A REVIEW OF THE LITERATURE ON THE EFFECT OF PHYSICAL ACTIVITY ON BODY DISSATISFACTION AND DEPRESSIVE SYMPTOMS IN AFRICAN AMERICAN AND WHITE ADOLESCENT GIRLS

by

Erica Elisabeth Friedman

BA, University of Michigan, 2008

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This thesis was presented

by

Erica Friedman

It was defended on

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and approved by

Committee Member: Jeanette Trauth, PhD, MPA, MS, Associate Professor, Department of Behavioral and Community Health Sciences, Graduate School of Public Health, University of Pittsburgh

Committee Member: Lynn Coghill, MSW, LCSW, Program Director, School of Social Work, University of Pittsburgh

Thesis Advisor: Mark Friedman, PhD, MSW, MPA, Assistant Professor, Department of Behavioral and Community Health Sciences, Graduate School of Public Health; Assistant Professor of Pediatrics, School of Medicine, University of Pittsburgh

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ABSTRACT

Objective: Body dissatisfaction and depression are two intersecting and significant public health issues impacting the health of adolescent girls. The aim of this study is to conduct a review of the literature to describe the relationships between (1) body dissatisfaction and depression, (2) physical activity and body dissatisfaction, and (3) physical activity and depression, in order to inform a quantitative study that will investigate the potential moderating role of physical activity on body dissatisfaction and depression. Special consideration is given to how these relationships differ across racial groups. A better understanding of the relationships between body dissatisfaction, depression and physical activity will provide valuable information to inform interventions targeting these important issues in different racial demographics.

Methods: A comprehensive literature review was conducted to describe the relationship between body dissatisfaction, depression and physical activity among African American and White adolescent girls.

Results: Depression is one of the most significant mental health conditions facing adolescents. Racial differences are inconsistent across studies and further investigation remains necessary. The majority of adolescent girls report some level of body dissatisfaction, many of whom have

symptoms significant enough to warrant diagnoses. There is significant body of data that suggests that African American girls report lower levels of body dissatisfaction than White girls. Physical activity is a powerful tool to help treat and prevent both of these conditions, however, a sharp decline is seen in adolescent girls' levels of physical activity, regardless of their race.

Conclusion: Depression and body dissatisfaction are two intersecting issues affecting the health of adolescent girls. This relationship is affected by participation in physical activity, however, physical activity rates decline sharply during adolescence. African American girls appear to be protected from body dissatisfaction by factors in the physical and social environments. Several recommendations are made to strengthen further research, intervention and policy addressing the intersection of depression, body dissatisfaction and physical activity in African American and White adolescent girls.

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PREFACE

This thesis is dedicated to my friends and family. Natasa, Carrie and Laurèn, you have been a constant source of strength—and dinner clubs—throughout my time here. Jessie, Lydia, and Jesse, you have challenged me to be a more informed and knowledgeable person. Without you (and Jed Bartlett), I would have almost certainly spiraled out of control this year. Madi, you inspire me to make thoughtful personal and professional decisions, while also being true to myself. I'm honored to be your MSW/MPH colleague and your friend. Finally, to my family, thank you for leading by example. You have provided me with the foundation to be a strong, independent woman. None of this would be possible without you.

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my professional questions and doubts. Thank you for your unwavering reassurance and understanding.

1.0 INTRODUCTION

The aim of this study is to conduct a review of the literature to describe the relationships between (1) body dissatisfaction and depression, (2) physical activity and body dissatisfaction, and (3) physical activity and depression, in order to inform a quantitative study that will investigate the potential moderating role of physical activity on body dissatisfaction and depression. Special consideration is given to how these relationships differ across racial groups. Depression remains a significant problem for people of all ages, yet adolescents appear to suffer from disproportionately high levels of depression. According to some estimates, 15%–30% of all adolescents will experience an episode of depression [1-3], which makes depression one of the most significant mental health conditions facing adolescents. Depression presents differently in adolescent populations: irritability, boredom or an inability to experience pleasure (anhedonia) appear to be more prominent symptoms, rather than feelings of sadness or despondency [4]. Given the variation in symptoms, depression is often misdiagnosed and/or untreated. This only causes more significant impairment and often exacerbates co-occurring conditions like anxiety, substance abuse, conduct disorders, learning disabilities, and medical illnesses [5-8]. The exact cause of mood disorders in adolescents is unclear, although it is hypothesized that it is a complex interaction between biological, psychological, developmental and social factors [4].

Body dissatisfaction is seen as one of many factors that may contribute to the development of depression in adolescents. A growing body of research suggests that a

significant percentage of adolescents, particularly adolescent girls, express body dissatisfaction [9]. Body dissatisfaction has public health significance as it appears to be associated with emotional distress, appearance rumination, and unnecessary cosmetic surgery [10]. Those who suffer from body dissatisfaction also appear to be at an increased risk for subsequent onset of eating pathology [11] and depression [12, 13].

Neither body dissatisfaction nor depression occur uniformly across all racial and ethnic groups, thus investigation is needed to determine if African American girls exhibit more, less, or equal symptoms of depression and body dissatisfaction than their White counterparts. There is, however, a growing body of evidence that suggests that African American girls show lower levels of body dissatisfaction and unhealthy weight-control behaviors than their White peers [14-16]. In light of the larger societal obsession with thinness as an ideal body image, these ethnic group differences are remarkable as African American girls are on average significantly heavier than White girls. This leads many researchers to conclude that African American girls hold a different, heavier body image ideal.

