THE ASSOCIATIONS BETWEEN THE HEALTH PROMOTING BEHAVIORS OF LOW INCOME PARENTS/CAREGIVERS AND THOSE OF THEIR CHRONICALLY ILL ADOLESCENTS

By

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This work is dedicated to the fond loving memories of three significant women in my life:

Mrs. Ophelia “Pen Pen” Cooke (1939-2006); Ms. Annie Mae “Grandma” Stinson (1912-2007);
and Ms. Bernadine “Bert” Barbee (1948-2008)

Thank you for loving me and treating me as your own. You will never be forgotten.

To my dearly departed friend Darius “D” Hubbard (1975-2002) I say:

This world has not been the same since you’ve been gone. You taught me that today is what matters not tomorrow and not yesterday, but today. Thanks for all the memories.

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THE ASSOCIATIONS BETWEEN THE HEALTH PROMOTING BEHAVIORS OF LOW INCOME PARENTS/CAREGIVERS AND THOSE OF THEIR CHRONICALLY ILL ADOLESCENTS

By

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The purpose of this study was to empirically examine whether primary parents’/caregivers’ engagement in specific health-promoting behaviors that help constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) will influence engagement in these health promoting behaviors and a health promoting lifestyle among their chronically ill adolescents.

This study used the concept of modeling as described by Social Learning Theory (Bandura, 1986) as a framework for examining parental influences of engagement in both a health-promoting lifestyle (HPL) and individual health-promoting behaviors among chronically ill, low-income Black and non-Hispanic White adolescents (N=79). The individual health promoting behaviors investigated are exercising consistently, eating a healthy diet, and health responsibility behaviors.

Results from a Pearson Correlation indicated that the participating adolescents’ levels of engagement in the investigated specific health promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) were indeed associated with their primary parents’/caregivers’ engagement in these specific health promoting behaviors.
Additionally, multiple regression analyses revealed that primary parents’/caregivers’ levels of engagement in consistent exercise and display of health responsibility behaviors were significant influences of one or more their adolescents’ level(s) of engagement in the investigated specific health-promoting behaviors. Finally, a multiple regression analysis revealed that primary parents’/caregivers’ level of display of health responsibility behaviors was the only significant influence of their adolescents’ level of engagement in a health promoting lifestyle.

Findings from this study suggest that the concept of modeling as described in social learning theory should be used to inform future research that aims to (a) better understand engagement in health promoting behaviors among low-income racially/ethnically diverse adolescents with a chronic illness, and (b) guide the development of culturally sensitive family-based interventions to increase levels of engagement in the investigated specific health-promoting behaviors among such adolescents.
CHAPTER 1
INTRODUCTION

Prevalence of Adolescent Chronic Illness

Chronic Illnesses in the United States has reached epidemic proportions, with the number of chronically ill adolescents and adults increasing dramatically during the past four decades (Centers for Disease Control [CDC], 2008; United States Department of Health and Human Services [USDHHS], 2001). A chronic illness is defined as any condition (e.g., diabetes, cancer, cardiovascular disease, asthma, and obesity) caused by a lack of engagement in the specific behaviors that constitute a health promoting lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors- i.e., reading nutrition labels) and that interferes in the daily life of an adolescent for longer than three months in a year (Perrin & Gerrity, 1984; Pless & Pinkerton, 1975). According to the National Health and Nutrition Examination Survey [NHANES III], an estimated 4.7 million children and adolescents (6 to 17 years old) in the United States are chronically ill (Institute of Health [IOH], 2004; Koplan, Liverman, & Vivica, 2005; Troiano & Flegal, 1998).

Although overall rates of chronic health conditions among children are alarmingly high, they are higher still in ethnic minority and low-income communities in the United States [U. S.]. Furthermore, although health problems has increased among all adolescents regardless of age, sex, and race, it disproportionately affects certain minority youth populations. Flegal et al. (2005) found that Black adolescents and Hispanic adolescents ages 12-19 are twice as likely to be chronically ill than non-Hispanic White adolescents (CDC, 2004; Gordon-Larsen, Adair, & Popkin, 2003; Strauss & Pollack, 2001). Importantly, data has shown health problems during adolescence to be a key predictor of co-morbid illnesses in adulthood (Deckelbaum & Williams, 2001; USDHHS, 2007).
The epidemic of increased incidence of adolescent chronic health problems subsequent health consequences has gained national attention. The U.S. report, Healthy People 2010, identified decreasing the rates of chronic illnesses among adolescents as a national health care priority. This report called for the development of effective interventions for reducing body weight and caloric intake, increasing activity, and improving health responsibility behaviors (which emphasizes being informed about and doing the necessary work e.g., reading nutrition labels when shopping) among all adolescents, especially low-income minorities (USDHHS, 2000).

**Need for Health Promotion**

According to the U.S. Interagency Committee on Nutritional Monitoring (1989), harmful lifestyle behaviors associated with many chronic diseases are likely to have their origins between the ages of 12-17. It was further reported that people who engage in health promoting behaviors (such as reducing fat and caloric intake, increasing physical activities, and displaying health responsibility behaviors) decrease their risk for chronic diseases; these people can expect to live healthier and longer lives (CDC, 2006; Institute of Medicine [IOM], 2004).

It is especially important for low-income minority adolescents who suffer from one or more chronic illnesses to engage in the specific health promoting behaviors that constitute a health promoting lifestyle, as failure to do so can intensify their health problems and possibly result in life-threatening consequences (Suris, Michaud, & Viner, 2004). Clearly, there is an urgent need for research that has implications for fostering health promoting behaviors and ultimately a health promoting lifestyle among adolescents, particularly those who are ethnic/racial minorities, are members of low-income families, and/or are living with one or more chronic illnesses.
Investigated Health Promoting Behaviors that Constitute a Health Promoting Lifestyle

Researchers have defined health promoting lifestyle as engagement in self-initiated behaviors that contribute to the maintenance of or enhance an individual’s wellness and fulfillment (Walker, Sechrist, & Pender, 1987). These behaviors that comprise a health promoting lifestyle include exercising consistently, eating a healthy diet, and a display of health responsibility behaviors (Walker et al., 1987).

Exercising Consistently

A review of the health promotion literature shows that a failure to exercise consistently has been linked to co-morbid diseases among chronically ill adolescents (Gittelsohn, & Kumar, 2007). Furthermore, authors have reported that engagement in the health promoting behavior of exercising consistently has a beneficial effect on a variety of chronic illnesses including obesity and cardiovascular disease among adolescents (Lee et. al, 2007). The implication of such research findings is that among racial/ethnic minorities and families of low socioeconomic status, leading a healthy lifestyle and engaging in specific health promoting behaviors that comprise this lifestyle may help to decrease the chronic illnesses that disproportionately impact the health and health-related quality of life of these individuals/groups.

Promoting a healthy lifestyle and specific health promoting behaviors among low-income minority adolescents with at least one chronic illness and their parents/caregivers may be particularly indicated. The American Academy of Pediatrics [AAP] (2006) reported that 26% of all children and adolescents in the United States engage in a sedentary lifestyle, spending more than four hours a day watching television. Specifically, in a report released by the Kaiser Foundation (2004), chronically ill low-income Black and Hispanic children and adolescents aged 8-18 spend significantly more time watching television and playing video games than their White counterparts. Several research studies reported a positive association between the times
spent viewing television and increased failure of engagement in a health promoting lifestyle chronically ill among adolescents (Lowry et al., 2002; Sherwood et al., 2004). Sedentary activities, specifically television viewing, have replaced time chronically ill adolescents spend engaging in the specific health promoting behavior of consistent exercise.

**Eating a Healthy Diet**

Eating a healthy diet is essential for good health, normal growth, and development of children and adolescents (USDA, 2005). A healthy diet includes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products. It also consists of lean meats, poultry, fish, and nuts as well as low saturated fats. However, adherence to a healthy diet is low among the majority of the U.S. adolescent population (USDHHS, 2000). According to the United States Department of Agriculture [USDA], approximately 68% to 75% of U.S. adolescents exceed the current dietary recommendations for intake of total or saturated fats primarily from grain mixtures (pizza & pasta) and sugary beverages. Additionally, while adolescents of all ethnicities eat more fat and sodium rich foods than fruits, vegetables, and whole grains (Simons-Morton, Baranowski, Parcel, O’Hare, & Matteson, 2002), low income chronically ill Black and Hispanic adolescents eat significantly more pork, lunch meat, high fat foods, and fewer vegetables than their White counterparts (CDC, 2005, Frank et al., 2004; Hedley et. al, 2004). Such socioeconomic and race/ethnicity related eating pattern differences put minority youth at risk for increased chronic health problems.

Co-morbid health problems such as cardiovascular disease, Type 2 diabetes, and hypertension are rapidly increasing among minority adolescents in low-income families (USDHHS, 2004). The implication of such realities is that among chronically ill low-income minority adolescents, engaging in a health promoting lifestyle and in the specific behaviors that
comprise this lifestyle may help to decrease the health disparities in the U.S. that negatively impact the health and health-related quality of life of these individuals.

**Health Responsibility Behaviors**

Adolescence marks the beginning of many behaviors, attitudes, and habits that contribute to the increased risk of declining health among adolescents. A growing body of literature indicates that chronically ill adolescents are as likely, or more likely, to engage in risky behaviors than their healthy peers (Suris & Parera, 2005). For example, some adolescents experiment with alcohol and drugs, engage in unprotected sexual encounters, smoke, engage in a sedentary lifestyle (i.e., do not participate in moderate or vigorous physical activity at recommended levels), and engage in poor dietary practices (Garn, 1979; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002). Such behaviors evidence a lack of health responsibility and thus are inconsistent with a health promoting lifestyle. Adolescents who are failing to engage in a health promoting lifestyle by having a limited display of health responsibility behaviors tend to weigh more and have higher blood pressure, both of which can lead to (a) a deterioration in their chronic health condition and (b) an increased risk of premature mortality (Lifshay et al., 2003).

According to a report released by the Institute of Medicine (2004), improving the overall health of low-income chronically ill minority adolescents must be the focus of national efforts to reduce both the health (physical and psychological) and economic costs of adolescent health problems. Specifically, there is a need for studies that emphasize the promotion of healthy lifestyles by increasing engagement in health responsibility behaviors among adolescents in order to reduce their risk for cardiovascular related illnesses and associated health problems (AHRQ, 2008; IOM, 2004; USDHHS, 2000).
Consequences of Not Engaging in a Health Promoting Lifestyle

Failure to engage in the specific behaviors that constitute a health promoting lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) among low income chronically ill minority adolescents is increasingly being recognized as a global epidemic (Tremblay & Willms, 2000; World Health Organization, 2002). This failure to engage in a health promoting lifestyle among chronically ill adolescents represents a serious public health concern given its associated physical, psychological, and economic consequences to society (Dietz, 1998; Janssen et al., 2005).

Physical Health Consequences

Health consequences associated with failure to engage in health promoting behaviors are similar among children, adolescents, and the adult population. Chronically ill adolescents who do not engage in health promoting behaviors are at risk for serious co-morbid health problems that once occurred almost exclusively among adults such as: (a) cardiovascular diseases such as high blood pressure, (b) obesity, (c) high cholesterol, and (d) Type 2 diabetes (CDC, 2007). These health problems, can lead to serious adult medical conditions like heart disease, heart failure, and stroke (IOM, 2004). Absence of physical activity, combined with poor eating habits, and a limited display of health responsibility behaviors among chronically ill low-income minority adolescents contributes to more than 50,000 preventable deaths a year in the U.S. (CDC, 2006). Poor behavioral choices have been cited as the source of approximately one-half of all premature deaths in the U.S. (CDC, 2006; McGinnis, 1993; USDHHS, 2000).

