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Homeschooling Parent Stress Levels and Its Association With the Mental and Physical Health of Their Children

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HOMESCHOOLING PARENT STRESS LEVELS AND ITS ASSOCIATION WITH
THE MENTAL AND PHYSICAL HEALTH OF THEIR CHILDREN

A Thesis

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Master of Education

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Indiana University of Pennsylvania

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This cross-sectional study examined 13 homeschooling parent's and 19 homeschooling children's perceived stress to establish what level of stress exists and if these levels have any significant association with the child's mental and physical health status.

The analysis revealed that both homeschooling parent's and their children's levels of perceived stress are relatively low according to the scale. In addition, no significant association was discovered between the perceived stress levels of homeschooling parents and children. When comparing parent perceived stress to the child's fitness level, one significant association was noted in regards to flexibility. No significance was found when comparing children's perceived stress level to their own fitness level. In addition, multiple sociodemographic characteristics were also compared and an analysis of variance determined no significance existed between these variables as well.

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CHAPTER I

THE PROBLEM

Statement of the Problem

It has been established that there is a direct relationship between parental influence and the overall health of their children (Hohepa et al., 2009). This connection could potentially be a contributing factor to the increasing prevalence of metabolic syndrome and obesity in youth (Zimmet et al., 2007). It is estimated that approximately 17 percent (12.7 million) U.S. children and more than one-third (34.9% or 78.6 million) U.S. adults are overweight or obese (Ogden et al., 2014). In order to combat the growing epidemic, the Centers for Disease Control and Prevention (CDC) currently recommends that adults receive at least 150 minutes per week of moderate activity and youth receive at least 60 minutes of moderate to vigorous aerobic activity per day to reduce their risk of developing obesity and other risk factors for diseases like type 2 diabetes and heart disease (CDC, 2008). In addition, the U.S. Department of Health and Human Services (USHHS) has launched the Healthy People 2020 initiative which establishes a collection of health-related objectives for the United States population to meet by the year 2020. For example, Physical Activity Objective PA-3 aims to increase the proportion of adolescents (a newly added topic area from Healthy People 2010) who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity (Healthy People 2020 Guidelines). These recommendations have been further endorsed by the Society for Health and Physical Educators (SHAPE) America's (2015) 50 million Strong by 2029 campaign; whose primary focus is to ensure that by the time today's preschoolers graduate from high school in 2029, all of America's students are benefiting from the "skills, knowledge and confidence to enjoy healthy, meaningful physical activity".

Unfortunately, 80 percent of the United States children, adolescents and adult counterparts do not meet the recommended guidelines (USHHS, 2014) and therefore making it critical to determine potential causes and influential variables contributing to this national health burden.

It has been noted in recent literature that there are several factors which affect children's health including both environmental (Stanley, Ridley & Dollman, 2012) and parental influences (Gustafson, & Rhodes, 2006). The United States Report Card on Physical Activity for Children and Youth (2014) identified 10 "indicators" related to physical activity. The report card determines a grade (A, B, C, D, F, INC) for how well the United States is succeeding in these areas. One of the identified indicators is family and peers which received a grade of "INC", distinguishing that "at the present time there is insufficient information available to establish a grade" (National Physical Activity Plan, 2014). The suggested cause was that evidence is lacking with how parental behaviors influence children's physical activity levels (National Physical Activity Plan, 2014). Despite the merit, much of this literature is merely a reflection of traditional schooling options (e.g. public or private). However, less is known about the influence of family on children's levels of health within the unique homeschooling environment (Wachob, 2015).

Literature related to the homeschooling environment is limited (Barwegen, et al., 2004), even though the number of families choosing home-bound instruction has seen a steady increase over the past several decades. It is believed that there are over two million children being educated in the home, up about 3% from 2007 (Ray, 2011). This equates to approximately 2 percent of the entire school-age population in the United States and 3.5 percent are 5-17 year old with 53 percent being middle or high school aged (Kunzman & Gaither, 2013; Noel et al., 2013). With increasing

popularity of home school education, it is crucial to begin examining the impact of this environment on the health of children (Wachob, 2015).