Finally, despite the well-documented physical and psychological benefits of physical activity, a sharp decline in physical activity is seen during adolescence, particularly amongst adolescent girls [17, 18]. There appears to be substantial evidence of a greater decline in African American girls than in White girls. The implications for the prevention, care and treatment of body dissatisfaction and depression separately and together is complicated, but must extend beyond addressing each issue individually and reflect programming that is tailored to meet the contextual and cultural needs of African American and White girls.

This thesis therefore utilizes a comprehensive search strategy to gather studies that explore and discuss body dissatisfaction, depression and physical activity in African American

and White adolescent girls. The questions and research gaps that emerged throughout the literature search shaped the recommendations for interventions made in the discussion and conclusion.

2.0 BACKGROUND

Body dissatisfaction and depression are two intersecting and significant public health issues impacting the health of adolescent girls. Although the contribution of body dissatisfaction to the development of depression has been well established, few studies have examined the impact of physical activity on this relationship. Moreover, there is no definitive answer as to how these relationships differ between African-American and White adolescent girls. A better understanding of the relationships between body dissatisfaction, depression and physical activity will provide valuable information and insight into these issues and their effect on interventions targeting these important factors in different racial demographics. This thesis begins with a review of the literature examining the burden of depression among adolescent girls, the burden of body dissatisfaction in this group and finally examines the effects of physical activity on depression and body dissatisfaction. Specific attention is given to the racial differences exhibited between African American and White adolescent girls.

2.1 THE BURDEN OF DEPRESSION AMONG ADOLESCENT GIRLS

2.1.1 Depression Among Adolescents

The annual rate of depression among adolescents and young adults in the United States is nearly twice that of adults 25–44 years old [19]. It is estimated that 15%–30% of all adolescents will experience an episode of depression [1-3]. According to the American Psychiatric Association [20], depression is defined as feeling sad, hopeless, discouraged, or "down in the dumps." Other symptoms often include: disturbed sleep or appetite, persistent feelings of irritability, poor concentration, low energy levels and suicidal thoughts, and/or poor concentration. In order to be diagnosed with depression, these symptoms must be present for two or more weeks. Symptoms of depression in adolescents, however, are complex and often misunderstood because they do not always present in the same way as adult depression. Irritability, boredom or an inability to experience pleasure (anhedonia) appear to be more prominent features of depression in adolescents, rather than simply feelings of sadness [4]. The exact cause of mood disorders in adolescents is unclear, although it is hypothesized that adolescent depression is a complex interaction between biological, psychological, developmental and social factors [4].

2.1.2 Gender Differences of Depression

Depression does not present equally in both males and females. As a result, depression is considered a gender-specific disorder with twice as many girls (12%) as boys (7%) diagnosed with depression each year [21]. Although the personal experience of depression may appear largely similar for adolescent girls and boys, clear sex differences in depressive symptoms have been reported, with girls experiencing more guilt and body dissatisfaction, self-disappointment, feelings of failure and concentration problems than boys, whereas anhedonia, morning depressed mood, and morning fatigue are more frequent in boys [22]. Several studies [23, 24] have determined that these gender differences appear around age 13 or 14 and remains consistent throughout life, regardless of nationality, socioeconomic status and ethnic identity [19].

There are several theories that seek to explain the discrepancy in incidence between male and female diagnoses. One, which is widely recognized, is that social factors such as help-seeking behavior and symptom reporting are different across genders: women are more likely to seek treatment for psychological problems earlier, whereas men are more prone to cope with sadness or depressive symptoms through, for example, increased drug or alcohol abuse [25]. These social factors are unlikely to fully explain the sex difference in the incidence of depression.

Another theory called the “gender additive model” posits that girls might face additional risk factors for depression, above and beyond those they share with their male counterparts (i.e. negative life events and family history) and that these risk factors may escalate in early adolescence [26]. These additional risk factors, the authors suggest, may include body image and eating-related variables. These factors are highly influenced by girls’ physical development and pubertal maturation. It has been suggested [8, 12] that during puberty, girls develop additional body fat, thus moving them further away from the current thin-ideal and precipitating

body-image and eating-related risk factors that may contribute to the higher rates of depression observed among girls during adolescence. This theory will be considered further in the section devoted to body dissatisfaction and depression. Regardless of the causes of the gender differences in adolescent depression, one fact remains clear: depression ranks among the most common mental health problem of adolescent girls [27, 28]. For this reason, it is of high public health significance.

2.1.3 Short- and Long-Term Outcomes of Depression

Adolescent depression, regardless of gender, is particularly troubling because of its short- and long-term impairments and outcomes. There is a strong association between adolescent depression and increased risk for suicide [29, 30]. As many as one-third of adolescents who suffer from depression attempt to commit suicide [7]. Approximately 4-10% of depressed adolescents die as a result of suicide, which makes depression a major cause of death among adolescents [7]. Depression also frequently co-occurs with anxiety, substance abuse, conduct disorders, learning disabilities, and medical illnesses [5-8]. Not surprisingly, depression along with these co-occurring conditions, can also lead to significant academic and interpersonal impairment [31].

Depression is often not a diagnosis isolated to one's adolescent years. The presence of mild depressive symptoms or "subthreshold depression" during adolescence increases the risk of more serious depressive disorders later in life [32-34]. This suggests that depression is persistent and recurring [35]. According to the World Health Organization (WHO) Global Burden of Disease Study, depression ranks as the single most burdensome disease in the world in terms of total disability-adjusted life years among people in midlife [36]. In the United States, it is

estimated that the annual salary costs of depression-related lost productivity exceeds $53 billion [37]. Moreover, depression negatively impacts the quality of interpersonal relationships (e.g. increased divorce rates and the elevated risk for psychopathology in children of people suffering from depression [38]).