Psychological Consequences

Consequences of adolescents’ failure to engage in a health promoting lifestyle are not limited to physical ailments; many of these consequences are psychological in nature. Studies have shown that children express negative attitudes toward their chronically ill peers as early as
kindergarten (Moran, 1999, Shuman & La Greca, 1999). Further, it was reported that there is a clear association between chronic illnesses and low self-esteem, especially among adolescents (Miauton, Narring, & Michaud, 2003; Reilly et al., 2003.). Adolescents who engage in a health compromising lifestyle have reportedly experienced less psychosocial well-being and lower self-esteem than peers who engage in a health promoting lifestyle (Mellin, Neumark-Sztainer, Story, Ireland, & Resnick, 2002; Miauton, Narring, & Michaud, 2003).

In a study cited by the CDC (Stunkard et al., 1986), failure to engage in a health promoting lifestyle was linked to behavioral and learning problems, social discrimination, and a negative self-image during adolescence that often persists into adulthood (Mellbin & Vuille, 1989). Further, it was reported that chronically ill adolescents experience lowered self-esteem, increased levels of sadness, loneliness and nervousness, and have an increased likelihood to engage in high-risk behaviors such as smoking and drinking alcohol (CDC, 2000; Eberstadt, 2003; Strauss, 2000). While this engagement in high-risk behaviors (i.e., smoking or drinking) can be harmful to any adolescent, those adolescents with one or more chronic illness increase their chances for more serious health consequences when they engage in those same high-risk behaviors (Suris, Michaud, & Viner, 2004).

**Economic Consequences**

As the prevalence of health compromising behaviors have increased in the U. S., so have related health care costs. Failure to engage in a health promoting lifestyle and the occurrence of chronic illnesses (e.g., obesity, diabetes, cardiovascular disease) that is often associated with this failure both often lead to health problems and have a significant economic impact on the U.S. health care system (USDHHS, 2001). Although the majority of these health care costs are generated by adults, there has been a dramatic increase in health care costs due to health problems among adolescents. Increased physician visits, medications, and hospital stays, as well
as restricted activity and premature death among chronically ill adolescents have all accounted for the medical expenditures attributable to health compromising behaviors. These expenses have been estimated at $70 billion and approximately half of these costs associated with chronically ill low-income minority adolescents were paid by Medicaid (Finkelstein, Fiebelkorn, and Wang, 2003; USDHHS, 2001; Wang & Dietz, 2002).

**Parent/Caregiver Modeling a Health Promoting Lifestyle**

Family provides the adolescent’s major social learning environment. Parents/caregivers serve both as a source of authority and a role model for their chronically ill adolescents (Golan, Weizman, & Fainaru, 1998; Golan, 2006). Indeed, parents/caregivers have a major influence on their adolescents’ health promoting behaviors (Krasnegor, Grave, & Kretchmer, 1988). For example, they influence their adolescents’ development of health responsibility behaviors by modeling eating behaviors, encouraging and providing healthy food preferences, promoting reading of food labels, and engaging in consistent exercise.

Healthy People 2010 (USDHHS, 2000) reports failure to engage in a health promoting lifestyle is a major contributor to preventable causes of death. Adopting a healthy lifestyle by improving dietary habits, increasing physical activity and increasing health responsibility behaviors have been identified as modifiable variables that influence the health status of all adolescents, especially ones who suffer from one or more chronic illness (AAP, 2003; Barlow & Dietz, 1998; Hayman et al., 2004). Several theories and models have been developed to attempt to explain levels of engagement in a health promoting lifestyle among adolescents including: (a) the Health Belief Model, (b) the Theory of Reasoned Action, and (c) the Social Learning Theory (Montgomery, 2002).

The Health Belief Model and the Theory of Reasoned Action were developed as a means to explain and predict preventive health behavior. The Health Belief Model postulates that
engagement in a health promoting lifestyle is influenced by a chronically ill adolescents’
perception of a threat posed by a co-morbid health condition and the value associated with health
promoting behaviors aimed at reducing the threat (Ajzen & Fishbein, 1980). According to the
Theory of Reasoned Action, chronically ill adolescents’ engagement in health promoting
behaviors is based on their attitude toward engaging in a health promoting lifestyle and their
perception of social pressures from significant others to engage or not to engage in health
promoting behaviors (Ajzen and Fishbein, 1980; Chehab, Pfeffer, Vargas, Chen, & Irigoyen,
2007).

Although the Health Belief Model and the Theory of Reasoned Action have been utilized
in previous research to examine the predictors of engagement in health promoting behaviors
among adolescents they have been criticized. Both the Health Belief Model and the Theory of
Reasoned Action have been found to be inadequate in their ability to generalize across
racial/ethnic, socio-economic, and cultural lines because of their limitations in addressing
parent/caregiver influences of poor health and family environmental barriers to the adoption of
health promoting behaviors among chronically ill minority adolescents (Elder et al, 1998; Ogden,
2003). Given the criticism of the Health Belief Model and the Theory of Reasoned Action,
engagement in health promoting behaviors among chronically ill low-income adolescents may be
better understood by utilizing a theory that recognizes the effects of parent/caregiver
determinants.

It is important when investigating the health behaviors of chronically ill low-income
minority adolescents that it be guided by theoretical perspectives that consider the adolescents’
social context. Families have been identified as ideal environments for the promotion of a
healthy lifestyle by the engagement in health promoting behaviors. The Social Learning Theory
(SLT) (Bandura, 1977) has been used extensively to understand health behaviors in adolescents and their families. SLT focuses on the learning that occurs within a social context (i.e., parents/caregivers). According to SLT, modeling influences learning primarily through its informative functions. Observers retain a symbolic representation of the modeled behavior, which then serves as a blueprint for the behavior. Individuals learn through observing others' behavior. If individuals observe positive, desired outcomes in the observed behavior, they are more likely to model, imitate, and adopt the behavior themselves (Bandura 1977; Bandura 1986).

Research has shown that SLT can be successfully used to implement interventions that targeted adolescents. For example, it has been shown that such interventions have enabled adolescents to minimize their health compromising behaviors and convert them into the modeled health promoting behaviors (Budd & Volpe, 2006).

Although there are many personal factors that influence behavior, Bandura (1986 & 1997) identified modeling as the most salient when altering the health promoting behaviors of adolescents. Despite these aforementioned facts, few studies have attempted to determine parent/caregiver influence on the levels of engagement in specific health promoting behaviors or levels of engagement in a health promoting lifestyle among chronically ill low income minority adolescents. Yet, knowledge of these influences will enable the development of interventions to increase health promoting behaviors during adolescence, behaviors that may delay or prevent the major causes of premature disease and mortality (e.g., diabetes, cardiovascular disease, cancer) in adulthood (Jessor, Turbin, & Costa, 1998). Such knowledge in relation to minority adolescents and associated interventions has the potential of helping to reduce the health disparities that plague the U.S.
Purpose of the Present Study

The purpose of this study was to empirically examine whether parent/caregivers’ engagement in specific health-promoting behaviors that help constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) and engagement in a health promoting lifestyle will influence these health promoting behaviors and health promoting lifestyle among their adolescents.

Hypotheses

The specific hypotheses for this study are as follows:

Hypothesis (1): Levels of primary parents’/caregivers’ engagement in specific health-promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle will have significant positive associations with the levels of their adolescents’ engagement in these specific health promoting behaviors.

Hypothesis (2): Levels of primary parents’/caregivers’ engagement in a health promoting lifestyle will influence their adolescents’ engagement in the specific health-promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle.

Hypothesis (3): Levels of primary parents’/caregivers’ engagement in a health-promoting lifestyle will influence their adolescents’ engagement in a health promoting lifestyle.
CHAPTER 2
REVIEW OF THE LITERATURE

This literature review is organized into four sections. In the first section, literature regarding prevalence of adolescent chronic illness is discussed. The second section provides health promotion literature addressing the health promoting behaviors that constitute a health promoting lifestyle. Next, a review of the literature that addresses the consequences (physical, psychological, and economic) of failure to engage in a health promoting lifestyle is presented. Finally, research findings regarding parent/caregiver influences of adolescent engagement the health promoting behaviors that constitute a health promoting lifestyle is discussed.

Prevalence of Adolescent Chronic Illness

The Surgeon General’s Call to Action reported that the health consequences (e.g., obesity, cardiovascular disease, and Type 2 diabetes) of failure to engage in a health promoting lifestyle among chronically ill adolescents in the United States has reached epidemic proportions (Centers for Disease Control [CDC], 2008; U.S. Department of Health and Human Services [USDHHS], 2001). A chronic illness is defined as any condition (e.g., diabetes, cancer, cardiovascular disease, asthma, and adolescent obesity) caused by a lack of engagement in the specific behaviors that constitute a health promoting lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) and that interferes in the daily life of an adolescent for longer than three months in a year (Perrin & Gerrity, 1984; Pless & Pinkerton, 1975). According to the National Health and Nutrition Examination Survey (NHANES) data, the prevalence of chronic illnesses caused by not engaging in the specific health promoting behaviors that constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) has doubled for children and has tripled for adolescents between 1999 and 2000 (Ogden, Flegal, Carroll, & Johnson, 2002). Obesity, cardiovascular
disease, and Type 2 diabetes affects an estimated 15% of all adolescents (aged 12-19), making them the most prevalent preventable chronic illnesses in the United States (Centers for Disease Control [CDC], 2004; National Center for Health Statistics [NCHS] 2002).

**Prevalence of Adolescent Chronic Illness among Low Income Minority Adolescents**

Chronic health problems among adolescents who fail to engage in the specific health promoting behaviors that constitute a healthy lifestyle exist in many segments of the population and are particularly common among low-income minority groups (USDHHS, 2001). In the past thirty years, the percentage of adolescents with chronic health conditions including obesity, cardiovascular disease, and Type 2 diabetes has more than tripled (NCHS, 2002). This increase is seen in both sexes and in children of all ages, with low-income Black children and adolescents and Hispanic children and adolescents disproportionately affected (Dietz, 2004). In both racial/ethnic groups, prevalence of chronic health problems increased by more than 10% between 1988 to 1994 and 1999 to 2000, compared with an increase of less than 5% in White children (Odgen et al., 2002).

According to the National Longitudinal Survey of Youth (NLSY), the rate of chronic health problems among Blacks and Hispanics has increased 47% to 73%. This increase in chronic health conditions among Blacks and Hispanics was reported to be faster among these two ethnic groups than among the White population (Strauss, 2002). The prevalence of poor health among adolescents due to limited engagement in the specific health promoting behaviors of exercising consistently, eating a healthy diet and, a display of health responsibility behaviors are highest among Black females, followed by Hispanics of both sexes and White males (Gordon-Larsen, Adair, and Popkin 2003). Specifically among adolescent males, Blacks are 1.13 times more likely and Hispanics are 1.73 times more likely to be suffering from health problems due to a failure to engage in a health promoting lifestyle as compared to their White counterparts.
Among female adolescents, Blacks are 1.46 times more likely and Hispanics are 1.56 times more likely to be afflicted with health problems due to a lack of engagement in a healthy lifestyle as compared to their White counterparts (Ogden et al., 2006). Researchers from a program entitled Child and Adolescent Trial for Cardiovascular Health (CATCH) reported that being a low income Black adolescent was a strong predictor of having chronic health problems due to a failure to engage in a health promoting lifestyle by age 11 (Crawford, Story, Wang, Ritchie, & Sabry, 2001).