To date, only two studies by Wachob (2015) and Long (2010) have examined this relationship. Their findings have both suggested family influence, parental support of physical activity, parental physical activity levels, and perceived nutritional habits are moderately correlated with physical activity in their children (Wachob, 2015). Long compared the physical activity and dietary intake patterns between public school and homeschool children. Results of his study showed public school children engaged in more physical activity than homeschool children and there were no differences reported in dietary habits (Long et al., 2010). While these studies provide insight into the influence of homeschooling parents' activity levels on their children's physical activity, they do not examine other factors; such as parental stresses influence on their children.

Adolescents are exposed to heightened rates of environmental stressors (e.g., relationship break-ups, sexual harassment, community violence, and academic pressures) (Cicchetti & Rogosch, 2002). Therefore, adolescent stress has received increasing attention as a risk factor for poor mental health (Murray, Byrne, & Rieger, 2011). While these developmental challenges present opportunity for growth, they may also act as a significant addition for stress (Compas, 1995)

Stress has been associated with decreased physical function over time (Cheng & Coakley, 2000) and obesity (Holmes, Ekkekakis & Eisenmann, 2010; Ogden & Stroebele, 2012; Siervo, Wells & Cizza, 2009) which increases the risk of cardiovascular disease and other chronic health conditions. It has also shown to impair health/lifestyle such as exercise, physical activity, and increased sedentary behavior (Hamer, 2012). Since there is a direct connection between parental

influence and their child's health (Hohepa et al., 2009) and the environment of the child plays such a crucial role in their health status (Wachob 2015), it is imperative to examine the impact that homeschooling parent's stress has on physical and mental health levels of their children. Therefore, the purpose of this study is to determine if the level of perceived stress experienced by homeschooling parents has an association with their children's levels of physical fitness (physical health) and perceived stress (mental health).

Questions to be Researched

1. What are the perceived stress levels of homeschooling parents?
2. What are the perceived stress levels of homeschooling children?
3. Do perceived stress levels of homeschooling parents have an association with their children's perceived stress levels?
4. Do perceived stress levels of homeschooling parents have an association with their children's physical fitness levels?
5. Do perceived stress levels of children have an association on their own physical fitness level?

Hypotheses

1. Homeschooling parents will experience higher levels of perceived stress due to the nature of their role as both parent and teacher during the homeschooling experience.
2. Homeschooling children will experience higher levels of perceived stress due the influence of their parent's increased levels of perceived stress.
3. Parents who report higher levels of perceived stress will have a decreased negative association with the perceived stress levels of their children.
4. Parents who report higher levels of perceived stress will have a decreased negative association with the physical fitness levels of their children.

5. Children who perceive higher levels of stress will have a decreased negative association on their own physical fitness level.

Significance of the Problem

Children and adults in the United States and across the world continue to succumb to the adverse effects of chronic health conditions known as Noncommunicable Diseases (NCD's), which is the leading cause of death globally; killing more people than all other causes combined (World Health Organization (WHO), 2010). Therefore, determining any possible contributing factors should be a continuing effort among health researchers. Stress has become a common symptom as a result of the fast-paced 21st-Century lifestyle and has also been linked to several illnesses including cancer, diabetes, cardiovascular disease, asthma, and rheumatoid arthritis (WHO, 2010; Cohen, Janicki-Deverts, & Miller, 2007; Johnson, Perry, & Rozensky, 2002). While stress has been regularly identified for producing adverse mental and physical health effects on an individual, less is known about parent's stress levels impact on their family and children. Recent research has drawn evidence to show parents who experience stress are often or always tend to be overweight and also have overweight or obese children (American Psychological Association, 2010), contributing to the global burden of disease. Therefore, the purpose of this study is to determine if the stress levels of homeschooling parents have an association with the mental and physical health of their children; a highly understudied population.

Definition of Terms

Physical Fitness- A measure of a person's ability to perform physical activities that require endurance, strength, or flexibility and are achieved through a combination of regular exercise and inherent ability. The components of health-related physical fitness are aerobic fitness, muscular strength, muscular endurance, and flexibility as they relate specifically to health enhancement (National Association for Sport and Physical Education (NASPE), 2011).

