction: A national survey of 1276 elite athletes and controls. *British Journal of Sports Medicine, 39*, 141-147.
- Torstveit, M.K., & Sundgot-Borgen, J. (2005). The female athlete triad: Are elite athletes at increased risk? *Medicine and Science in Sports and Exercise, 37*, 184-193.

- Tozzi, F., Sullivan, P.F., Fear, J.L., McKenzie, J. & Bulik, C. (2003). Causes and Recovery in Anorexia Nervosa: The Patient's Perspective *International Journal of Eating Disorders*, 33(2), 143-154.
- Van den Putte, H. (1991). On the theory of reasoned action. Unpublished doctoral dissertation, University of Amsterdam.
- Vardar, E., Vardar, S.A., & Kurt, C. (2007). Anxiety of young female athletes with disordered eating behaviors. *Eating Behaviors*, 8, 143-147.
- Vaughan, J.L., King, K.A., & Cottrell, R.R. (2004). Collegiate athletic trainers' confidence in helping female athletes with eating disorders. *Journal of Athletic Training*, 39(1), 71-76.
- Vohls, K.D., Heatherton, T.F. & Herrin, M. (2001). Disordered eating and the transition to college: A prospective study. *International Journal of Eating Disorders*, 29(3), 280-288.
- Waltz, V. (25 September, 2009). Athletes and eating disorders: Dark truths about the hunger to win. *BU Today Online*. Retrieved from: <http://www.bu.edu/today/2009/athletes-and-eating-disorders/>
- Warren, M.P. & Perlroth, N.E. (2001). Hormones and sport: The effects of intense exercise on the female reproductive system. *Journal of Endocrinology*, 170, 3-11.
- Weight, L.M., & Noakes, T.D. (1987). Is running an analog of anorexia? A survey of the incidence of eating disorders in female distance runners. *Medicine and Science in Sports and Exercise*, 19(3), 213-217.
- Wheeler, G.D., Wall, S.R., Belcastro, A.N., Conger, P., & Cumming, D.C. (1986). Are Anorexic Tendencies Prevalent in the Habitual Runner? *British Journal of Sports and Medicine*, 20(2), 77-81.

- Whitehead, K. (2010). "Hunger hurts but starving works": A case study of gendered practices in the online pro-eating disorder community. *Canadian Journal of Sociology, 35*(4), 595-626.
- Williams, M.S., Thomsen, S.R., & McCoy, J.K. (2003). Looking for an accurate mirror: A model for the relationship between media use and anorexia. *Eating Behaviors, 4*(2), 127-134.
- Wood, W., Wong, F.Y., & Chachere, J.G. (1991). Effects of media violence on viewers aggression in unconstrained social-interaction. *Psychological Bulletin, 109*, 371-383.
- Yates, A., Leehey, K., & Shisslak, C.M. (1983). Running: An Analogue of Anorexia? *New England Journal of Medicine, 309*, 47-48.
- Zach, K.N., Smith Machin, A.L., & Hoch, A.Z. (2011). Advances in management of the female athlete triad and eating disorders. *Clinics in Sports Medicine, 30*(3), 551-575.

Appendix A – Questionnaire

1. TERMS OF PARTICIPATION: I understand that my participation in this project is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my selection of “continue” below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my choice to click “continue” acknowledges that I have received a copy of this consent form. If I select “discontinue,” I am refusing to consent to the terms of this study and will be taken to an exit page.

Continue

Discontinue

2. I get health information from the following sources (rank in order of importance with 1 being most important and 12 being least important):

. Televised news

. Newspapers

. Magazines

. Social media

. Blogs

. Movies

. Coach

. Teammates

. Parents

. Dietician

. Physician

. Non-teammate friends

3. I get information on the “ideal body type” from the following sources (rank in order of importance with 1 being most important and 12 being least important):

- ___ . Televised news
- ___ . Newspapers
- ___ . Magazines
- ___ . Social media
- ___ . Blogs
- ___ . Movies
- ___ . Coach
- ___ . Teammates
- ___ . Parents
- ___ . Dietician
- ___ . Physician
- ___ . Non-teammate friends

4. Can you recall and media-based health messages that emphasize *healthy* body types? (e.g., anti-obesity campaigns).

5. Can you recall any media-based messages that emphasize *unhealthy* body types?

6. For the following items, please select the number that best applies to you.

6.1. I have a health relationship with food.

- ___ Strongly Agree
- ___ Agree
- ___ Neutral
- ___ Disagree
- ___ Strongly Disagree

6.2. I have a healthy relationship with body image.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6.3. I need to restrict calories to be competitive at the NCAA Division I level in cross country.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6.4. I need to be at low weight to be competitive at the NCAA Division I level in cross country.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6.5. I am happy with my relationship with food.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6.6. I am happy with my relationship with body image.