**Need for Health Promotion**

It is especially important for low-income minority adolescents who are diagnosed with one or more chronic illnesses to engage in a health promoting lifestyle. It has been shown that not engaging in the specific behaviors that constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) can exacerbate a current chronic illness and have possible fatal consequences (JAMA, 2003; Gortmaker, Walker, Weitzman, & Sobol, 1990; Suris, Michaud, & Viner, 2004). Clearly, there is an urgent need for research that has implications for fostering health promoting behaviors and a health promoting lifestyle among adolescents, particularly those who are ethnic/racial minorities, are members of low-income families, and/or are living with one or more chronic illnesses.

**Investigated Health Promoting Behaviors that Constitute a Health Promoting Lifestyle**

Researchers have defined health promoting lifestyle as a pattern of self-initiated behaviors that contribute to the maintenance of or enhance an individual’s wellness and fulfillment (Walker, Sechrist, & Pender, 1987). These health promoting behaviors that comprise a health-promoting lifestyle include exercising consistently, eating a healthy diet, and a display of health responsibility behaviors (Walker, et al., 1987).
**Exercising Consistently**

According to a report released by the CDC (2003) engagement in exercising consistently among chronically ill adolescents will not only help to prevent additional health problems, it will also help to promote health maintenance. This CDC report (2003) indicated that exercising consistently among chronically ill adolescents helps control weight, build lean muscle, and reduce fat build-up. Exercising also (a) helps to maintain healthy bones, muscles, and joints, (b) helps to reduce blood pressure in adolescents with hypertension, and reduces feelings of depression (CDC, 2003). However, although many chronically ill adolescents know that engaging in health promoting behaviors such as exercising consistently aids in overall health management, many still do not engage in these behaviors (Croll, Neumark-Sztainer, & Story, 2001; Sallis et al., 2000).

Exercising consistently is a component of energy expenditure that may be a strong predictor of poor health among adolescents (IOM, 2005). Unfortunately, there has also been a recent change in the types and amounts of activities adolescents are engaged in. Adolescents are spending more time on health risk activities including sedentary activities, such as watching television, and less time engaged in health promoting activities including physical activities, such as walking, running, or exercising. Research suggests that the average adolescent spends between 3-4 hours/day watching television (Mokdad et al., 2000; Tucker & Friedman, 1989) and only 8-10 minutes/day engaged in consistent exercise (Janz et al., 1992).

Chronically ill low-income minority adolescents are more likely to be sedentary than their White counterparts (Taylor, Baranowski, & Young, 1998). For example, one study reported a higher percentage of chronically ill low income Black and Hispanic youth than chronically ill low income non-Hispanic White children watched four or more hours of television per day (Anderson, Crespo & Bartless, 1998). According to a report released by Nielsen Media Research
(2000), Black households watch more television than typical White households and are more likely to view an increased number of advertisements for fast-food restaurants and unhealthy foods (i.e., sweets and soda) (Tirodkar & Jain, 2003).

Lastly, a study conducted on high school students found that 14% of students watched at least five hours of television per day (Lowry, Wechsler, Galuska, Fulton, & Kann, 2002). The authors of this study reported that 52% of Hispanic high school students admitted watching more than two hours of television a day. This high rate of television viewing can be understood since children are exposed to television as early as their first year and have seen an estimated 360,000 commercials before graduating from high school (Certain & Kann, 2002). Researchers have found that television viewing promotes the consumption of food, while watching and exposes adolescents to unhealthy food ads and messages (Dietz & Gortmaker, 1985; Schmitz et al., 2002).

**Parent/Caregiver Influence on Exercising Consistently**

Sallis et al. (2000) reported finding that parental support and engagement in exercising consistently was frequently and positively correlated with their chronically ill adolescents’ engagement in physical activities. The authors reported many ways in which parents/caregivers can help to increase their chronically ill adolescents’ level of engagement in health promoting behaviors. One of these ways is by encouraging and accompanying their chronically ill adolescent in a range of physical activities (i.e., walking or taking stairs instead of an elevator) that may promote a healthy lifestyle (IOM, 2004).

**Eating a Healthy Diet**

A failure to engage in the health promoting behavior of eating a healthy diet is one of the major causes of co-morbidity of chronic illnesses including diabetes, cardiovascular disease, and obesity among adolescents. A growing body of evidence has demonstrated that following a
healthy diet that complies with United States Department of Agriculture’s [USDA] Dietary Guidelines may reduce the risk of chronic illnesses (CDC, 2004; USDA, 2005); unfortunately, many chronically ill adolescents still do not engage in this specific health promoting behavior.

Research has also shown differences in level of engagement in a healthy diet among racial/ethnic groups. For example, chronically ill low-income Black and Hispanic adolescents consume more daily fast food and eat larger portion sizes of high-calorie nutrient-poor foods than their White counterparts (Bowman, Gortmaker, Ebbeling, Pereira & Ludwig, 2004; Hill and Peters 1998).

**Parent/Caregiver Influence on Eating a Healthy Diet**

Parents play an important role in the growth, development, and socialization of children (Darling and Steinberg 1993). Parents can influence their children through the use of modeling and creating a home environment that endorses health promoting behaviors. Parents who consume fruits and vegetables, for example, have adolescents who do the same. Similarly, parents who display their mastery of portion control can positively influence their children to engage in portion control (Cullen et al., 2001; Nicklas et al., 2001; Fisher et al., 2002).

The family is a major influence on a chronically ill adolescents' eating behavior. A growing body of research suggests the importance of parent caregiver behavior on food choices of their chronically ill adolescent (Story, Neumark-Sztainer & French, 2002; Birch & Davison, 2001). Although adolescents may consume fewer meals with their family than do young children, research suggests that adolescents still consume 65% of their total energy intakes at home (Guthrie, Lin & Frazao, 2002). Parent/caregiver modeled behavior regarding food conveys their attitudes, preferences, and values around eating behaviors and food preferences (Booth, Sallis, Ritenbaugh, Hill, Birch, et. al 2001; Nicklas, Baranowski, Baranowski, Cullen, Rittenberg et al, 2001). According to research presented by Birch & Davison (2001) low income
parents/caregivers mediate their chronically ill adolescents' healthy eating behaviors by being the provider of food and modeling healthy attitudes, preferences, and values that affect their chronically ill adolescents’ lifetime eating habits.

Despite the importance of healthy eating during adolescence, studies have consistently shown that adolescents as a group have poor eating habits and that these habits do not meet current dietary recommendations (Munoz, Krebs-Smith, Ballard-Barbash, & Cleveland, 1997; Morton & Guthrie, 1998; Story, Neumark-Sztainer, 2002). Nutrition-related concerns include unhealthy dieting, high intake of fast foods and other foods high in fat, low intake of fruits, vegetables, fiber, and dairy foods, and erratic eating behaviors, such as skipping meals (Morton & Guthrie 1998; Munoz, Krebs-Smith, Ballard-Barbash, & Cleveland, 1997; Neumark-Sztainer, Story, Resnick, Blum 1998). Recent national data show that only 1% of adolescent males and females meet national recommendations for all the Food Guide Pyramid groups, and 18% of girls and 7% of the boys did not meet any of the recommendations (Story, Neumark-Sztainer & French, 2002).

Adolescence offers a unique opportunity to positively influence the adoption of healthy eating that could be sustained throughout life. Specific health promoting behaviors acquired during this period are likely to influence long-term health behaviors engagement for healthier lifestyle (Croll, Neumark-Sztainer, & Story, 2001; Gittelsohn, & Kumar, 2007; IOM, 2005).

Health Responsibility

Adolescence marks the beginning of many attitudes and habits that contribute to the decline of their health. A failure to engage in health responsibility behaviors among chronically ill adolescents (as evidenced by experimentation with alcohol and drugs, unprotected sexual encounters, smoking, a sedentary lifestyle, and poor dietary practices) increases the potential for additional health problems (Garn, 1979; Lowry, Wechsler, Galuska, Fulton, & Kann, 2002).
In contrast, adolescence is also a critical time for the development of health responsibility behaviors related to a healthy lifestyle. As demonstrated in a study by Kelder, Perry, Klepp, & Lytle (1994), health responsibility behaviors (e.g., eating a balanced diet, reading food labels, limiting sweets and sodas, exercising, preparing healthy meals) learned during adolescence are carried over into adulthood.

Health promotion literature reveal that a limited display of engagement in health responsibility behaviors among chronically ill adolescents have been linked to the development co-morbid conditions including the following: coronary heart disease, cancer, diabetes, hypertension, and obesity (Gittelsohn, & Kumar, 2007; Lee, 2007). On the other hand, it has been reported that engagement in the specific health promoting behavior of health responsibility has been associated with increased psychological and mental well-being, reduced cardiovascular risk, and proper weight maintenance (CDC, 2003; Gordon-Larsen, et al., 2002; IOM, 2005; Lee, 2007). According to Gordon-Larsen, et al. (2005), the implication of such research findings is that among low-income chronically ill adolescents, leading a healthy lifestyle and displaying health responsibility behaviors may help to decrease the health disparities in the U. S. that negatively impacts the health and health-related quality of life of these individuals.

Parent/Caregiver Influence on Health Responsibility

Family members provide adolescents’ major social learning environment. The family environment can be supportive of healthy behaviors or provide unhealthy opportunities that increase the risk for a variety of adverse health conditions and consequences. Parents/caregivers have a significant influence on their chronically ill adolescent as her or his first model of health responsibility behaviors. Parents who overeat, have sedentary lifestyles, do not read food labels, eat excessively fast, or ignore their internal satiety clues provide a poor example for their family (Golan & Weizman, 2001). When parents adopt a healthier lifestyle, in addition to positively
affecting their lives, this lifestyle may help the level of engagement in health promoting behaviors in their chronically ill adolescents.

Parents/caregivers can influence their chronically ill adolescents’ attitudes and behaviors that contribute to a healthy lifestyle by modeling health responsibility behaviors such as encouraging and providing healthy food preferences, promoting reading food labels, and engaging in consistent exercise (Birch & Fisher, 1998). Imitation is a vital aspect of learning, and the process of adopting a healthier lifestyle can be enhanced by the presence of proper social models (Golan & Weizman, 2001).

**Consequences of Failure of Adolescents to Engage in a Health Promoting Lifestyle**

Adolescent failure to engage in a health promoting lifestyle has been associated with immediate and long-term physical and psychological health and future healthcare costs (USDHHS, 2001). Epidemiological studies have shown that health consequences due to behaviors during adolescence are correlated with chronic health problems (e.g., obesity, cancer, diabetes, hypertension, and cardiovascular disease) in adults (Hill & Trowbridge, 1998). Adolescents who fail to engage in the health promoting behaviors that constitute a healthy lifestyle currently pose a major public health threat in the United States.

**Physical Health Consequences**

Failure to engage in a health promoting lifestyle is associated with significant health problems and is an important early risk factor for both adolescent morbidity and early mortality. Many co-morbid health problems have been associated with this failure to engage in the specific health promoting behaviors that constitute a health promoting lifestyle, including obesity, diabetes, cardiovascular disease, hypertension, and cancer (Goodman & Whitaker, 2002). Between one-third and one-half of chronically ill adults first develop health problems due to a
lack of engagement in a health promoting lifestyle during childhood or adolescence (Price, 2002; Steinbeck, 2001).