Healthy Fitness Zones- Designates the range of fitness scores associated with good health; used by Fitnessgram. The healthy fitness zone is based on criterion-referenced standards because they represent the age-and-gender-appropriate fitness levels that a child needs for good health (NASPE, 2011).

Assumptions

The researcher makes several assumptions in this study. Firstly, it is assumed that all cases are independent of one another. Secondly, it is assumed that students who have underwent fitness testing have given their best effort and their scores are an accurate and reliable indication of their physical fitness level. It is also assumed that parents and children who have consented to participate in the study will answer all survey instrument questions truthfully and their responses are an accurate measure.

Delimitations

Delimitations of the study include a simplistic design and simple data collection processes. Parent and child(ren) participants will only be asked to respond to an identical 10-item survey questionnaire. Also, since fitness testing scores are already part of an existing data set, they are easily accessible for the researcher.

Limitations

The limitations of this research study are a survey instrument which relies on self-report measures from participants and a relatively small sample size (n=19 children, n=13 parents).

CHAPTER II

REVIEW OF RELATED LITERATURE

United States Physical Health

Approximately seventeen percent or 12.7 million children aged 2-19 years are obese which is likely attributed to physical inactivity (Centers for Disease Control and Prevention (CDC), 2012). The CDC recommends children and adolescents engage in at least sixty minutes of moderate-to-vigorous activity a day to reduce the risk of developing chronic health conditions such as cardiovascular disease and Type II diabetes. The same can be said of their adult counterparts. Currently, more than one third of adults are overweight or obese, costing the United States approximately 147 billion dollars annually (CDC, 2012). Adults need moderate-intensity physical activity for a minimum of 150 minutes per week in order to maintain a healthy lifestyle (Physical Activity Guidelines for Americans, 2008). Unfortunately, more than eighty percent of children and adults do not meet the recommended physical activity guidelines (United States Department of Health and Human Services, 2014), therefore identification of any possible deterring factors is critical. As westernized societies continue to adopt a host of unhealthy behaviors, increasing their risk of adverse health effects, stress can be identified as a core component of this viscous cycle.

Stress

Stress can be recognized as “the generalized, non-specific response of the body to any factor that overwhelms, or threatens to overwhelm, the body’s compensatory abilities to maintain homeostasis” (Sherwood, 2001). In other words, stress is a physiological response by the body to some type of stressor or stressful situation. Stressors inducing the stress response include; physical stressors (trauma, surgery, intense heat or cold); chemical stressors (reduced oxygen supply);

physiological stressors (heavy exercise, shock, pain); psychological or emotional stressors (anxiety, fear, sorrow); and social stressors (personal conflicts, change in lifestyle) (Sherwood, 2001). Emotional stimulation having possible consequences is not a new concept; dating back to Hippocrates indicating possible connections between emotion and health (Salovey, Rothmans & Steward, 2000). Holmes and Rahe (1967) made connections between major life changes causing overtaxing on individual coping abilities, leading to more vulnerability for infection, injury, or disease. When stressors are measured comprehensively, the impairment on physical and mental health are substantial (Thoits, 2010), and exposure to these chronic psychological stressors contribute to the global burden of disease (World Health Organization, 2001). Currently, while there are various causes contributing to declining health in adults, levels of experienced stress should not be under examined.

Effects of Stress on Physical Health

Stress has been associated with diminishing physical function over time (Cheng & Coakley, 2000) and obesity (Holmes, Ekkekakis & Eisenmann, 2010; Ogden & Stroebele, 2012; Siervo, Wells & Cizza, 2009) increasing the risk of cardiovascular disease and other chronic health conditions. It has also shown to hinder health/lifestyle such as exercise, physical activity and increased sedentary behavior (Hamer, 2012). Reasoning for this association may be that stress promotes unhealthy behaviors such as eating high-fat foods, not exercising, drinking alcohol, and smoking (Ng & Jeffery, 2003). More commonly noted is the impact of stress on the mental health of an individual.