2.1.4 Racial Differences of Depression

Researchers disagree about the prevalence of depression in African American girls. A review of the literature by Slater et al (2001) on adolescent mental health concluded that the prevalence of depression is lower in African-American adolescent girls than in Caucasian adolescent girls [39]. As Franko and Striegel-Moore [14] noted, however, only 5 of the studies included in Slater et al's literature review examined the difference in rates of depression in African-American and Caucasian adolescent girls. These studies, they argue, have found either no difference or significantly higher depression scores in African-American compared with Caucasian girls [29]. Keenan et al's [40, 41] work supports findings that African American girls exhibit more symptoms of depression; their findings are also supported by the National Longitudinal Study of Adolescent Health (NLSAH) [42]. In this nationally representative study, over 9% of adolescents reported moderate/severe depressive symptoms at baseline with females, older adolescents, and ethnic minority youths more likely to report these symptoms at baseline [42]. These studies hypothesize that there may be specific socio-cultural stressors for African Americans (e.g. living in a low-income environment), that influence the transition from population vulnerable to the development of mental illness to a population with active mental health symptoms [41]. At this juncture, further investigation is needed in order to determine if

African American girls exhibit more, less, or equal symptoms of depression than their White counterparts.

2.1.5 Predictors of Adolescent Depression

Despite the increased understanding of adolescent depression, there continues to be a number of predictive factors that are not entirely understood. According to the Epidemiology of Depressive Symptoms in the NLSAH [42], the following sociodemographic factors have been demonstrated to be associated with greater depressive symptomatology and persistent depression in children and adolescents: older age of adolescent, African-American race, female gender, low maternal education, single-parent household, and lower socioeconomic status [43-47]. There are other studies, however, that have not reported associations with some of these demographic factors [44, 48, 49]. Other predictors of adolescent depression include fair/poor general health, school suspension, weaker family relationships and health care utilization [42]. Anxiety and oppositional-defiant disorder, which often present as comorbid disorders, have also been associated with the course of adolescent depression [46, 50].

2.2 THE BURDEN OF BODY DISSATISFACTION AMONG ADOLESECENT GIRLS

2.2.1 Body Dissatisfaction among Adolescents

Both anecdotal evidence and a growing body of research suggests that a significant percentage of adolescents, particularly adolescent girls, express body dissatisfaction [9]: it is estimated that approximately 60% of girls and 30% of boys report a desire to change their size or shape [51, 52] and nearly 25% of adolescent girls report levels of body dissatisfaction significant enough to warrant diagnoses [53]. The term body dissatisfaction is often used interchangeably with the terms self-concept, self-esteem, and body image. For the purposes of this analysis, the following definition of body dissatisfaction will be used, "A person's negative thoughts and feelings about his or her body" [54] (p. 4). Furthermore, body dissatisfaction relates to negative evaluations of body size, shape, muscularity/muscle tone, and weight, and it usually involves a perceived discrepancy between a person's evaluation of his or her body and his or her ideal body [55]. Evidence suggests that the further a person views himself or herself from her ideal body weight and size, the more likely he or she is to be dissatisfied with his or her appearance [56]. Body dissatisfaction, however, does not appear to be simply a result of a person's body mass. Instead, body dissatisfaction appears to be significantly related to the standards a person places on him/herself, independent of his/her actual size[57].

2.2.2 Gender Differences in Body Dissatisfaction

In the past, most research on body dissatisfaction was dedicated to examining this condition in girls and women; however, in recent years researchers have begun to recognize that body dissatisfaction is also highly prevalent in boys and men. For both genders, the desire to make changes to one's appearance can lead to high levels of body dissatisfaction [51] and can also be associated with emotional distress [58]. The high prevalence of body dissatisfaction during adolescence, a critical period of identity formation, is disturbing in that body image, self-image and self-esteem tend to be closely intertwined.

2.2.3 Short- and Long-Term Outcomes of Body Dissatisfaction

The effects of body dissatisfaction are varied and often dependent on individual experiences. There has been significant research conducted on the short- and long-term impairments that body dissatisfaction causes. In the short-term, body dissatisfaction appears to be associated with emotional distress, appearance rumination, and unnecessary cosmetic surgery [10]. Cosmetic surgery in this demographic appears to be on the rise: According to the American Society for Aesthetic Plastic Surgery (ASPAS), in 2010, over 125,000 procedures were performed in people ages 18 and under; this represents 1.3% of the total number of surgeries performed in the United States [59]. In the long-term, body dissatisfaction also increases the risk for subsequent onset of eating pathology [11] and depression among adolescent girls [12, 13]. Eating pathology, which can include both mild forms of disordered eating, as well as more severe forms of anorexia nervosa and bulimia nervosa, has been associated with a variety of adverse physical and emotional outcomes, which often results in an increased

mortality risk [60, 61]. The relationship between depression and body dissatisfaction will be further discussed in the section below.

2.2.4 Racial Differences in Body Dissatisfaction

There is a growing body of evidence that suggests that African American girls experience lower levels of body dissatisfaction and unhealthy weight-control behaviors than their White peers [14-16]. Weight dissatisfaction and inappropriate dieting behaviors are reported to be rampant among White adolescent girls. Survey research has suggested that there is an "epidemic" of dieting among White girls [62]. At any given time, 60-80% of White girls report dieting [63]. White girls report a thinner body size ideal [64] and are more likely to describe themselves as "overweight" [65, 66] or "too fat"[67-69] than African American girls. White girls are also more likely to report they are trying to lose weight [62, 70].

These ethnic group differences are remarkable because African American girls are on average significantly heavier than White girls. White girls between ages 11 and 16 scored higher than African American girls on the Body Dissatisfaction and Drive for Thinness subscales of the Eating Disorders Inventory even though on average White girls were thinner [71]. In both groups, higher drive for thinness (i.e., greater preoccupation with dieting) was found for heavier girls, but at comparable BMI levels, White girls reporter a greater drive for thinness than African American girls. The following is a discussion on potential cultural factors that may contribute to these racial differences.