Common physical co-morbid consequences associated with child and adolescent failure to engage in the specific health promoting behaviors that constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) include the following: cardiovascular risk factors, early maturation, sleep apnea, abnormal insulin and cholesterol concentrations, and orthopedic complications (Dietz, 1998). The rapid growth in the prevalence of chronically ill adolescents who do not engage in a healthy lifestyle has likely contributed to the high prevalence of co-morbid chronic health problems in this group. Support for this view are the findings that 60% of chronically-ill 5- to 10-year-old children already have one associated cardiovascular disease risk factor such as elevated blood pressure, and more than 20% of these children have two or more cardiovascular disease risk factors.

It is also noteworthy that the incidence of Type 2 diabetes, which until recently was thought to be an almost exclusively adult-onset disease, has dramatically increased among youth (Copeland, Becker, Gottschalk, & Hale, 2005; Dietz & Gortmaker, 2001). In fact, it has been reported that low income minority adolescents now account for as much as 50% of new cases of Type 2 diabetes (Fagot-Campagna et al., 2000; Gittelsohn & Kumar, 2007).

Psychological Consequences

In addition to the physical risk factors for chronic illness, the consequences of a failure to engage in a health promoting lifestyle also is associated with psychological morbidities including depression, difficulty with peer relationships, poor self-esteem, and social isolation (Ebbeling, 2002; Katz et al., 2005). Adolescents with chronic illnesses have become the targets of teasing and bullying, negative stereotyping, and social marginalization (IOM, 2004). Thus, adolescents who are physically ill face an increased risk of social, emotional, and academic problems lasting
well into adulthood (IOM, 2004; Katz et al., 2005). Specifically, results from one study reported young men who were chronically ill as adolescents were found to be less likely to be married (Gortmaker et al., 1993). Further, it was reported that chronically ill adolescent females completed fewer years of education, experience higher poverty rates, and have decreased rates of marriage (Karger & Basel, 2001).

Adolescents who do not engage in a health promoting lifestyle are at risk for a number of psychosocial consequences which can begin early in life. Empirical research shows that many chronically ill adolescents are rejected by their peers and experience discrimination and rejections as adults (LeBow, 1984). Lastly, in a study by Crocker, Major, and Steele (1998) it was found that chronically-ill adolescents have a devalued personal identity. According to these authors, adolescents who were chronically-ill are aware of their peers’ negative views about their illness, which in turn, is personalized and results in lowered self-esteem.

**Economic Consequences**

The health care costs directly associated with a failure to engage in a health promoting lifestyle were estimated to be $70 billion in 1995; the direct costs associated with physical inactivity alone were estimated to be $24 billion, or 2.4% of U.S. health care expenditures (Colditz, 1999; Grundy, et al., 1999). Further, it was reported that medical costs associated with health problems due to a failure to engage in the specific health promoting behaviors that constitute a healthy lifestyle increased from $70 billion in 1995 to $78.5 billion in 1998 (Finkelstein, Fiebelkorn, & Wang, 2003). The U. S. is already affected by the costs associated with the increased prevalence of adolescents who fail to engage in a healthy lifestyle. For example, from 1997 through 1999, hospital costs for adolescents with chronic health problems averaged $127 million a year (CDC, 2003).
Failure to engage in a health promoting lifestyle among adolescents is of concern in part because when this failure begins at an early age, it increases the demand for costly health services over their lifespan. A decrease in health promoting behaviors has increased the need and subsequent cost of treatment for and risk of early disability and death from heart disease, kidney disease and, diabetes among chronically ill low income adolescents (Young-Hyman et al., 2001). The overall direct and indirect costs of childhood diabetes in 2002 were nearly $132 billion (CDC, 2003).

The increasing prevalence of health problems in children and adolescents due to failure to engage in a healthy lifestyle may also lead to increased hospital stays (CDC 2003; Wang et.al, 2002). The majority of these health care costs are generated mainly by low-income minority adults with chronic illnesses. However, there has been a dramatic increase in health problems among chronically ill low-income minority adolescents. Approximately half of these costs were for low-income and minority adolescents and their families. These cost were paid for by Medicaid to cover medications and hospital stays (Finkelstein, Fiebelkorn, and Wang, 2003; USDHHS, 2001; Wang & Dietz, 2002).

**Parent/Caregiver Modeling a Health Promoting Lifestyle**

Parenting strategies aimed at preventing adolescent health problems should include encouraging the engagement of health promoting behaviors that are consistent with a health-promoting lifestyle. These behaviors include exercising consistently, eating a healthy diet, and health responsibility behaviors (Walker, et al., 1987; Ebbeling et al. 2002; International Association for the Study of Obesity, 2004; James & Gill, 2004; Muller et al. 2004). Most preventative strategies that examine the level of engagement in health promoting behaviors among low-income chronically ill adolescents’ and their parents/caregivers are theory driven (St. Jeor, Perumean-Chaney, Sigman-Grant, Williams, & Foreyt, 2002). Several theories
and models have been developed to attempt to explain levels of engagement in a health promoting lifestyle among adolescents including: (a) the Health Belief Model, (b) the Theory of Reasoned Action, and (c) the Social Learning Theory (Montgomery, 2002).

The Health Belief Model and the Theory of Reasoned Action were developed as a means to explain and predict preventive health behavior. The Health Belief Model posits the likelihood that a chronically ill adolescent will engage in health promoting behaviors to prevent co-morbid illnesses depends on the adolescents’ perception that: (a) they are vulnerable to worsened conditions, (b) engaging in health promoting behaviors effectively prevents co-morbid conditions, and (d) the benefits of reducing the threat of co-morbid conditions exceed the costs of engaging in health promoting behaviors (Chehab, Pfeffer, Vargas, Chen, & Irigoyen, 2007). According to the Theory of Reasoned Action, adolescents intend to behave in ways that allow them to obtain favorable outcomes and meet the expectations of others (Ajzen & Fishbein, 1980). Specifically, the Theory of Reasoned Action posits that engagement in a health promoting lifestyle among chronically ill adolescents increases after they: (a) have developed an intention (i.e., the subjective probability of performing a behavior), which requires adopting a positive attitude toward the behavior, (b) accept engagement in health promoting behaviors as a norm, and (c) believe they have the ability to engage in health promoting behaviors (Ajzen & Fishbein, 1980).

Although the Health Belief Model and the Theory of Reasoned Action have been utilized in previous research to examine the predictors of engagement in health promoting behaviors among adolescents they have been criticized. Both the Health Belief Model and the Theory of Reasoned Action have been found to be inadequate to be inadequate in their ability to generalize across racial/ethnic, socio-economic, and cultural lines because of their limitations in addressing
parent/caregiver influences of poor health and family environmental barriers to the adoption of health promoting behaviors among chronically ill minority adolescents (Elder et al, 1998; Ogden, 2003). Given the criticism of the Health Belief Model and the Theory of Reasoned Action, engagement in health promoting behaviors among chronically ill low-income adolescents may be better understood by utilizing a theory that recognizes the effects of parent/caregiver determinants.

Social Learning Theory (SLT) is a theoretical framework commonly used to explain how people learn behavior (IOM, 2005). According to Bandura (1977) people learn through observing others' behavior. If people observe positive, desired outcomes from observed behavior, they are more likely to model, imitate, and adopt the behavior themselves (Bandura, 1977; Bandura, 1986; Glanz & Rimer, 1997). The concept of modeling, as described by SLT, is particularly applicable to this study. Specifically, if adolescents observe that their parents/caregivers have more energy, look and feel better from making health responsibility choices, exercising, and eating healthy, they see a positive consequence of this behavior and thus are more likely to engage in these behaviors. According to SLT (Bandura, 1977), imitation is an essential aspect of learning and the process of adopting a new behavior (e.g., engaging in specific health promoting behaviors) can be enhanced by the presence of proper social models (i.e., parents/caregivers).

The concept of modeling as described by the SLT has been widely used to examine parent/caregiver influence on the level of engagement in specific health promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) among middle-income elementary school children from grades 3 to 5 (Corwin, Sargent, Rheaume, & Saunders, 1999; Cullen, Baranowski, & Olvera, 2000; Cullen et al., 2002; Kratt, Reynolds, &
Shewchuk, 2000; Neumark-Sztainer, Wall, Perry, & Story, 2003; Resnicow et al., 1997; Reynolds et al., 2000). More recently, studies have begun to use the concept of modeling to the study parent/caregiver influence on the level of engagement in specific health promoting behaviors among chronically ill minority adolescents (Granner et al., 2004; Lytle et al., 2003; Neumark-Sztainer et al., 2003; Reinaerts, Nootjer, Candel, Vries, 2007). Results of such studies have shown racial and economic differences in levels of engagement in specific health promoting behaviors. For example, Molaison et al. (2005) indicated from their study that low-income Black adolescents with at least one chronic illness were more likely to engage in specific health promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) if a parent/caregiver provided proof that engagement in these behaviors are related to improved health. The authors of this study also reported that levels of engagement in specific health promoting behaviors among these chronically ill adolescents are heavily influenced both positively and negatively by their parents' engagement in health promoting behaviors (Bandura, 1977; Molaison et al. (2005).
CHAPTER 3
METHODOLOGY

Participants

The participants in this study were recruited as part of a larger study created to test an intervention program designed to increase health promoting lifestyles/behaviors among adolescents who have chronic health problems, live in families with low incomes, and receive health care through Children’s Medical Services [CMS] in North Central, Florida. CMS is a state healthcare assistance program for any severely or chronically ill adolescent in Florida whose family meets low-income eligibility requirements and/or whose healthcare costs place a financial burden on the adolescent’s family.

A total of 145 eligible adolescents and their primary parents/caregivers agreed to participate in the present study. From those 145 adolescent/child-parent/caregiver pair participants, 94 pairs returned their assessments (65 % return rate) to the principal investigator. Of those who did not return their assessments, 10 indicated that they changed their mind about participating in this study and the remaining 41 either could not be contacted or did not return our follow-up telephone calls to solicit their study participation. It is not known whether those who participated in this study are a representative sample of all eligible CMS patients because the CMS data management system was not capable of identifying demographic distributions (e.g., ethnicity, race, gender) among their patient population.

Of those 94 adolescent/child-parent/caregiver pair participants who returned their Assessment Battery (AB), only 79 of these pairs totally and correctly completed the ABs and thus provided usable data for the present study. Therefore, the final participant sample for the present study consisted of this 79 adolescent/child-parent/caregiver pairs. Specifically, this sample consisted of 32 Black adolescents (23 females and 9 males) and their primary
parents/caregivers (32 females) and 47 White adolescents (27 females and 20 males) and their primary parents/caregivers (47 females). The adolescent participants ranged in age from 12 to 17 years old, with a mean age of 13.3 for the Black adolescents ($SD = 1.5$) and 13.8 for the White adolescents ($SD = 1.3$). The participating primary parents/caregivers, who were all female, ranged in age from 30 to 67 ($M=43$), and their median annual family income range was $10,000 to $20,000. Eighty-two percent of these primary parents/caregivers reported annual family incomes below $30,000, indicating that the research participants constituted a low-income skewed sample. Seventy percent of these primary parents/caregivers reported their highest level of education obtained as completion or less than completion of high school. The demographic characteristics of the participants in this study are presented in more detail in Table 3-1.

The criteria for inclusion in the larger study and thus in the present study were as follows: (a) is between the ages of 12 and 17 years old; (b) has attended CMS at least once in the year prior to the start of this research; (c) identifies as Black not of Hispanic origin or White not of Hispanic origin (d) has had a diagnosis of a chronic medical illness (e.g., asthma, diabetes, hypertension) for at least one year prior to the planned research, (e) self-reports as being able to communicate effectively verbally or in writing in her or his native language, and (f) gives written assent or consent to be a research participant. The criteria for exclusion from this study were as follows: (a) children younger than age 12 and adolescents older than age 18 or, (b) identifies her or his race/ethnicity as being other than Black or White.