Effects of Stress on Mental Health

Prolonged exposure to stress hormones, regardless of the moment in the lifespan, influences an individual's brain structure, cognition, and mental health (Lupien et al., 2009). There

are a number of factors throughout the lifespan which can contribute to mental health risk. Langer and Stanley (1963) stated the number of factors experienced, rather than the pattern predict the risk of mental health impairment. Individuals use three mechanisms in their response to stress including coping, social support, and mastery and how these resources are utilized determine the outcome of mental health and well-being (Pearlin et al., 2005). There is also a relationship between stress and later depression (Hammen, 2005), increasing morbidity from poor physical health conditions (Kiecolt-Glaser et al., 2002). While there are a host of negative health outcomes for an individual experiencing high levels of stress, the causes of these increased stress levels are continuing to be established by researchers; especially in the United States.

United States Stress Levels

The American Psychological Association (APA) performs a national study which aims to examine the stress levels of adults in the United States. The most recent survey, *Stress in America Paying with Our Health* (2015), concluded Americans are stressed mostly regarding financial pressures, followed by work, family responsibilities and health concerns. Though U.S. adult stress ratings have dropped from 6.2 to 4.9 on a 10-point scale (where 1 is “little or no stress” and 10 is “a great deal of stress”), the adverse health effects are continuing to plague the nation. Physical and mental health problems are most frequent among women, adolescents, young adults, blacks and Hispanics, persons who are single or of lower socioeconomic status (Thoits, 2010). *The Stress in America Findings* (2010) states obese adults and children are likely to experience higher levels of stress. Overweight children report being able to tell when their parents are experiencing stress often or always in the past month. It also suggests Americans who are struggling to balance stress in their lives are not only adversely affecting their personal physical health, but taking a toll on the physical well-being of their families; especially their children.

Parental Influence on Child Health

The debate deciding nature vs. nurture is still inconclusive but it can be said family; especially parents, are one of the most influential entities in a child's life. From birth and into the first years, parents and family are granted with the care and development of their children (Repetti, Taylor & Seeman, 2002). Health status is an early life attainment and research has consistently concluded that families of certain risky characteristics lay the groundwork for long-term damaging physical and mental health problems in their children (Repetti, Taylor, & Seeman, 2002). Similar to adults, children and adolescents raised in stressful environments tend to be at risk for certain health-threatening behaviors such as drug abuse, sexual promiscuity (Repetti, Taylor, & Seeman, 2002), lack of sleep, lack of exercise, and poor dieting habits (APA, 2014). A potential explanation for this relationship between stressful experiences and health consequences is continued stress exposure and early hardship (Raposa et al., 2014). These negative effects of early adversity are likely to influence the types of environments children select later in their life, increasing the probability they will perceive stress in escalated fashion (Campbell et al., 2005). Not only can a parent possess substantial influence on their child's mental health status, but their influence can reach into the physical status of the child as well.

Parental Influence on Children's Physical Activity

There is evidence to suggest a relationship between parental influence and child physical activity levels (Wachob, 2015). In a study conducted by Trost et. al, (2003), a model linking parental physical activity patterns with children's self-efficacy perceptions and physical activity participation was tested. The results concluded parental support was an important factor in child self-efficacy towards physical activity and programs should strive to include parental involvement for increasing children's motivation towards being physically active. This was paralleled by

Loprinizi (2010) who evaluated parental influences on physical activity behavior at the preschool level. The results of his study also showed positive associations between parental perceptions and support of physical activity positively influenced their child's physical activity at home. O'Connor (2009) disregarded this notion and suggested there is little evidence for proving family involvement is effective in promoting childhood physical activity.