- Strongly Agree

- Agree
- Neutral
- Disagree
- Strongly Disagree

6.7. The media have contributed to the way I view food.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6.8. The media have contributed to the way I view body image.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

7. How has the importance of eating changed since you joined your college team?

8. How have your teammates' bodies, words, or behaviors influenced your food- and body-related thoughts, emotions, and/or behaviors?

9. How has your coach influenced your food- and body-related thoughts, emotions, and/or behaviors?

10. What non-running-related people/factors have affected your food- and body-related thoughts, emotions, and/or behaviors?

11. How do the media affect your food- and body-related thoughts, emotions, and/or behaviors?

12. Please list factors you believe facilitate (make it easy to develop) unhealthy relationships with food and body image.

13. Please list factors you believe inhibit (make it difficult to develop) unhealthy relationships with food and body image.

14. How could the media contribute to the prevention of unhealthy relationships with food and body image among female distance runners?

15. Is there anything else you would like to share or feel is important or meaningful to this study?

Appendix B – Select Questionnaire, Focus Group, and In-Depth Interview Quotes

QUOTES ON MEDIA INFLUENCE ON DISORDRED EATING

COLLEGIATE RUNNERS

- The image of the ‘perfect’ women in the media definitely is a little discouraging, knowing that no matter what I will never look like that.
- [The media] emphasize unhealthy body types or suggest that there is a certain body type that everyone has to live up to if they want to be accepted.
- I get frustrated reading running magazines sometimes because I feel like the majority of the articles are about food and weight loss.
- In running media, there are often pictures of extremely lean athletes. This makes me feel as if I am not a real athlete if I am not as lean.

PROFESSIONAL RUNNERS

- The media’s role is enormous.
- The *Runner’s World* articles on eating and weight loss may be beneficial to some readers, but they do not meet the needs of NCAA athletes.
- Professional runners in the media are often only depicted in their peak physical shape—at meets like worlds, etc.
- I’m sure it does have an effect, but maybe not as much as day-to-day interactions.

DIETITIANS

- My overall perspective is that media affects what we view as normal and makes things that are not normal appear normal.
- [Female collegiate distance runners] are just like everyone else with our media-saturated society and all the information overload, a great part of it not really accurate information. I see misinformation propelling some of their disordered behavior.

PHYSICIANS

- [Female collegiate distance runners] are a group that we want to encourage mindful eating with. It’s important for their success. But there is definitely a lack of education on some basic dietary principles. There is all kinds of misinformation in the media and layman’s journals. Add that to talk among the team that may be different, and there’s just a lot of confusion about what’s right.
- This issue is definitely both a culture and a gender thing. There is more pressure from the media for girls to be thin and more talk in the media about females and food than males and food. You see that turn into a social pressure that girls then put on each other.
- [Running media] pushes the mindset of, “You’ve got to do it my way in order to succeed,” but that “way” is not always based in fact. There are a lot of people out there who are interested in saying that it was their method that made an athlete successful. I could probably challenge a lot of what is presented in those kinds of media with valid counter-research.

QUOTES ON ATTITUDE INFLUENCE ON DISORDERED EATING

COLLEGIATE RUNNERS

- Eating is different for distance runners than it is for anyone else.
- Since joining the team, I have realized how big of a component food is in our lives as distance runners.
- Thoughts about food are all consuming and stressful for me every day.
- [The collegiate running environment] has messed up my thoughts on food...most likely permanently.
- Upon entering college, I became more aware of a certain standard for how you should look if you want to be fit.
- I was never self-conscious about my body until I was in this environment.
- It's common knowledge that you should be skinny to be a distance runner. Whether someone says it to you or not, you should probably be pretty lean if you want to be competitive.
- I think it's very frustrating to be in a sport where it's almost impossible to be both competitive and be at a healthy weight. That's just the reality of it.
- Everyone says I'm very skinny, but in the running community I'm just average.
- The best runners in the NCAA for the most part are smaller and lean.

PROFESSIONAL RUNNERS

- It's hard to not let running and eating and weight get out of perspective in college. There is so much emphasis on it.
- Distance running is definitely a sport where [thin body types] are emphasized.
- People equate thinness with speed. And that's because there are some girls that will do very well and they're very thin.
- There are a lot of people in our sport that come and go, and tons of it has to do with the fact that they don't have a healthy perspective on eating.
- College is almost about surviving, since there is a lot more disordered eating at that level. With the pros, you see it a whole lot less.