**Overview of Measures**

Each participating adolescent and her/his primary parent/caregiver completed an AB that included a measure of health promoting lifestyles and behaviors and a demographic information form. Below is a brief description of the two measures that constitute each AB.
The Health Promoting Lifestyles Profile-II (HPLP-II; Walker, Sechrist, & Pender, 1987). The HPLP-II is a 52-item self-report inventory that measures the degree to which participants engage in a health-promoting lifestyle. The HPLP-II consists of six subscales that assess levels of the following specific aspects of a health promoting lifestyle (e.g., six health-promoting behaviors): (a) exercising consistently, (b) eating a healthy diet, (c) health responsibility behaviors, (d) engaging in stress management practices, (e) seeking to reach one’s fullest potential, and (f) the ability to form close interpersonal relationships. Only the first three subscales were used in the present study as they assess objective modifiable behaviors that have been identified as (a) potentially playing a substantial role in the development and management of chronic illnesses among low-income minority adolescents and b) modifiable under whatever conditions that exist in people’s lives.

HPLP-II items are rated on a 4-point Likert scale with polar responses labeled never and routinely. Higher scores on the HPLP are indicative of a more health promoting lifestyle. Sample items on the HPLP-II are as follows: “Do you exercise vigorously for 20 or more minutes at least 3 times a week?” (exercising consistently); “Do you eat 6-11 servings of bread, cereal, rice, and/or pasta each day?” (eating a healthy diet) and “Do you choose a diet low in fat, saturated fat, and cholesterol?” (health responsibility behavior). The reliability (Cronbach alpha) of the overall HPLP-II has been reported to be .79 (Walker et al., 1987). For adolescent participants in the present study, Cronbach’s alphas for the full HPLP-II scale and the three sub-scales used were .95 (full scale); .85 (exercising consistently); .80 (eating a healthy diet); and .86 (health responsibility behaviors). For the primary parent/caregiver participants, Cronbach’s alphas were .85 (full scale); .75 (exercising consistently); .73 (eating a healthy diet); and .70 (health responsibility behaviors).
Measures to Obtain Demographic Information

A Demographic Data Form (DDF). The DDF was constructed by the researchers to obtain demographic information on the participating primary parents/caregivers. Specifically, the following demographic information was obtained on the DDF completed by the participating primary parents/caregivers: ethnic/racial group, education, gender, age, and family income range.

An Adolescent Demographic Data Form (ADDF). The ADDF was constructed by the researchers to obtain information including the participant’s race/ethnicity, gender, age, and diagnosed chronic illness (or illnesses). Adolescent participants were asked to obtain any needed help in completing the ADDF (i.e., help from their primary parent(s)/caregiver(s)).

Procedure

Staff at a local north central Florida Children’s Medical Services (CMS) Program mailed research participation invitation materials to the parents/caregivers of 145 arbitrarily selected Black adolescent patients and non-Hispanic White adolescent patients (ages 12 – 17) in this program. These materials included a cover letter describing the study, an informed consent form, an assent form, a DDF, an ADDF, and a postage-paid, pre-addressed business reply envelope to return a signed informed consent form and assent form and completed DDF and ADDF to the researchers. The cover letter provided information on the following topics: (a) purpose of the study (to determine the factors that influence level of engagement in health promoting lifestyles and behaviors of adolescents), (b) participants’ responsibilities (approximately 2 hours of time to complete a set of questionnaires), (c) actions taken to ensure participants’ confidentiality (inclusion of the instruction on questionnaires completed by participants to not write their names on these questionnaires, and informing participants that their individual questionnaire responses would not be shared with their health care providers and staff nor with anyone else in the public), (d) questionnaire completion timeframe (3 weeks), and (e) participation compensation (a $20
All of the primary parents/caregivers and their adolescents who were mailed research participation invitation materials agreed to participate in this study, provided signed informed consent and assent forms verifying this agreement, and completed DDFs and ADDFs. Each of these primary parents/caregivers self-identified as the parent/caregiver of an adolescent who was participating in the earlier identified CMS Program. It is not known whether those who agreed to participate in this study are a representative sample of all eligible CMS patients. This information is not known because the participant data management system for this participating CMS was not capable of identifying demographic distributions (e.g., ethnic/racial group distribution, gender distribution, etc.) for the adolescents and parents/caregivers that it serves.

Each of the 145 primary parents/caregivers and their adolescents who returned signed informed consent and assent forms and a completed DDF and ADDF were mailed the Assessment Battery (AB) for this study and a postage-paid, return-addressed envelope for returning the completed AB to the researchers. Reminder telephone calls were made by trained undergraduate researchers to the participants who had not returned a completed AB by the end of the 3-week deadline for returning this document. To allow for completed ABs to be mailed following the reminder phone calls, the data collection period was extended two weeks beyond the original 3-week deadline for receiving completed ABs. At the end of this extended two-week data collection period, the researchers had received completed ABs from 94 of the 145 primary parents/caregivers and their adolescents who had been invited via letters to be research participants (65 % return rate). The entire duration of this study was four months.
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<tr>
<td>Parent education</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>middle school</td>
<td>5</td>
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<td>32</td>
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<tr>
<td>some college</td>
<td>35</td>
<td></td>
<td></td>
<td>44</td>
</tr>
<tr>
<td>college</td>
<td>14</td>
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<tr>
<td>Parent employment</td>
<td></td>
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<tr>
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<td></td>
<td>38</td>
</tr>
<tr>
<td>part time</td>
<td>15</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>does not work</td>
<td>34</td>
<td></td>
<td></td>
<td>43</td>
</tr>
</tbody>
</table>
CHAPTER 4
RESULTS

This section presents the results from the analyses to test each of the hypotheses that were set forth in this study. First, descriptive data for the major variables of this study are presented. Second, the results of the Pearson Correlation analysis to test hypothesis (1) are reported. Finally, the results of the multiple regressions to test hypotheses (2) and (3) are presented.

Descriptive Data for the Major Variables

The descriptive data for the major variables in the present study (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) are presented in Table 4-1.

Hypothesis 1

Hypothesis 1 states that levels of primary parents’/caregivers’ engagement in specific health-promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle will have significant positive associations with the levels of their adolescents’ engagement in these specific health promoting behaviors.

To test hypothesis 1, Pearson correlation coefficients were computed to determine whether a relationship exists between the levels of primary parents’/caregivers’ engagement in specific health promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) and their adolescents’ level of engagement in these specific health promoting behaviors, respectively. A p-value equal
to or less than .05 was required for statistical significance. Table 4-2 shows the results of these analyses.

Results revealed that adolescents’ engagement in exercising consistently had a significant but low positive association with their primary parents’/caregivers’ engagement in exercising consistently, $r = .29, p < .01$. Results also revealed that adolescents’ engagement in eating a healthy diet had a significant but low positive association with their primary parents’/caregivers’ engagement in (a) exercising consistently, $r = .24, p < .05$, and (b) health responsibility behaviors, $r = .30, p < .01$. Finally, results revealed adolescents’ engagement in health responsibility behaviors had a significant but low positive association with their primary parents’/caregivers’ engagement in (a) exercising consistently, $r = .25, p < .05$; (b) eating a healthy diet, $r = .32, p < .01$; and (c) health responsibility behaviors, $r = .38, p < .01$.

**Hypothesis 2**

Hypothesis 2 states that levels of primary parents’/caregivers’ engagement in a health promoting lifestyle will influence their adolescents’ engagement in the specific health promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle.

To test hypothesis 2, three multiple regression analyses were performed. In the first multiple regression, the predictor variables were primary parents’/caregivers’ engagement in exercising consistently, eating a healthy diet, and health responsibility behaviors and the criterion variable was adolescents’ engagement in exercising consistently. Results indicated that primary parents’/caregivers’ engagement in exercising consistently was the only statistically significant influence of adolescents’ engagement in
exercising consistently, $F(3, 75) = 2.83, p < .05$ (adjusted $R^2 = .07, p < .05$). This finding implies that increases in adolescent engagement in the specific health promoting behavior of exercising consistently may be significantly influenced by an increase in primary parent/caregiver engagement the specific health promoting behavior of exercising consistently. The results of this first regression analysis to test hypothesis 2 are presented in Table 4-3.

In the second multiple regression, the predictor variables were primary parents’/caregivers’ engagement in exercising consistently, eating a healthy diet, and health responsibility behaviors, and the criterion variable was adolescents’ engagement in eating a healthy diet. Results revealed that primary parents’/caregivers’ engagement in health responsibility behaviors was the only one of the investigated predictor variables that had a statistically significant influence on adolescents’ engagement in a healthy diet, $F(3, 75) = 3.85, p < .05$ (adjusted $R^2 = .10, p < .05$). This finding implies that increases in adolescents’ engagement in the specific health promoting behavior of eating a healthy diet may be significantly influenced by an increase in primary parents’/caregivers’ engagement in health responsibility behaviors. The results of this regression analysis are presented in Table 4-4.

In the third multiple regression, the predictor variables were primary parents’/caregivers’ engagement in exercising consistently, eating a healthy diet, and health responsibility behaviors and the criterion variable was adolescents’ engagement in health responsibility behaviors. Results indicated that primary parents’/caregivers’ engagement in health responsibility behaviors was the only one of the investigated predictor variables that had a statistically significant influence on adolescents’ health.
responsibility behaviors, $F (3, 75) = 5.50, p < .05$ (adjusted $R^2 = .15, p < .05$). This finding implies that increases in adolescent engagement in health responsibility behaviors may be significantly influenced by an increase in primary parents’/caregivers’ engagement the specific health promoting behavior of health responsibility behaviors. The results of this regression analysis are presented in Table 4-5.

**Hypothesis 3**

Hypothesis 3 stated that levels of primary parents’/caregivers’ engagement in a health promoting lifestyle will influence their adolescents’ engagement in a health promoting lifestyle.