Adolescent Stress

As early as (1904), Stanley Hall distinguished adolescence as a period of “storm and stress”. It has also been identified as a “unique period of the life cycle” (Latha, & Reddy, 2006) in which the brain displays remarkable changes in both structure and function (Romeo & McCewen, 2006), but also a significant period for certain developmental vulnerabilities (Spear, 2000; Anderson, 2003) such as stress (Romeo & McCewen, 2006). Adolescence is initiated by puberty, which tends to create a level of susceptibility to various psychological disorders, such as anxiety and depression (Conger & Peterson, 1984). The onset of psychiatric disorders is most frequent in adolescence and young adulthood and drops off with age (Kessler et al., 2005). American adolescents report experiences with stress that follow a similar pattern as adults but are less likely to report that their stress has slight to no impact on their physical health (54%) or their mental health (52%) (APA, 2014). Furthermore, only 16% of adolescents' report declining levels of stress, while nearly 31%, or double, report increased levels of stress over the past year (APA, 2014). This burden of chronic stress accompanied by changes in personal behavior is referred to as “allostatic overload”, which affects the brain and the rest of the body (McEwen, 2007).

Causes of Adolescent Stress

Adolescents are exposed to increased rates of stressful life experiences (e.g., romantic break-ups, community violence, date rape, etc) (Grant et al., 2005) which provides evidence for

increased rates of issues adolescents experience psychologically (e.g., depression, conduct disorder, substance abuse) (Arnett, 1999). In communities all across the United States, adolescents endure various pressures including, but not limited to; acceptance by peers, battles with parents, fallouts with friends, difficult family transitions, and frustrations with schoolwork and teachers (Gonzales et al., 2005). A common source of stress for adolescents are academic pressures which escalate during high school (Latha & Reddy, 2006). Adolescents living in low-income, inner city neighborhoods are at a higher risk for experiencing chronic stress (Tolan et al., 1997) due to problems including family issues, poverty, abuse and neglect, family drug and mental health problems, domestic violence, and parents with diminished coping and parenting capacities (Lynch & Cicchetti, 1998).

Differences in Adolescent Stress

Adolescents are exposed to heightened rates of environmental stressors (e.g., relationship break-ups, sexual harassment, community violence, and academic pressures) (Cicchetti & Rogosch, 2002). Literature has shown gender differences as well; suggesting adolescent females experience higher levels of stress than males (Gröer et al., 2007); relating specifically to peers, romantic relationships, and family (Hampel & Peterman, 2006; Hankin, 2007). Males seem to score higher in self-esteem during adolescence (Kim, 2003; Ranta, 2007). Adolescent females also seem to be more susceptible to negative psychological health effects of stress than males (Charbonneau, 2009; Hankin, 2007). These findings were concurrent with research conducted by Moksnes, Inger, Geir, & Byrne (2010), who also noted scores on stress, self-esteem, and emotional states did not differ significantly with age.

Adolescent Stress in School

Adolescents report their stress levels during the school year far exceeds what they believe to be healthy (5.8 versus 3.9 on a 10-point scale) (APA, 2014). A common source of stress for adolescents are academic pressures which escalate during high school (Latha & Reddy, 2006). In neighborhoods and schools across the U.S., adolescents face pressures to be accepted by peers, fallouts with friends, difficult family transitions, frustrations with schoolwork and teachers, and battles with parents (Gonzales et al., 2005).

Parental Stress

Parents responded with a rating of 5.7 (on a 10-point scale) slightly higher than the national average (APA, 2015). Higher stress levels were reported among parents of children with a mental or physical disability (Pearling, 1981), behavior problems (Baker et al., 2003) of low birth weight (Singer et al., 1999), suffering from ADHD (Anastopoulos et al., 1992) or Autism Spectrum Disorder (Davis & Carter, 2008). It is most notable among parents of low socioeconomic status (Lupien et al., 2000).

Data from the Pew Research Center analysis of the (2011) *American Time Use Survey* states that the amount of time spent parenting for mothers (nearly double at 14 hours per week) and fathers (nearly triple at 7 hours per week) has increased substantially since the 1960's due to dramatic changes in traditional work status. While 24% of all parents believe they are doing an excellent job parenting their child, 53% of all working parents with children under the age of 18 feel it is difficult for them to balance responsibilities of their job with that of their family (Parker & Wang, 2013). Also, 40 % of working mothers and 34% of working fathers say they always feel rushed (Parker & Wang, 2013).