In order to better understand body dissatisfaction in African American girls, it is helpful to understand the relationship that African American *women* have with their bodies. Data from several studies suggest that African American women tend to underestimate their body weight

and not view themselves as being overweight [72]. Even when they recognize and identify that they are overweight, many African American women still consider themselves attractive [73]. One potential explanation for the above differences is that African American and White mothers may communicate their weight-related attitudes to their daughters. Few studies have examined this maternal link directly; however, Brown et al. [74] found that African American mothers, compared to White mothers, were more understanding of the build and eating habits of their overweight daughters.

Other relationship issues may play a role in the differences between African American and White girls. African American girls reported receiving more positive than negative feedback about their looks from their friends and family. African American girls also described themselves as being very supportive of each other, as compared to White girls who expressed competitiveness and envy regarding body-related issues [14]. Maternal, familial and peer relations likely shape the development of the African American girls' body ideal. Parker et al [16] reported that rather than using thinness as a standard for beauty, African American girls emphasized "making what they had 'work for them'." Greater comfort with and even idealization of fuller figures occurs among African American girls despite being on average heavier and more prone to overweight than Whites [75]. In a large study of African American and White 9-10 year olds, African American teenagers were more likely to endorse statements indicating that being fat is healthy or makes one feel more like a girl [76]. African American girls appear to be proud of their bodies, regardless of their size. This suggests that they hold a different, heavier body ideal than their White counterparts.

Finally, self-esteem appears to serve as a protective factor against African American girls' body dissatisfaction. African American girls have been found to have higher self-esteem

and feel a greater sense of personal and familial importance than White girls [77-79]. Simmons et al. [79] suggested that higher self-esteem in African American girls and adolescents may be related to greater flexibility in sex roles found in female-headed households for African American girls. While there are no definitive answers for the marked differences between the levels of body dissatisfaction in African American and White girls, maternal, familial and peer relations, differences in body ideal and self-esteem appear to play a protective role.

2.2.5 Predictors of Body Dissatisfaction

There are many variables that are likely implicated in the development of body dissatisfaction in adolescent girls. It many ways, it is an individual experience. This literature review, however, focuses on ideal-body internalization, issues of social support, and negative affect as broad predictors of body dissatisfaction.

Ideal-body internalization is based on the gender intensification hypothesis [80] which hypothesizes that as adolescents mature physically and emotionally, their identification with same-gender stereotype strengthens. For girls, this stereotype emphasizes physical attractiveness as an area of key importance [12, 81]. In the mass media in Western culture, physical attractiveness in women is strongly linked with thinness [82]. As adolescent girls move through puberty, they often gain weight and thus move further from the thin-ideal.

Social support also plays a strong role in adolescent girls' body dissatisfaction. Theoretically, gender intensification is triggered not only by girls' actual physical maturation and consequent weight gain, but also by the way in which peers and parents respond to these changes [81]. Adolescents who feel unconditionally accepted by their support network may be less inclined to attempt to attain acceptance by conforming to and acting on the thin ideal. In

contrast, those who experience rejection from their peers and parents may attribute this lack of support in part to their physical appearance. This hypothesis of social support has mixed empirical support. Stice et al [53] found that deficits in social support predicted body dissatisfaction for adolescent girls, and another prospective study found that supportive maternal relationships was significantly associated with increased body satisfaction [83]. However, Byely et al, 2000 found no relation between body dissatisfaction and social supports in girls in a smaller sample size [84].

As the literature indicates, body dissatisfaction has been associated with the expression of depressive symptoms. There is also reason to believe that depression can be implicated in the development of body dissatisfaction. Theoretically, depressed affect induces a preference for, and selective attention to, negative information about oneself and the world [85]. While this study focuses primarily on body dissatisfaction as a predictor of depression, it should be acknowledged here that it could influence the relationship in either direction. The following section analyzes these questions more closely.

2.3 PHYSICAL ACTIVITY

2.3.1 Physical Activity and Depression

There has been an overwhelming body of evidence published supporting the relationship between physical activity and depression. Regular physical activity is associated with enhanced health and reduced risk of all-cause mortality. Beyond the effects on mortality, physical activity has many health benefits, including reduced risk of cardiovascular disease, certain cancers, osteoporosis, and depression ([86] for a review). This well-established relationship recognizes the beneficial effects of physical activity on depression, as well as the inverse relationship between physical activity and depression. Explanations of this relationship will be presented through two hypotheses: The protection hypothesis and the inhibition hypothesis [87]. Evidence of these relationships is also strong in studies of adolescents [88-91], thus a brief overview of trends in adolescent physical activity follows.

The protection hypothesis holds that physical activity protects against depressed mood. Biological and psychological mechanisms have been proposed to suggest how this protection effect occurs. Biologically, physical activity may increase monoamines (e.g., serotonin, norepinephrine, dopamine). These brain chemicals, which are naturally released during pleasurable activities, may also be released while a person is engaging in physical activity. This, in turn, may lead to a positive affect and reduced risk for depression [92]. Physical activity has also been linked to endorphin productive, elevated body temperature, and lower responses from

stress, all of which may have protective factors against depression [93]. Psychological hypotheses propose that physical activity may also serve as a distraction from negative affect. This is beneficial as it may reduce the risk for other maladaptive coping strategies (e.g., rumination), thereby reducing risk for depression [94]. Furthermore, physical activity provides experiences of mastery and control, influences self-esteem, improves the retrieval of positive thoughts, and is an important social arena for the learning of social skills and social networking [95, 96].