To test this hypothesis, the predictor variables were primary parents’/caregivers’ engagement in exercising consistently, eating a healthy diet and, health responsibility behaviors, and the criterion variable was adolescents’ engagement in a health promoting lifestyle. Results indicated that primary parents’/caregivers’ engagement in health responsibility behaviors was the only one of the investigated predictor variables that had a statistically significant influence on their adolescents’ engagement in a health promoting lifestyle, $F (3, 75) = 5.54, p < .05$ (adjusted $R^2 = .15, p < .05$). This finding implies that increases in adolescents’ engagement in a health promoting lifestyle may be significantly influenced by an increase in primary parents’/caregivers’ engagement in the specific health promoting behavior of health responsibility behaviors. The results of this regression analysis are presented in Table 4-6.
Table 4-1 Descriptive Data for the Major Variables for All Participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Norm M</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-EC</td>
<td>79</td>
<td>2.2</td>
<td>.57</td>
<td>1.0</td>
<td>3.5</td>
<td>2.9&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>A-HD</td>
<td>79</td>
<td>2.3</td>
<td>.49</td>
<td>1.3</td>
<td>3.6</td>
<td>2.8&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>A-HRB</td>
<td>79</td>
<td>2.1</td>
<td>.57</td>
<td>1.0</td>
<td>3.8</td>
<td>2.5&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>PC-EC</td>
<td>79</td>
<td>1.9</td>
<td>.61</td>
<td>1.0</td>
<td>3.5</td>
<td>2.2&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>PC-HD</td>
<td>79</td>
<td>2.4</td>
<td>.51</td>
<td>1.3</td>
<td>3.7</td>
<td>2.5&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>PC-HRB</td>
<td>79</td>
<td>2.3</td>
<td>.57</td>
<td>1.1</td>
<td>3.7</td>
<td>2.7&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note: A-EC= Adolescent exercise consistently; A-HD= adolescent eating a healthy diet; A-HRB= Adolescent health responsibility behaviors; PC-EC= Primary parent/caregiver exercise consistently; PC-HD= Primary parent/caregiver eating a healthy diet; PC-HRB= Primary parent/caregiver health responsibility behaviors; <sup>a</sup> Callaghan, 2006; <sup>b</sup> Monteith & Ford-Gilboe, 2002
**Table 4-2 Correlations for the Major Variables for All Participants (N=79)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-EC</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-HD</td>
<td>.57</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-HRB</td>
<td>.38</td>
<td>.45</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC-EC</td>
<td>.29**</td>
<td>.24*</td>
<td>.25*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC-HD</td>
<td>.12</td>
<td>.19</td>
<td>.32**</td>
<td>.46</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PC-HRB</td>
<td>.21</td>
<td>.30**</td>
<td>.38**</td>
<td>.41</td>
<td>.48</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note: ** indicates a significant correlation at the 0.01 level (2-tailed); * indicates a significant correlation at the 0.05 level (2-tailed); A-EC= Adolescent exercise consistently; A-HD= adolescent eating a healthy diet; A-HRB= Adolescent health responsibility behaviors; PC-EC= Primary parent/caregiver exercise consistently; PC-HD= Primary parent/caregiver eating a healthy diet; PC-HRB= Primary parent/caregiver health responsibility behaviors*
Table 4-3 Multiple Regression with Primary Parents’/Caregivers’ Health Promoting Lifestyle Variables as Predictors of Adolescents’ Engagement in Exercising Consistently (A-EC)

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
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<td>2.83*</td>
<td>3, 75</td>
<td></td>
</tr>
<tr>
<td>PC-EC</td>
<td></td>
<td></td>
<td></td>
<td>.24*</td>
</tr>
<tr>
<td>PC-HD</td>
<td></td>
<td></td>
<td></td>
<td>-.14</td>
</tr>
<tr>
<td>PC-HRB</td>
<td></td>
<td></td>
<td></td>
<td>.20</td>
</tr>
</tbody>
</table>

Note: PC-EC= Primary parent/caregiver exercise consistently; PC-HD= Primary parent/caregiver eating a healthy diet; PC-HRB= Primary parent/caregiver health responsibility behaviors * = p < .05
Table 4-4 Multiple Regression with Primary Parents’/Caregivers’ Health Promoting Lifestyle Variables as Predictors of Adolescents’ Engagement in Eating a Healthy Diet (A-HD)

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>$df$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC-EC</td>
<td>0.10</td>
<td>3.85*</td>
<td>3, 75</td>
<td>.19</td>
</tr>
<tr>
<td>PC-HD</td>
<td></td>
<td></td>
<td></td>
<td>-.04</td>
</tr>
<tr>
<td>PC-HRB</td>
<td></td>
<td></td>
<td></td>
<td>.26*</td>
</tr>
</tbody>
</table>

Note: PC-EC = Primary parent/caregiver exercise consistently; PC-HD = Primary parent/caregiver eating a healthy diet; PC-HRB = Primary parent/caregiver health responsibility behaviors * = $p < .05$
Table 4-5 Multiple Regression with Primary Parents’/Caregivers’ Health Promoting Lifestyle Variables as Predictors of Adolescents’ Engagement in Health Responsibility Behaviors (A-HRB)

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC-EC</td>
<td>0.15</td>
<td>5.50*</td>
<td>3, 75</td>
<td>.09</td>
</tr>
<tr>
<td>PC-HD</td>
<td></td>
<td></td>
<td></td>
<td>.11</td>
</tr>
<tr>
<td>PC-HR</td>
<td></td>
<td></td>
<td></td>
<td>.31*</td>
</tr>
</tbody>
</table>

Note: PC-EC = Primary parent/caregiver exercise consistently; PC-HD = Primary parent/caregiver eating a healthy diet; PC-HRB = Primary parent/caregiver health responsibility behaviors * = $p < .05$
Table 4-6 Multiple Regression with Primary Parents’/Caregivers’ Health Promoting Lifestyle Variables as Predictors of Adolescents’ Engagement in a Health Promoting Lifestyle (A-HPL)

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>$F$</th>
<th>df</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>0.15</td>
<td>5.54*</td>
<td>3, 75</td>
<td></td>
</tr>
<tr>
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<td>PC-HD</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC-HR</td>
<td>.30*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: PC-EC= Primary parent/caregiver exercise consistently; PC-HD= Primary parent/caregiver eating a healthy diet; PC-HRB= Primary parent/caregiver health responsibility behaviors * = $p < .05$
CHAPTER 5
DISCUSSION

The purpose of this chapter is to (1) summarize and interpret the results of this study, (2) identify the limitations of this study, (3) discuss the clinical implications of the results from this study and offer directions for future research, and (4) discuss the implications of the present study for counseling psychologists.

This study empirically examined the relationship between low-income Black and Non-Hispanic White primary parents’/caregivers’ engagement in specific health-promoting behaviors that help constitute a health promoting lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) and their chronically ill adolescents’ engagement in these specific health promoting behaviors. It also examined the relationship between low-income Black and Non-Hispanic White primary parents’/caregivers’ engagement in a health promoting lifestyle and their chronically ill adolescents’ engagement in a health promoting lifestyle.

Summary and Interpretation of Results

Hypothesis 1 posited that there would be a significant relationship between the levels of primary parents’/caregivers’ engagement in specific health-promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle and the levels of their adolescents’ engagement in these specific health promoting behaviors.

Results from this study lend support for Hypothesis 1. Results from Pearson Correlations revealed significant correlations between adolescents’ engagement in consistent exercise and their primary parents’/caregivers’ engagement in exercising
This finding is consistent with the conclusion of Epstein (2001) that parents/caregivers have a significant influence on the physical activity and eating behaviors of children and adolescents with chronic illnesses. In fact, according to Golan, Weizman, Apter, & Fainaru (1998) the parent/caregiver is the primary mediator of change (i.e., increasing engagement in health promoting behaviors) among their adolescents’.

Further, results also revealed a significant correlation between adolescents’ engagement in eating a healthy diet and their primary parents’/caregivers’ engagement in (a) exercising consistently and (b) health responsibility behaviors. These results are consistent with findings of Van der Horst and colleagues (2007) that parents’/caregivers’ levels of engagement in eating a healthy diet and health responsibility behaviors are positively associated with their chronically ill adolescents’ engagement in eating a healthy diet. Additionally, in the results of a five year (1999-2004) longitudinal study of economically and racially diverse adolescents dietary behaviors, Arcan and colleagues (2007) reported that parents/caregivers engagement in health responsibility behaviors and consumption of healthy foods (i.e., fruits and vegetables) were positively associated with their adolescents’ engagement in health responsibility behaviors and consumption of healthy foods.

Finally, results in the present study related to hypothesis 1 revealed that adolescents’ health responsibility behaviors had a significant positive association with their primary parents’/caregivers’ engagement in all of the specific investigated health-promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle. This finding is
consistent with that of Fitzgibbon, Stolley, & Kirschenbaum (1995) who reported the finding that low-income parents’/caregivers’ engagement in health responsibility behaviors (i.e., reading labels) was associated with their chronically ill adolescents’ engagement in specific health-promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) and weight loss. Such associations have been explained as due in part to primary parents/caregivers being positive health promotion role models and contributing to healthy home environments such as by purchasing and cooking healthy foods (Epstein et al., 1990; Epstein et al., 1994; Dietz, 2001).

Hypothesis 2 posited that levels of primary parents’/caregivers’ engagement in a health promoting lifestyle will influence their adolescents’ engagement in the specific health promoting behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) that help constitute a health promoting lifestyle.

Results from this study lend support for Hypothesis 2. Specifically, it was found that primary parents’/caregivers’ engagement in exercising consistently significantly influenced their adolescents’ engagement in exercising consistently, whereas these primary parents’/caregivers’ engagement in eating a healthy diet and health responsibility behaviors did not significantly influence their adolescents’ engagement in exercising consistently. These findings are consistent with two reviews of low income chronically ill adolescents’ engagement in physical activity, which reported that parental engagement, parental support of, and opportunities to exercise are significantly associated with increases in these adolescents’ engagement in the specific health promoting behavior of
exercising consistently (Sallis, Prochaska et al. 2000; van der Horst, Chin A. Paw et al. 2007).

Further, the small amount of variance in adolescents’ engagement in consistent exercise accounted for by primary parents’/caregivers’ behaviors suggest that other variables influence engagement in consistent exercise among the adolescents in the present study. According to two adolescent health promotion studies, peer influences play a role in the engagement in exercising consistently among the adolescents similar to those in the present study (Mackey & LaGreca, 2006; Stice, 2002). Given the amount of time adolescents spend outside the home, it is not surprising that peers play such a powerful role in the engagement of health promoting behaviors (i.e., exercising consistently) (Csikszentmihalyi & Larson, 1984). Future research is needed to further explore additional variables that may play a role in the investigated health promoting behavior of exercising consistently in adolescents similar to those in the present study.

Results from an examination of Hypothesis 2 also revealed that primary parents’/caregivers’ engagement in health responsibility behaviors significantly influenced their adolescents’ engagement in eating a healthy diet, whereas these primary parents’/caregivers’ engagement in exercising consistently and eating a healthy diet did not significantly influence their adolescents’ engagement in eating a healthy diet. These findings are consistent with a study that reported a significant positive association between low income parents’/caregivers’ health responsible choices and the level of engagement in healthy behaviors (i.e., eating a healthy diet) among their chronically ill adolescents’ (Davison et al., 2003).
Additionally, the small amount of variance in adolescents’ engagement in eating a healthy diet accounted for by primary parents’/caregivers’ behaviors suggest that it is likely that other factors influence engagement in eating a healthy diet among the adolescents in the present study. Existing research suggest that there are multiple influences that contribute to eating habits and quality of life among chronically ill adolescents including physical and social environmental factors (Mokdad et al., 2005). Specifically, findings from Story, Neumark-Sztainer, & French (2002) reported low income chronically ill adolescents’ eating behaviors are influenced by (a) interpersonal (i.e., peers), (b) medical (i.e., adherence to a prescribed diet), (c) environmental (i.e., schools), and (d) societal (i.e., media) factors (Story, Neumark-Sztainer, & French (2002). Factors influencing eating behaviors of chronically ill adolescents need to be better understood to develop effective interventions to improve eating behaviors among adolescents similar to these in the present study.

It was also found from the test of Hypothesis 2 that primary parents’/caregivers’ who engage in health responsibility behaviors significantly influenced their adolescents’ engagement in health responsibility behaviors, whereas these primary parents’/caregivers’ engagement in eating a healthy diet and exercising consistently did not significantly influence their adolescents’ engagement in health responsibility behaviors. These findings are consistent with the results from in a report released by the US Department of Health and Human Services (2000) which concluded that among chronically ill low income adolescents, parent/caregiver encouragement and modeling of health responsibility behaviors (a) promotes normal growth and development, and (b) is positively associated with engagement in health responsibility behaviors. It was also
stated in this report that health responsibility behaviors acquired during adolescence are likely to influence long-term health promoting behaviors.