COACHES

- There is so much emphasis on running successfully and so many messages about nutrition and weight. It's easy to see how a connection can be made and then taken a little too far...even with good intentions.

DIETITIANS

- It's a fascinating thing to figure out when [increased focus on food, eating, weight, and body image] turns into more than just 'How am I fueling? How am I getting what I need?' Somewhere along the way, it can become something that distracts an athlete from her life.

PHYSICIANS

- I see a lot of women distance runners who feel that they need to be at really low weight to perform well.

QUOTES ON SUBJECTIVE NORMS' INFLUENCE ON DISORDERED EATING

COLLEGIATE RUNNERS

- When I came in as a freshman, I didn't know anything. I looked at the other girls to see what they were doing. I saw them hardly eating, so I did the same. I figured that's what I needed to do to be good, too.
- When a teammate makes a comment about a girl from another team being fat and wanting to beat them because they are so fat, it makes me wonder if they think I am fat too.
- I have lost some of who of I am because of the influence of my team and the pressure to reach this unrealistic thinness to be a better runner or a good runner.
- I feel judged when I'm around my teammates.
- I don't think my coach cares about how healthy I am as long as I run well. I think he would rather see me run well at an unhealthy weight than run poorly at a healthy weight.

PROFESSIONAL RUNNERS

- I think teammates [have more influence than other factors] because you're always together. You're cooking together, traveling together, eating together...you're always together.
- I think that it takes a couple of years or a really strong person to forget what everyone else is doing and do your own thing.

COACHES

- As a coach, you want to create an environment where nobody else has to bear the burden of [eating disordered teammates] as their own detriment. There should be [professional intermediaries] in place to take the weight off of [the runners'] shoulders so they can compete and not worry.
- There is a lot of pressure on coaches. We end up taking on all kinds of informal roles...that's just the nature of distance running.

DIETITIANS

- It can be hard for coaches to refer athletes to us [to address disordered eating] because they have a vested interest in them performing well.

PHYSICIANS

- Their coaching job is dependent on the success or failure of the team. I don't want to say that they don't care [about their athletes well being]...but I think some coaches really don't care. It's the same thing for them as it is for the athletes that we're trying to help. They want the success, and some of them will go over the edge in order to achieve it.

SPORTS PSYCHOLOGISTS

- I want [female collegiate distance runners] to know that I have an interest in their success as an athlete, but I won't be pressuring them in ways that their coaches might be. There is a lot of pressure from coaches, whether the environment is healthy or not. It's just the nature of athletics.

QUOTES ON PERCEIVED BEHAVIORAL CONTROL INFLUENCE ON DISORDERED EATING

RUNNERS

- A lot of us are perfectionists and put so much pressure on ourselves. I think that contributes maybe more than anything.
- Every day you're constantly surrounded by people that are extremely fit...where your body is constantly being judged.
- In college, you're expected to train in nothing but a sports bra and spandex. There isn't a rule about it, but it's kind of an unwritten expectation. So if you wear it, people judge your body. If you don't, they judge you for not being confident, or just assume that you've gained weight and are trying to hide it.
- I've watched [our team's body fat measure] completely destroy some of my teammates. I wish that we didn't have to do it. Everyone gets so stressed when we know it's coming up. One of my teammates didn't eat the entire week before because she wanted a low number.

PROFESSIONAL RUNNERS

- Distance runners tend to have a "more is always better" mentality, which can make them successful at a sport like running that requires work, but it can also get them into trouble if they start messing with eating disorders.

COACHES

- Any coach at any level will tell you that when change occurs at every level all at once, you're going to run into problems. The freshman year is one of these times. As a runner, you're facing all kinds of stress—academic, athletic, and otherwise—and you haven't developed...skills to handle it yet.

DIETITIANS

- [When athletes come to us], we try to help them relax. We know this is their sport and it's important, and that pressures—including pressures to be thin—are almost innate within their sport.

PHYSICIANS

- Distance runners are kind of a funny breed. They are very focused on details...Type-A or even OCD, if you will. If they're off 0.1 second, they're immediately looking at all kinds of [variables] that may have thrown off their performance.
- Obviously anyone competing and training at this level is very disciplined. But they don't have discipline over that innate feeling that they have to do something to be faster and be better. So habits begin. And habits are very hard to break.

SPORTS PSYCHOLOGISTS

- It's normal for collegiate student-athletes to be stressed. But when they transition from stress to distress, that's when we see problems like disordered eating surface. It is important to realize the things that can set them into distress and take care of them so that they're healthy.