The inhibition hypothesis, assumes that depressed mood, at least to some degree, disables an individual's capability of being physically active. Depression can be viewed as a continuum from depressed mood to diagnosable depressive disorder [34]. Also, subthreshold depressive symptoms (symptoms below the threshold for clinical diagnosis), such as depressed mood, are linked to some forms of psychosocial dysfunction and functional impairment [34] and may start a negative pattern in which a person lacks the energy to start exercising. Thus, an inverse relationship between physical activity and depressed mood can be explained by the depressed person not having the energy to be physically active [97].

2.3.2 Racial Differences in Physical Activity

Despite the well-documented physical and psychological benefits of physical activity, a sharp decline in physical activity is seen during adolescence, particularly amongst adolescent girls [17, 18]. Data from the 2001 National Youth Risk Behavior Surveillance indicate that high school girls in all racial/ethnic groups are less active than high school boys; 38% of adolescent girls and 24% of adolescent boys did not meet national recommendations for moderate or vigorous physical activity[98, 99]. In a prospective, longitudinal study of 1213 African

American girls and 1166 White girls, physical activity declined by year 10 of the study by 100% for the African American girls and 64% for the White girls. By the ages of 16 or 17, 56% of the African American and 31% of the White girls reported no habitual leisure-time activity. Habitual leisure-time activity can be defined as a broad descriptor of activities one participates in during free time, based on one's personal interests and needs [100]. These activities include formal exercise programs, as well as participation in informal activities (e.g. walking, hiking, gardening and dancing). Regardless of race, a higher body-mass index was associated with a decline in activity [17, 101]. While adolescents overall report a lower level of physical activity, there appears to be substantial evidence of a greater decline in African American girls than in White girls.

3.0 METHODS

3.1 LITERATURE REVIEW

The aims of this research study are to inform the following research questions: (1) What is the relationship between body dissatisfaction and depressive symptoms during early to mid-adolescence? (2) Does physical activity moderate the relationship between body dissatisfaction and depressive symptoms in African American and White girls during early to mid-adolescence? This was done by using a comprehensive search strategy to gather quantitative articles that explore and discuss body dissatisfaction, depression and physical activity in African American and White adolescent girls. Three online databases were used (PubMed, Scopus, PsychINFO). Various combinations of the following words and terms were used in the literature search: adolescent, girls, African American, Black, European American, White, physical activity, exercise, depression, mood disorders, depressed mood, depressive symptoms, perceived body image, self concept, weight perception, body satisfaction, body dissatisfaction, self-esteem, body weight, weight perception, and self-perceptions. A set of inclusion criteria was developed and applied to the results from the literature search the select articles:

1. Published in peer-reviewed journals.
2. Focused on adolescents between the ages of 12-17.
3. Focused primarily on adolescent body dissatisfaction and development of depression.

4. Focused primarily on adolescent physical activity and its relationship to body dissatisfaction and/or depression.
5. Published in English.
6. Published between 1984-2012.

4.0 FINDINGS

4.1 BODY DISSATISFACTION AND DEPRESSION

Body dissatisfaction has been linked to the development of depression in adolescent girls. Moreover, this factor is hypothesized to be partially responsible for the differences seen in the two genders starting in adolescence. In this section, three prominent theories on the relationship between body dissatisfaction and depression, Self-Discrepancy Theory, Gender Additive Model and Dual Pathway Model, are explained and discussed as possible explanations for the dramatic increase in depression for girls during adolescence.

The basic premise of the Self-Discrepancy theory is that it is the "relations between and among different types of self-beliefs or self-state representations that produce emotional vulnerabilities rather than the particular content of nature of the actual self or of any other individual self-belief" [102] (pg. 94). This theory proposes that there are two psychological parameters: *domains of the self* and *standpoints on the self*. In the original model, three types of self-domains were identified [103]: (1) The *actual* self, which is your representation of the attributes that you or another believes you possess; (2) The *ideal* self, which is your representation of the attributes that you or another would like you, ideally, to possess; and (3) the *ought* self, which is your representation of the attributes that you or another believes you should or ought to possess. Higgins, Klein, and Strauman (1985) have shown that actual-ideal discrepancy is generally associated with dejection-related emotions, like those seen in

individuals suffering from depression [104]. This theory has also been applied to social anxiety [104], group-based emotional distress [105], and symptoms of disordered eating [106]. This model was one of the first to attempt to relate different types of self-state representations to different kinds of emotional problems [102]. It continues to provide an interesting and applicable framework for understanding the relationship between body dissatisfaction and depression.

The Gender Additive Model suggests that females face additional risk factors related to the development of depression, many of which escalate during early adolescence. One of the most widely examined factors is pubertal timing. The relationship between the onset of puberty and body dissatisfaction plays a pivotal role in the etiology of depression. Early onset puberty has been associated with significantly elevated body weight. There have been many suggestions [8, 12] that puberty and the acquisition of body fat moves girls away from the thin ideal, thus precipitating body-image concerns and eating-related risk factors that may contribute to the higher rates of depression [8]. This explanation is further supported by findings that body dissatisfaction has emerged as a consistent predictor of future depression among girls [12, 107].

The third model, the Dual Pathway Model of Bulimic Pathology was developed by Stice et al [108] to describe the relationship between body dissatisfaction and depression in adolescent girls. This model proposes that elevated body mass index, body dissatisfaction and dieting lead to both depression and the development of eating disorder symptoms. Theoretically, elevated body mass results in body dissatisfaction because being overweight is presently considered to be undesirable in all age demographics, especially adolescence. Body dissatisfaction in turn may contribute directly to the development of depression, because of the importance of appearance in Western cultures. Moreover, body dissatisfaction is also thought to foster dieting, which may in

turn increase the chances of developing depression. Accordingly, elevated body mass, body dissatisfaction, and dieting might be expected to predict the onset of depression among girls during adolescence.