This can lead to “parenting” or “parental” stress which is defined as stress felt in response to the demands of being a parent and can not only be attributed to raising a child, but other social and environmental circumstances, responsibilities, and everyday life (Cronin & Becher, 2015). Individual characteristics such as age, gender, and physical health may impact stress levels, but other factors such as geographical location, socioeconomic status, race, and ethnicity, employment status, relationships may also threaten the physical and mental health of parents (Epel & Lithgow, 2014; Beeber, 2013; Berger et al., 2009; Kotelchuck, 2006). The most distinguishable attributer to parental stress, aside from raising a child, is economic and financial hardship; which can lead to less optimal parenting practices, associated with an increase in child problem behaviors (Cronin & Becher, 2015); especially among adolescents (Hardaway & Cornelius, 2014). The stress of being a parent and its influential nature has been well-documented, but there are other influential adults in a child’s life; such as teachers, who may be experiencing similar adversity.

Stress of the Teaching Profession

Teachers typically spend on average over 50 hours per week on all teaching and other school-related activities (U.S. Department of Education, 2004). Teaching has been described as an “emotionally taxing and potentially frustrating” profession leading to increased stress and risk of burnout (Lambert et al., 2006). A study by Geving (2007) identified student behavior as a factor for increasing stress, especially among secondary teachers. Grant (2007) also recognized achieving high qualifications and effectiveness, as well as increased accountability (Sorenson, 2007) as factors contributing to the stress and burnout of teachers. While this research is compelling, it is merely a reflection of the general public or public school, and does not consider sub-categories such as the homeschool population; a growing trend in the United States in which little research is focused (Green & Hoover-Dempsey, 2007).

Homeschool in the United States

The number of families choosing home-bound instruction has seen a steady increase over the past several decades. It is believed that there are over two million children being educated in the home, up about 3% from 2007; equating to around 2% of the entire school-age population in United States (Ray, 2011). Homeschooling has been defined as “educating children under the supervision of parents instead of school teachers” (Lines, 2002). Reasons for the increase include differing views on educational approach; values and moral instruction; well-being and safety of the child; and family unity (Spiegler, 2010). With increasing popularity of home school education, it is crucial to begin examining the impact of this environment on the health of children (Wachob, 2015).

Features of Homeschooling Families

Sociodemographic factors have been shown to have an impact on the physical and mental health of parents (Beeber, 2014; Epel & Lithgow, 2014; Berger & Guidroz, 2009; Kotelchuck, 2006). Therefore, it is crucial to identify sociodemographic characteristics of homeschooling families as it could have significant influence on their well-being as well. Almost 75% of homeschool parents have studied beyond high school and tend to have above-average levels of education (United States Department of Education (USDOE), 2005, Table 3-1). The National Center for Education Homeschooling Survey indicates approximately 81 percent of homeschooling families have two-parent households (USDOE, 2005, Table 3-1). They also tend to have above average family size (66 %) having three or more children (USDOE, 2005, Table 3-1). Bielick (2001) found that there were no significant differences in household income between homeschoolers and non-homeschoolers; both having annual incomes of 50,000 dollars or less. However, recent figures show homeschooling families spend less income (4,000 dollars per year

per household) than public school spend per child (9,644 dollars) (Basham, Merrifield, & Hepburn, 2007) potentially having impact on parental stress levels.

Homeschool Physical Activity Levels

Unlike the well-established public school setting which includes regular opportunities for physical activity (i.e. recess, physical education, before/after school programs) (Sallis, Prochaska, & Taylor, 2000), the homeschool environment is very unique and varies among different families. Most states require homeschoolers provide physical education instruction (Home School Legal Defense Association), however, there is very little government oversight on what must be reported; allowing families to determine the exposure to physical activity their children receive. Elevated rates of childhood obesity and other chronic health conditions have caused increasing efforts in literature to determine what influences the behavior choices and health status of children (Grissom, 2005). However, most studies focus on public school children because they are an easily accessible population to most researchers. Homeschooling has succeeded at withholding educational policies and requirements out of the home, constraining the data that can be collected at the state level (Isenberg, 2007). Though an accomplishing feat, it has led to a lack of available information of homeschool children's health status (Welk, Schaben, & Shelley, 2004).