Furthermore, the small amount of variance in adolescents’ engagement in health responsibility behaviors accounted for by primary parents'/caregivers’ behaviors suggest that other variables play a significant role in the level of engagement in health responsibility behaviors among the adolescents in the present study. Clearly, parents/caregivers are not the only influences of engagement in the health promoting behavior of health responsibility among chronically ill adolescents (Beal, Ausiello, & Perrin, 2001). An additional influence to consider is the significance of adult authority figures with whom adolescents have regular contact, for example: (a) health teachers, (b) school nurses, (c) sports coaches, and (d) physicians who may have emphasized the importance of engaging health responsibility behaviors (Williams, Holmbeck & Greenley, 2002).

Hypothesis 3 posited that levels of primary parents’/caregivers’ engagement in a health promoting lifestyle will influence their adolescents’ engagement in a health promoting lifestyle. Results from this study lend support for Hypothesis 3. Specifically, it was found that primary parents’/caregivers’ engagement in health responsibility behaviors significantly influenced their adolescents’ engagement in a health promoting lifestyle, whereas these primary parents’/caregivers’ engagement in eating a healthy diet and exercising consistently did not influence their adolescents’ engagement in a health promoting lifestyle. This finding is consistent with the results from a report released by the Institute of Medicine IOM (2005) which states that low income parents/caregivers can
have a profound influence on their chronically ill adolescents’ engagement in a healthy lifestyle by promoting certain values and attitudes and by serving as role models.

According to the IOM, the parent/caregiver is an essential mediator of change for adolescents. Parents/caregivers can promote a healthy lifestyle by engaging in health responsibility behaviors and by (a) providing healthy food and beverage choices, (b) carefully considering nutrient quality and the number of calories per gram of food prepared for one’s family and, (c) educating adolescents about making health responsible decisions regarding types of food and beverages to eat and drink, how often and how much to eat, d) limiting television viewing time to less than two hours per day, and e) serving as positive role models for children regarding engagement in specific health-promoting behaviors that help constitute a healthy lifestyle (IOM, 2005).

Further, the small amount of variance in adolescents’ engagement in a healthy lifestyle accounted for by primary parents’/caregivers’ behaviors suggest that other variables play a significant role in the level of engagement in a healthy lifestyle among the adolescents in the present study. Parry-Langdon & Roberts (2005) reported that in addition to the influence of parent/caregiver engagement in a healthy lifestyle, other variables likely play a role in the level of engagement in a healthy lifestyle among adolescents similar to those in the present study. Specifically, these researchers reported these other variables to be as follows: (a) friends, (b) schools, (c) neighborhoods, (d) doctors, (e) Internet, and (f) the media. Since adolescents typically spend more time away from home and their families, parent/caregiver behaviors may be among the less influential factors in their adolescents' engagement in a healthy lifestyle (Parry-Langdon & Roberts, 2005).
Together, the findings in this study are consistent with the concept of modeling as described by the SLT (Bandura, 1977). SLT implies that the process of adopting the specific health promoting behaviors that constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) among low-income minority adolescents with at least one chronic illness can be enhanced by modeling their primary parents'/caregivers’ engagement in these behaviors (Golan & Weizman, 2006). These findings suggest that using the concept of modeling as described by the SLT may be useful in understanding parent/caregiver influence on the levels of engagement in each of the investigated health promoting behaviors examined in the present study.

**Limitations of this Study**

The findings in this study must be considered preliminary given the limitations of this study. These limitations include that the samples of parent/caregiver and adolescent pairs were small and thus may have limited the power to find some significant relationships between the predictor and criterion variables investigated in this study. This low number of participants was due to limitations including (a) the fact that many participants failed to provide required complete data (i.e., a complete demographic data) and/or (b) the fact that some participants completed the self-report measures incorrectly (i.e., did not answer all questions on a measure or gave two answers for one question). Although the study had a small sample size, significant associations and influences were detected between parent/caregiver engagement in specific health promoting behaviors and engagement in such behaviors by their adolescents.
Another limitation that was encountered during this study was the absence of male primary parent/caregiver participants. This is likely due to the high number of single female headed households among low income minority families. It is not known whether the primary parents/caregivers who agreed to participate in this study are a representative sample of all eligible Children Medical Services [CMS] patients’ primary parents/caregivers. This information is not known because the participant data management system for this participating CMS was not capable of identifying demographic distributions (e.g., ethnic/racial group distribution, gender distribution, etc.) for the parents/caregivers that it serves. Yet another limitation with regard to the sample in this study is that all participants are members of low-income families from North Central Florida, which limits external validity of its results and the ability to generalize these results to the larger population of American families, or even of low-income families of the ethnic groups represented in this study.

An additional limitation of the present study is the use of self-report measures to assess engagement in health promoting behaviors by the participating adolescents and primary parents/caregivers. As in any study utilizing self-report measures there is an inherent risk that participants are not truthful and thus results will not be valid or reliable (Johnson, 2005).

The use of self-report measures to assess the variables of interest without the inclusion of a social desirability measure (i.e., the Marlow Crown Social Desirability Inventory) was also a limitation of this study. Indeed, participants may have been giving socially desirable rather than honest responses on the self-report measures. Without a
measure of social desirability, any influence of this variable could not be controlled for in the analyses performed.

**Clinical Implications of the Results and Future Research Directions**

The descriptive data presented in Table 4-1 suggest that the primary parent/caregiver and adolescent participants in this study had limited engagement in the investigated specific health promoting behaviors that constitute a healthy lifestyle, as evidenced by low HPLP-II mean scores. This was particularly apparent in the primary parents’/caregivers’ and adolescents’ mean levels of engagement in exercising consistently (1.9 and 2.2, respectively). Given the considerable physical, psychological, and social demands involved in caring for a chronically ill adolescent and living with a chronic illness, it should come as no surprise that lower rather than higher levels of engagement in the specific behaviors that constitute a healthy lifestyle (i.e., exercising consistently) have been shown to be prevalent in such families (Holmbeck et al., 2002; Power et al., 2003).

Future research addressing chronically ill adolescents’ engagement in health promoting behaviors should include a focus of environmental barriers that may make it especially difficult for low income minority families to engage in a healthy lifestyle. These barriers include, but are not limited to the following barriers: (a) the close proximity of fast-food restaurants to low income neighborhoods, (b) the lack of availability and the high cost of healthy foods and beverages (e.g., high-fiber breads, low-fat milk, and fresh fruits and green vegetables) in low income areas, (c) the presence of perceived threats (e.g., litter, graffiti, youth gangs, heavy traffic, drug activity), and (d)
fewer physical activity settings (e.g., parks, walking paths, and playgrounds) in low income communities.

In the present study, the parent/caregiver behaviors (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) together significantly accounted for 7%, 10%, 15%, and 15% of the variance in their adolescents’ levels of engagement in exercising consistently, eating a healthy diet, health responsibility behaviors, and a healthy lifestyle, respectively. The small amount of variance in adolescents’ engagement in health promoting behaviors accounted for by primary parents’/caregivers’ behaviors could be due to stronger influences of peers and environmental conditions. For example, the behaviors of peers (i.e., engagement in a health promoting lifestyle) and schools (e.g., athletic programs, physical activity classes and health classes, availability of healthy foods) likely significant influence adolescents’ engagement in a health promoting lifestyle (Jacobson, 2003). The challenges of future research in addressing the health promoting lifestyles of low income minority adolescents with a chronic illness are (a) to raise the awareness of the importance of engaging in the specific health promoting behaviors that constitute a healthy lifestyle, and (b) to conduct culturally sensitive family-based research examining parent/caregiver influence on their adolescents’ engagement in a health promoting lifestyle.

Implications for Counseling Psychologists

Counseling psychologists can use their knowledge of social learning theories and multicultural research and theories to conduct similar research to the present study for the purpose of understanding health promotion among low-income minorities. The commitment of counseling psychologists to social justice and health promotion also
renders them to be ideal for implementing such health promotion research. Furthermore, the multicultural counseling training of counseling psychologists prepares them for developing and implementing family interventions that may be implicated from research such as that in the present study.

**Conclusion**

Overall, the results of the present study suggest that primary parents’/caregivers’ self-reported engagement in specific health-promoting behaviors that help constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors) are associated with their adolescents’ engagement in these same self-reported health-related behaviors. If the results in this study are replicated in future similar studies, with larger samples, support will be provided for developing family interventions to positively impact the health promoting behaviors of adolescents who have one or more chronic illnesses, especially those from low-income minority families.

The low self-reported levels of engagement in health promoting behaviors by the adolescents with one or more chronic illnesses who participated in the present study and by their primary parents/caregivers have a significant implication. Specifically, these low levels of engagement in health promoting behaviors indicate that adolescents and primary parents/caregivers similar to those in the present study could possibly benefit from interventions designed to provide health information and skills to promote and increase engagement in the specific health promoting behaviors that constitute a healthy lifestyle (e.g., exercising consistently, eating a healthy diet, and health responsibility behaviors).
APPENDIX A
PARTICIPANT INVITATION LETTER

Date:

Dear Parent/Caregiver:

Children’s Medical Services is supporting a new health improvement research project in which children and parents are being invited to participate. Dr. Carolyn M. Tucker, who works at the University of Florida, is leading the project. Because our records show that one of your children has attended Children’s Medical Services within the past 3 months, we are inviting both you and your child to take part in the project. One of the major reasons for this project is to teach children who have health problems (are overweight, have diabetes—also called “sugar,” and/or have high blood pressure) how to live healthier lives. Another reason for this project is to find out what you think your healthcare providers (doctors, nurses, clinic staff, etc.) and Nurse Care Coordinators can do to make you feel more comfortable, feel more respected by them, and also feel more trusting of them. This information may help healthcare professionals give healthcare that is more satisfactory to you and your family.

Please carefully read the Adult Informed Consent Form and the Adolescent Informed Consent that was included in this mailing. Also have your child read the Adolescent Assent Form. These forms explain the project and what you and your child will be asked to do, if you choose to participate. Basically, if you and your child agree to participate, both of you will complete some questionnaires during the next 12 months. Some parents and children will also be asked to attend three health improvement workshops. If you decide to participate in the project, you will be paid for completing the questionnaires and/or for attending the workshops. The amount of pay is explained in the Informed Consent Forms.

A parent or primary caregiver must participate with each child. Also, only one parent (or primary caregiver) and one child from each family can take part in the project.

If you do not wish to participate, do not return the forms sent along with this letter. If you do not participate, the healthcare your child receives at Children’s Medical Services will not change in any way. In fact, the doctors, nurses, and office staff at Children’s Medical Services and at the clinics will not know if you and your child do or do not take part in this project.

If you and your child would like to participate, you should do the following:

1. Read the Adult Informed Consent Form and the Adolescent Informed Consent Form.
2. Print your full name on the first page of the Adult Informed Consent Form and the Adolescent Informed Consent Form (item number 1).
4. Complete the Payment Release Form (the last page of the Adult Informed Consent Form) and sign your name at the bottom of the page.
5. Keep one of the Adult Informed Consent Forms and one of the Adolescent Informed Consent Forms for your records and information.
6. Complete the Adult Information Questionnaire.
7. Put the Adult Information Questionnaire, ONE copy of the signed Adult Informed Consent Form (please do not tear off the Payment Release Form), and ONE copy of the signed Adolescent Informed Consent Form in one of the pre-stamped, pre-addressed envelopes.
8. Put this envelope in the mail.

Now,
1. Have your child read and sign his/her name on BOTH of the Adolescent Assent Forms.
2. Have your child complete the Youth Information Questionnaire.
3. Your child should keep one of the Adolescent Assent Forms for her or his records and information.
4. Have your child put the Youth Information Questionnaire and ONE copy of the signed Adolescent Assent Form in the second pre-stamped, pre-addressed return envelope.

Put this envelope in the mail.