Taken together, these theories help to explain the dramatic increase in depressive symptoms in adolescent girls. Firstly, as the Gender Addictive and Dual Pathway models suggest, girls experiencing the physical changes associated with puberty (i.e. weight gain and increased body fat) often consider them to be undesirable [109]. Boys undergoing pubertal changes, however, often see them as desirable since it moves them closer to the societally accepted definition of attractive (i.e. muscular and toned) [109]. As outlined by the Self-Discrepancy model this creates an actual-ideal discrepancy. In most demographics in western societies, being thin and having a minimal level of body fat is considered to be ideal. Puberty moves girls away from this thin-ideal, thus causing them to be more dissatisfied with their bodies. Secondly, as the Dual Pathway Model posits, depressive symptoms are positively correlated with body mass, body dissatisfaction, dieting, and bulimic pathology among samples of adolescent girls [62, 110-112]. The Self-Discrepancy and Gender Additive models provide additional support for these positive correlations. Finally, body dissatisfaction has prospectively predicted depressive symptoms during adolescence for girls [107, 113]. Thus, there is some evidence that body image and eating disturbances may be useful in explaining the rise in clinical depression for adolescent girls.

4.1.1 Racial differences in body dissatisfaction and depression

The role of body dissatisfaction in the development of depression in adolescent girls has not been widely researched in regards to racial differences. The aforementioned studies [12, 13, 108] have mainly studied the experience of White adolescent girls. Siegel (2002), however, extended an earlier study by following her multiethnic sample of adolescents 13 months after the initial study (n=675) [114]. In order to examine the temporal relationship between body image and depressive symptoms, she measured body image change between Time 1 and Time 2 as either "more favorable," "unchanged" or "less favorable," and examined the effect of this change on depressive symptoms. Consistent with the previously reviewed literature [9, 14-16, 71], African American girls had the least body dissatisfaction of all three groups (White, Hispanic, or Asian). The African American girls, however, who identified their body image as becoming "less favorable" had higher scores on the Children's Depression Inventory than the other three ethnic groups. Conversely, African American girls whose body image became more positive over time had the least number of depressive symptoms. The author of this study suggested that "higher rates of depression may have occurred because a negative body image is not normative for African American adolescent girls, and thus not liking one's body may have resulted in feelings of 'not fitting in' with one's peer group, leading to depressive symptoms" [114]. These findings are compelling in that they further demonstrate the difference between ethnically diverse adolescent girls' experiences, however, it should be noted that the sample of African American girls in the study was quite small (the exact number is not given). Given the small sample size, it is difficult to generalize this relationship beyond the study.

One additional study was located that analyzed the meditational model of body dissatisfaction in relation to depression, however, it was conducted with White and Black

women. Bay-Cheng et al [115] tested a model proposing that weight concerns mediate the relationship between "embodied femininity" and depressive symptoms. Among the 608 White women studied (ages 18–45, mean age 34.4 years), weight concern was found to be a potent mediator between embodied femininity and depressive symptomatology. In other words, for White women, thinness was found to be essential to the ideal feminine body, and weight concern was clearly and significantly linked to depression. In contrast, this model was not supported for the 113 Black women (ages 18–45, mean age 32 years) who were tested. In this group, weight concern did not predict depression, suggesting that for Black women an emphasis on thinness did not play a role in the development of depressive symptomatology. The low levels of body dissatisfaction and weight concern found in this group suggest that similar results might be obtained although additional research is needed to examine this question with Black adolescent girls.

4.2 PHYSICAL ACTIVITY AND BODY DISSATISFACTION

The evidence surrounding the relationship between physical activity and body dissatisfaction has been mixed. Some researchers have hypothesized that some level of body dissatisfaction in adolescent girls serves as a powerful motivator to engage in health promoting behaviors [116, 117]. Other researchers, however, have hypothesized and supported the assertion that girls who experience body dissatisfaction are more likely to engage in health compromising behaviors, often causing more harm in both the short- and long- term [15, 57, 118]. Both arguments will be analyzed in order to better understand the effects of body dissatisfaction on physical activity.

Heinberg and his colleagues have argued that some level of body dissatisfaction may prove to be beneficial for individuals with average or above-average body mass indexes (BMI)[116, 117]. They hypothesize that for these individuals, body dissatisfaction may lead to healthy weight management behaviors and ultimately, healthier lifestyles. They assert that the relationship between body image dissatisfaction and healthy weight management behaviors may be illustrated by "an inverted U-shaped curve." When body dissatisfaction is very low, individuals may not engage in healthy eating and exercise behaviors, even if they are necessary to alleviate health-related conditions. Conversely, when body dissatisfaction is very high, individuals may fail to engage in healthy weight management behaviors because of a perceived inability to make meaningful changes in their bodies. There is also a high likelihood that these people may engage in unhealthy dieting behaviors in a desperate attempt to lose weight. Thus, they argue that there exists a healthy level of body dissatisfaction that serves as a motivator to make meaningful short- and long-term lifestyle decisions.