The little research that does exist on homeschooling children attempts to compare physical activity levels with their public school counterparts; suggesting that homeschoolers receive less physical activity by comparison (Long, Gaetke, & Perry, 2010; Welk, Schaben, & Shelley, 2004). However, these studies lack explanations into how the homeschool environment influences the health status of this particular group of children (Wachob, 2015). Since little is known about the environmental impact homeschooling has on health status, it leaves these children at greater risk for inactivity and cardiovascular disease (Welk, Schaben, & Shelley, 2004).

Opportunities for these children to be physically active vary significantly, oftentimes based on parental influence, availability of resources, and family income (Long, Gaetke, & Perry, 2010).

Homeschool Parental Influence on Physical Activity

To date, only two studies by Wachob (2015) and Long (2010) have examined this relationship. Long compared the physical activity and dietary intake patterns between public school and homeschool children. Results of his study showed public school children engaged in more physical activity than homeschool children and there were no differences reported in dietary habits (Long et al., 2010). Wachob's findings have suggested family influence, parental support of physical activity, parental physical activity levels, and perceived nutritional habits are moderately correlated with physical activity in their children (Wachob, 2015).

Homeschool Parental Influence on Academics

Contrary to popular belief, homeschool students tend to outperform their public school peers on a variety of academic tests. Almost one quarter (24.5%) of home schooled students perform one or more grades above their age-level peers in public and private schools (Basham, Merrifield, & Hepburn, 2007). There is evidence to suggest other factors may influence achievement; such as parental involvement. In study performed by Barwegen et al. (2004), a students' perception of high level of parental involvement performed better on the national ACT exam than students who perceived a low level of parental involvement. However, there was no difference in achievement between public school student's perception and homeschool student's perception of parental involvement. These findings suggest parental involvement could be a highly influential variable in achievement.

The Homeschool Child-Student

Homeschool children have received general misconceptions about their character from the public. It has been inferred that these students are not adequately socialized and spend all of their time with immediate home family and do not benefit from outside additional influences (Basham, Merrifield, & Hepburn, 2007). However, the homeschool child is typically involved in up to 8 different activities outside of the home (Van Pelt, 2003) including sports, scouts, church, groups, ballet, Little League, neighborhood play, part-time employment, voluntary work both with public school students and other home schooled students. Shyers (1992) indicated public school children had significantly more problem behaviors than homeschooled children; possibly due to the fact that homeschool students model primary behavior of their parents rather than their peers. These students are also more mature, better socialized, better adjusted, more thoughtful, competent, and happier (Smedley, 1992). Much of the achievement and characteristics of homeschool child-student can be attributed to the effectiveness and influence of homeschooling parent-teacher.

The Homeschool Parent-Teacher

In this setting, the homeschooling parent plays the role of teacher and parent simultaneously. Increasing levels of stress due to parenting and stress accrued from teaching have been previously identified in the literature. Therefore, there is reason to suggest homeschooling parents may accrue increased levels of stress as well. However, the stress due to being a parent and teacher synchronously have yet to be determined; and if these stress levels, at all, have an influence on their children's physical and mental well-being; as also reflected in previously stated literature.

CHAPTER III METHODOLOGICAL PROCEDURES

Purpose of the Study

The purpose of this study is to determine if the reported perceived stress levels of homeschooling parents has an association with mental and physical well-being of their child(ren). Parents of children enrolled in the IUP Homeschool Physical Education Program (HPEP) will complete a survey, the Perceived Stress Scale (PSS-10) (Appendix C-D) regarding their perceived stress levels. The children (ages 9-18) will also complete the PSS-10 survey. Lastly, previously existing fitness data, collected annually as part of the HPEP, will be included in the final analysis.

The parents' PSS-10 results will be compared to their children's responses to the PSS-10 as well as the children's fitness scores. These three variables will be compared against one another to determine if an association exists between parent's reported perceived stress levels and their children's mental and physical health status.