**NOTE:** Please do not put your forms and your child’s forms in the same envelope. Also, if you want to participate please make sure that you return these materials within 2 weeks.

Within two months of sending us these materials, we will send your first packet of questionnaires (if you and your child are selected to take part in the project). If you move before you receive this first packet, or at any time during the project, please call the researchers at (352) 392-0601, Ext. 260 to give them your new address.

During the whole project, we will make sure that your confidentiality is protected as much as possible. Also, no one at Children’s Medical Services will see what you or your child writes on any of the questionnaires.

If you have any questions about taking part in this research project, or would like the materials we have sent you in English, call the Principal Investigator of the research, Dr. Carolyn M. Tucker, at (352) 392-0601, Ext. 260.

Thank you for your time. We hope you will think about participating in this project.
Sincerely,
Arlan Rosenbloom, M.D.
Gainesville/Ocala Medical Director,
Children’s Medical Services
APPENDIX B
ADULT DEMOGRAPHIC QUESTIONNAIRE

**Directions:** Please give all of your answers by completely filling in the circle beside your answer. It should look like this: • Remember, your answers to all questions in this packet will be kept **completely private.**

What is your sex?

- O Female
- O Male

How do you describe yourself?

- O African-American/Black-American (not of Hispanic origin)
- O Caucasian/White/European-American (not of Hispanic origin)
- O Hispanic/Latino
- O Multi-Racial (Please describe: ________________________________)

What is your current relationship status?

- O Divorced or separated
- O Married, living **with** partner
- O Married, **not** living **with** partner
- O Single, living **with** partner
- O Single, living **without** partner
- O Widow/Widower

What is your employment status?

- O Work Full Time (30-40 hrs)
- O Work Part Time (10-30 hrs)
- O Do not work

What is the highest level of education that you have **completed**?

- O Elementary School
- O Middle/Junior High School
- O High School
- O Some College/Technical School
- O College
- O Professional/Graduate School

What is your annual household income level?

- O Below $10,000
- O $10,000 to $19,999
- O $20,000 to $29,999
- O $30,000 to $39,999
- O $40,000 or above
How many children currently live with you in your home?

O none  O five
O one    O six
O two    O seven
O three  O seven
O four   O other: ________

How many adults currently live with you in your home?

O none  O five
O one    O six
O two    O seven
O three  O seven
O four   O other: ________

When we mail you things would you like them to be written in:

O English
O Spanish

Which county do you live in?

O Alachua        O Hernando
O Bradford       O Levy
O Columbia       O Marion
O Dixie          O Putnam
O Gilchrist      O Other (Please specify: ______________________)

Please write your answers to the following questions in the blanks provided:

In the last year, how many times have you visited the medical clinic you usually attend: ______

How many years have you lived in this community: _________

Your age: _________

PLEASE RETURN BOTH PAGES OF THIS QUESTIONNAIRE

Thank you for helping us with this research!
APPENDIX C
YOUTH DEMOGRAPHIC QUESTIONNAIRE

Directions: Please give all of your answers by completely filling in the circle beside your answer. It should look like this: O. Remember, your answers to all questions in this packet will be kept completely private.

Are you female or male?

O Female
O Male

How old are you?

O 12    O 15
O 13    O 16
O 14    O 17

How do you describe yourself?

O African-American/Black-American (not of Hispanic origin)
O Caucasian/White/European-American (not of Hispanic origin)
O Hispanic/Latino
O Multi-Racial (please describe: ________________________________)

What grade are you in?

O 5th    O 10th
O 6th    O 11th
O 7th    O 12th
O 8th    O I do not go to school
O 9th

How many hours per week do you usually take part in sports and athletics at school or in your community (such as soccer, football, cheerleading, swimming, running, walking, or weightlifting)?
How many hours each week do you usually take part in activities at school or in your community that are not sports (such as music groups, clubs, scouts, church, volunteering, chores)?

- None
- 1-5 hours each week
- 6-10 hours each week
- 11 or more hours each week

How many hours each week do you usually work at a paid job?

- None
- 1-10 hours
- 11-20 hours
- 21-30 hours
- 31-40 hours

Do you have any children of your own?

- No
- Yes (How many?: ______)

When we mail you things would you like them to be written in:

- English
- Spanish

Have you felt any of these things? (Fill in all that you have felt.)

- blurry vision
- dizzy
- headaches
- none
- shortness of breath
- thirsty a lot of the time
- tired a lot of the time

Which of the following, if any, has your doctor or someone else at your doctor’s office asked you to do to treat your high blood pressure, diabetes (sugar), or weight? (Fill in all that you have been told to do.)
O  take medication
O  change the kinds of things you eat
O  exercise
O  lose weight
O  other: ___________________________________________________________

Do you think your doctor or someone else at your doctor’s office has taught you about high blood pressure, diabetes (sugar), and/or obesity? (Fill in one answer only.)

O  Agree  a lot
O  Agree a little
O  Not Sure
O  Disagree a little
O  Disagree a lot

Do you have (Fill in all that you have):

O  high blood pressure
O  diabetes (sugar)
O  obesity (very overweight)
O  none

Does any other member of your immediate family (parent, brother, sister) have any of the following problems? (You can fill in more than one bubble.)

O  high blood pressure
O  diabetes (sugar)
O  very overweight
O  none

In school, which of these grades do you mostly make?

O  A
O  B
O  C
O  D
O  F

What is your Grade Point Average (GPA)? ________
In the past year, what grade have you mostly made in English/Language Arts/Reading?
- O  A
- O  B
- O  C
- O  D
- O  F

In the past year, what grade have you mostly made in Math?
- O  A
- O  B
- O  C
- O  D
- O  F

In the past year, what grade have you mostly made in Social Studies/History?
- O  A
- O  B
- O  C
- O  D
- O  F

In the past year, what grade have you mostly made in Science?
- O  A
- O  B
- O  C
- O  D
- O  F
The following information will only be used to check your school grades and will be kept completely private. To protect your privacy, the CHSE researchers will separate this page from all of the above information.

What school do you go to? ______________________________

What county do you live in? ______________________________

What is your birth date? _______________________________

What is your Social Security Number? _______________________________

What is your Florida Student ID Number (located on any of your report cards)?

______________________________

PLEASE RETURN ALL PAGES OF THIS QUESTIONNAIRE

Thank you for helping us with this research!
### APPENDIX D
THE HEALTH PROMOTING LIFESTYLES PROFILE-II

**Directions:** We want to know about your way of life and personal habits. Please answer each question as honestly as you can, and try not to skip any question. Show how often you do each behavior by filling in one circle for each question. Your answer should look like this: •.

<table>
<thead>
<tr>
<th>How often do you:</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Routinely (Very Often)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Discuss your problems and concerns with people close to you?</td>
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<tr>
<td>2. Choose a diet low in fat, saturated fat, and cholesterol?</td>
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<td>3. Report any unusual signs or symptoms to a physician or other health professional?</td>
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<tr>
<td>4. Follow a planned exercise program?</td>
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<tr>
<td>5. Get enough sleep?</td>
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<tr>
<td>6. Feel you are growing and changing in positive ways?</td>
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<tr>
<td>7. Praise other people easily for their achievements?</td>
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<tr>
<td>8. Limit the use of sugars and food containing sugar (sweets)?</td>
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<tr>
<td>9. Praise yourself, think positively about yourself, or feel good about yourself when you limit the use of sugars and food containing sugar (sweets)?</td>
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<tr>
<td>10. Read or watch TV programs about improving health?</td>
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<td>11. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber?)</td>
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<tr>
<td>12. Take some time for relaxation each day?</td>
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<tr>
<td>13. Believe that your life has purpose?</td>
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</tbody>
</table>
14. Maintain meaningful and fulfilling relationships with others?

<table>
<thead>
<tr>
<th>How often do you:</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Routinely (Very Often)</th>
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</thead>
<tbody>
<tr>
<td>15. Eat 6-11 servings of bread, cereal, rice, and pasta each day?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>16. Question health professionals in order to understand their directions?</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>17. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes five or more times a week)?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>18. Accept those things in your life that you cannot change?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>19. Look forward to the future?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>20. Spend time with close friends?</td>
<td>○</td>
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<tr>
<td>21. Eat 2-4 servings of fruit a day?</td>
<td>○</td>
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<tr>
<td>22. Praise yourself, think positively about yourself, or feel good about yourself when you eat 2-4 servings of fruit a day?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>23. Get a second opinion when you question your health care provider’s advice?</td>
<td>○</td>
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<tr>
<td>24. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling)?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>25. Concentrate on pleasant thoughts at bedtime?</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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<tr>
<td>26. Feel content and at peace with yourself?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>27. Find it easy to show concern, love, and warmth to others?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>28. Eat 3-5 servings of vegetables each day?</td>
<td>○</td>
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<tr>
<td>29. Praise yourself, think positively about yourself, or feel good about yourself when you eat 3-5 servings of vegetables each day?</td>
<td>○</td>
<td>○</td>
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</table>
### How often do you:

| Question                                                                 | Never | Sometimes | Often | Routinely
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<tr>
<td>30. Discuss your health concerns with health professionals?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>31. Do stretching exercises at least 3 times per week?</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>32. Use specific methods to control your stress?</td>
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<td>☑</td>
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<tr>
<td>33. Work toward long-term goals in your life?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>34. Touch and get touched by people you care about?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>35. Eat 2-3 servings of milk, yogurt, or cheese each day?</td>
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<tr>
<td>36. Praise yourself, think positively about yourself, or feel good about yourself when you eat 2-3 servings of milk, yogurt, or cheese each day?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>37. Inspect your body at least monthly for physical changes/danger signs?</td>
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<tr>
<td>38. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking)?</td>
<td>☑</td>
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<tr>
<td>39. Praise yourself, think positively about yourself, or feel good about yourself when you get exercise during usual daily activities?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>40. Balance time between work and play?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>41. Find each day interesting and challenging?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>42. Find ways to meet your needs for intimacy?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>43. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day?</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>44. Ask for information from health professionals about how to take good care of yourself?</td>
<td>☑</td>
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<tr>
<td>Question</td>
<td>Never</td>
<td>Sometimes</td>
<td>Often</td>
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<td>45. Check your pulse rate when exercising?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>46. Practice relaxation or meditation for 15-20 minutes daily?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>47. Think about what is important in your life?</td>
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<td>48. Get support from a network of caring people?</td>
<td>○</td>
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<td>49. Read labels to identify nutrients, fats, and sodium content in packaged food?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>50. Attend educational programs on personal health care?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>51. Reach your target heart rate when exercising?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>52. Pace yourself to prevent tiredness?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>53. Feel connected with some force greater than you?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>54. Settle conflicts with others through discussion and compromise?</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>55. Eat breakfast?</td>
<td>○</td>
<td>○</td>
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<tr>
<td>56. Seek guidance or counseling when necessary?</td>
<td>○</td>
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</tr>
<tr>
<td>57. Expose yourself to new experiences and challenges?</td>
<td>○</td>
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</tr>
<tr>
<td>58. Praise yourself, think positively about yourself, or feel good about yourself?</td>
<td>○</td>
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</tr>
</tbody>
</table>


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BIOGRAPHICAL SKETCH

Christopher Mack received his Bachelor of Arts (B.A.) in psychology and Master of Social Work (M.S.W.) from the University of Michigan and began to work with abused and abandoned children in Ann Arbor, Michigan. Currently, Christopher Mack is attending the University of Florida pursuing his PhD in counseling psychology. His research interests include investigating the health risk and violent behaviors as well as academic achievement amongst low-income at-risk minority youth and their families.