There is also a growing body of evidence that indicates that body dissatisfaction does not serve as a motivator towards behaviors likely to be effective in long-term weight management

(i.e. physical activity and fruit and vegetable intake) in adolescent and adult women [15]. Instead, findings indicate that lower levels of body satisfaction are associated with more health-compromising behaviors, such as unhealthy weight control behaviors and binge eating, and fewer health-promoting behaviors, such as physical activity. This can be partially explained by the aforementioned self-discrepancy theory. According to this theory, negative emotional conditions, like depression, can be caused by discrepancies between the actual self and the ideal self. These negative emotional states may, in turn, lead to decreased motivation and self-efficacy for achieving bodily goals and ultimately have a negative impact on the maintenance of healthy behaviors such as adequate fruit and vegetable intake and appropriate physical activity [57]. This loss of motivation and efficacy may be especially pronounced in girls who have elected to engage in physical activity primarily to lose weight [118] and who have not met their, often unrealistic, weight loss goals [119].

4.2.1 Racial Differences in Physical Activity and Body Dissatisfaction

The role of body dissatisfaction in physical activity has also not been widely studied with regards to racial differences. As previously noted, physical activity appears to decrease in all adolescent demographics [17], regardless of race. In one study examining a cohort of obese African American adolescents in Philadelphia, high levels of self-esteem were demonstrated by the participants despite their elevated body mass [120]. Furthermore, when examined for physical activity patterns, most participants in the study did not engage in any physical activity nor did they demonstrate any exercise-related knowledge [120]. This confirms previously cited findings that African American girls' body satisfaction is not dictated by their body mass index

[9, 14, 16]. It also confirms the growing national trend that African American girls' physical activity levels fall below daily recommendations.

White adolescent girls may engage in physical activity as a means to combat the body dissatisfaction that often occurs during pubertal development [116]. The literature suggests that because African American girls do not appear to experience similar levels of body dissatisfaction [9, 14, 16], they likely do not use physical activity as a means to decrease the body dissatisfaction [120]. Instead, African American may fail to engage in physical activity for other reasons. They may face additional socioeconomic and environmental factors, i.e. necessity to obtain paid employment to support their family, lack of access to safe walking areas, and neighborhood violence [121]. These factors, in addition to lower income and education levels [121], may affect African American girls levels of physical activity and may also impact in prevalence of obesity in this demographic.

5.0 DISCUSSION

5.1 IMPLICATIONS OF AND GAPS IN RESEARCH

Body dissatisfaction and depression are two intersecting and significant public health issues impacting the health of adolescent girls. Although the contribution of body dissatisfaction to the development of depression has been well established, few studies have examined the impact of physical activity on this relationship. This literature review discussed the relationship between depression and body dissatisfaction and investigated the effects of physical activity on the relationship between these two variables in African American and White adolescent girls.

Depression in all adolescents is a significant public health issue that leads to a number of negative short- and long-term effects. Because the prevalence and incidence of depression is twice as high in adolescent girls as compared to boys [21], it is a particularly pressing problem that requires special attention from public health, medical and mental health professionals. As evidenced by this literature review, there is significant evidence of the increased incidence and prevalence of depression during adolescence [1-3, 21]; however, the causes of mood disorders in any population are not entirely understood. While there are many biological, psychological, developmental and social factors that contribute to the developmental of depression and other mood disorders, more research should be done in order to better understand specific contributions.

At present, there is no conclusive evidence of the difference between African American and White adolescent girls' experiences with depression. While some studies have found that being an African American female is a risk factor for depression [39-42], others have found no conclusive evidence that there are any differences between these two racial groups [14]. While determining the exact prevalence and incidence of depression in any group can be difficult, the studies that have attempted to differentiate between different racial experiences have had a number of methodological weaknesses (e.g. small sample sizes). If there is to be a better understanding of depression in adolescent African American girls, more comprehensive, powerful studies should be conducted.

Body dissatisfaction is a complex and pervasive problem that appears to affect African American and White girls at different levels. There appears to be a "dieting epidemic" among White adolescent girls that is likely driven by intense body dissatisfaction [62]. African American girls, however, do not appear to express a similar level of body dissatisfaction or drive for thinness, suggesting that they hold a different, heavier ideal for their bodies [14-16, 62]. The suggestion that African American girls are protected from body dissatisfaction by their families, peers, and high levels of self-esteem is a remarkable aspect of this research. Often times, research highlights the negative associations with being African American, however, this literature review suggests that African American girls may be protected from the negative consequences of body dissatisfaction. This finding has interesting and potentially transferable implications for both African American and White adolescent girls.

Finally, the benefits of physical activity are well documented in all populations. Physical activity in adolescents, however, is especially important, as it has been shown to protect against depression and dictate long-term engagement in exercise and healthy lifestyle choices [97, 117].

The marked decline in physical activity in both African American and White adolescent girls is alarming in light of the rising obesity epidemic in both groups [17, 18]. While the evidence is strong that the decline is significant in both groups, the factors contributing to this decline remain uncertain. In order to target both groups and increase physical activity, the factors contributing to this steep decline should be better understood.

5.2 IMPLICATIONS FOR INTERVENTIONS

Understanding body dissatisfaction and depression has the potential to positively influence health promotion interventions. At present, most body image interventions typically consist of psycho-educational, cognitive-behavioral, or drug therapies. Many of these interventions, however, are expensive and impractical for adolescents. Moreover, adolescents with clinically significant body dissatisfaction rarely seek treatment. Their condition is often normalized by a society that expects young women to be thin and conscious of their weight. Physical activity provides a strong alternative, as it is inexpensive, practical and developmentally appropriate for adolescents. Given the powerful evidence of the benefits of exercise, physical activity is a promising mode of intervention for body dissatisfaction.

At present, many weight loss interventions for adolescent girls only take into consideration the physical activity and dietary components of weight loss. Often times, these interventions provide information regarding caloric intake and energy expenditure. The adolescent girls, often lacking an adequate understanding of either of these concepts, are then expected to make the necessary behavioral changes in order to mange their weight. In understanding body dissatisfaction and depression, it becomes clearer that these factors strongly

contribute to an adolescent girl's decision to participate in physical activity. Interventions should screen participants for symptoms of depression. If symptoms are found to be clinically significant, they should be referred to an appropriate mental health provider for treatment. Body dissatisfaction should also be an important component of any intervention. Important aspects of body dissatisfaction could include realistic portrayals of female adolescent bodies, issues of body image in the media, and the effects of puberty on body mass index. Weight loss and physical activity interventions should include components of body dissatisfaction and depression screening in order to effectively address declining rates of physical activity during adolescence and adolescent obesity.

Given the differences between African American and White girls' experiences with body dissatisfaction and depression, it is especially important that health promotion programs be matched to the social, cultural and environmental characteristics of the target populations. For inner city, low-income African American girls, these factors may include culturally specific attitudes with regard to ideal body type and greater tolerance of being overweight. They should also be considerate of the fact that African Americans have unique dietary patterns that are important on individual and cultural levels. Finally, environmental considerations should include neighborhood violence, access to walking paths and parks, as well as access to healthy food options.

5.3 IMPLICATIONS FOR POLICY

Policy plays an important role in many issues affecting the health and wellness of adolescents. While body dissatisfaction may be affected on a policy level, depression and physical activity are

most certainly affected by policies governing the mental and physical health services provided to adolescents. The following analyzes the potential for this research to impact adolescent mental and physical health.

Depression, as one of the most significant mental health issues facing adolescents, should be a high priority for all adolescent health providers. At present, depression screening is infrequently and indiscriminately administered by clinicians seeing adolescents for annual physical examinations. In order to treat adolescents for symptoms of depression, this screening must be consistently administered to all patients across all providers. Moreover, for adolescents who do not see providers annually, mental health services should be made available through existing systems such as schools, churches and after-school programs. By expanding the provision of mental health services to places where adolescents spend a significant portion of their time, depression would be recognized and treated earlier and more consistently. This would likely have a significant impact on the burden of adolescent depression and other co-occurring conditions.

Physical activity is important for people of all ages. It is especially important, however, that adolescents are encouraged to continue to engage in physical activity as they age and develop lasting habits. Time that is designated for physical activity during schools hours is influenced on a policy level. Schools should continue to designate time for adolescents to exercise—be it during recess or gym class. On a governmental level, local, state and federal governments should continue to provide adequate funding for in-school and after-school exercise programs. The benefits of these programs are seen immediately in the alleviation of conditions like depression, anxiety, conduct disorders, etc. While the benefits of these programs may not be seen by the schools themselves, they are see on a wider societal level. Children and adolescents

who engage in physical activity at a young age are more likely to develop habits that will follow them into their adult years. Consequently, they will have fewer mental and physical health conditions. Policy initiatives that encourage physical activity in children and adolescents are quality investments in that encourage short-term and long-term health benefits for all.

6.0 STRENGTHS AND LIMITATIONS

Although the search and review of the literature was conducted in a systematic manner, they may not represent an all-inclusive set. The author's use of inclusion criteria narrowed the range of literature gathered for review, however, as seen in the bibliography, there are still a considerable number of sources. The ones ultimately selected and cited were chosen to represent a relevant set of data in order to accomplish the goals and objectives of this paper.

One of the strengths of this paper is the inclusion of race as a consideration for the literature review and the discussion of interventions. While race and ethnic identity is an important factor in any individual's life, it can be difficult to tease apart the effects of race on specific factors like mental health, body dissatisfaction and physical activity. The author's attempt to understand how race impacts these factors is a notable strength of this paper. An additional strength is the author's dedication to continuing this research through a quantitative analysis with data from the Pittsburgh Girls Study. This study will further investigate the mediating role of physical activity in the development of depressive symptoms and body dissatisfaction in African American and White adolescent girls.

7.0 CONCLUSION

The aim of this study was to conduct a review of the literature to describe the relationships between (1) body dissatisfaction and depression, (2) physical activity and body dissatisfaction, and (3) physical activity and depression, in order to inform a quantitative study that will investigate the potential moderating role of physical activity on body dissatisfaction and depression. Furthermore, it explored the contribution of African American and White racial experiences to this relationship. As demonstrated, depression affects a significant number of adolescents, both male and female, African American and White, thus making it one of the greatest public health issues affecting adolescent health. Further research is needed in order to determine which factors contribute to the development of depression in all demographics, especially African American adolescent girls.

Body dissatisfaction is a significant factor in the development of depression in adolescents. Historically, research has focused on this condition in girls and women; however, there is growing evidence to suggest that boys and men also experience significant levels of body dissatisfaction. White adolescent girls appear to express the highest levels of body dissatisfaction, while African American girls appear to be protected from body dissatisfaction by factors like maternal influence, family and friends, and self-esteem. This is particularly remarkable as African American girls are on average significantly heavier than their White peers.

Further research is needed to understand these protective factors and how they can be translated to other racial groups who suffer from high levels of body dissatisfaction.

Finally, despite the well-documented physical and psychological benefits of physical activity, adolescents continue to engage in fewer physical activities as they age. The reasons for this sharp decline are not well understood. Further investigation is needed in order identify the contributing factors and address them through effective interventions. This decline in physical activity is seen in both African American and White adolescent girls, however, African American girls appear to be the more sedentary of the two groups. This is particularly alarming given the rising obesity rates in both demographics.

The implications for the prevention, care and treatment of body dissatisfaction and depression separately and together is complicated, but must extend beyond addressing each issue individually and reflect programming that is tailored to meet the contextual and cultural needs of African American and White girls. Rigorous research on depression, body dissatisfaction and physical activity would further illuminate the factors that contribute to these conditions, thus making for better prevention, treatment and policy.

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