Setting of the Study

This study will be held on the Indiana University of Pennsylvania campus. For convenience, the parents and their children will complete the survey during one of the HPEP sessions that takes place during the Spring semester. Site approval will be obtained prior to beginning this study (see Appendix B).

Study Sample

The participants included in this study are families (parents/guardians & children) who are currently enrolled in the Indiana University of Pennsylvania Homeschool Physical Education Program (HPEP). Parental ages are varied while children are between the ages of 9 to 18. Almost all of the parental participants are females and are the mothers of the children enrolled in HPEP. However, fathers who are available and wish to participate will not be excluded from this study.

Since this study focuses only on families with children between the ages of 9 to 18, these will be the only families eligible to participate (n=32). Multiple child families are also included and each sibling may participate. Consent from parents, assent of their children, and children's consent will be obtained from all participants prior to beginning this study.

Data Collection

As part of this study, parents will be asked to complete a version of the PSS-10 (Appendix C) regarding their perceived stress levels which also includes other relevant sociodemographic information (i.e. age, gender, marital status, education level, and employment status). Children will also complete an identical PSS-10 (Appendix D) separately from their parents but will only be asked to indicate their age and gender. The survey results of both parent and children will be entered into SPSS data analysis software. Specifically, parent survey results will be compared to their own children's survey results and fitness testing scores and children's survey results will be compared to their own fitness scores.

Instruments Used

Perceived Stress Scale

The *Perceived Stress Scale (PSS-10)* (Appendix C-D) is the most widely used psychological instrument for measuring the perception of stress (Cohen, 1983). It is a measure of the degree to which situations in one's life are appraised as stressful. A 10-item questionnaire with 5 Likert scale ratings (0=Never and 4=Very often) are designed to determine how much unpredictability, uncontrolledness, and overload respondents find in their lives. The scale also includes direct queries about current levels of experienced stress. The *PSS* was designed for use in community samples with at least a junior high school education (Cohen, 1988). Items ask respondents about thoughts and feelings within the last month and how often they felt a certain way (Cohen, 1988).

Cronbach's Alpha is a measure of internal consistency reliability, with a value $>.70$ considered a minimum measure of internal consistency. In 12 out of 12 studies which used the PSS-10, Cronbach's alpha was evaluated at $>.70$; establishing rigid reliability (Lee, 2012). Test-retest reliability was also measured using a correlation coefficient such as Pearson's and Spearman's. In four studies, the PSS-10 met the criterion of $>.70$ in all studies (Lee, 2012). The PSS scores of validity were lower for groups of participants who were young, white, married, employed, earning a higher income, and with parents with a smaller number of children (Lee, 2012). However, Terzian et al., (2010) determine that the PSS-10 as a "well-validated" instrument to measure stress among adolescents as well.

Pre-existing Fitness Data

The existing fitness scores that will be utilized as part of this study were collected on the children enrolled in HPEP using the FITNESSGRAM assessment (Cooper Institute, 2010). This instrument is a comprehensive tool used to assess aerobic capacity, body composition, muscle strength, muscular endurance, and flexibility of an individual. The FITNESSGRAM uses criterion-referenced health standards which define Healthy Fitness Zones (HFZ) for which a participant compares his/her score. Specifically, the test measures are the:

PACER Test- The *PACER* (Progressive Aerobic Cardiovascular Endurance Run) is a measure of participant's aerobic capacity. This test requires participants to run a series of 20-meter laps to a timed cadence with the speed increasing each minute until the child cannot complete the lap in the designated time. The calculations of aerobic capacity include a formula that uses the PACER results with participants' heights and weights. The PACER has been administered to millions of students and is the most endorsed fitness test by school districts nationwide (Meredith, & Welk, 2010).

Curl-Up Test- The curl-up test is a measure of participants' abdominal muscular strength and endurance levels. This test requires students to complete a series of curl-ups (modified sit-up) at a rate of one curl-up every three seconds.

90° Push-Up Test- The push-up test is a measure of participants' upper body muscular strength and endurance levels. This test requires students to complete a series of push-ups at a rate of one push-up every three seconds.

Back-Saver Sit & Reach Test- The back-saver sit-and-reach test is a measure of lower back and hamstring flexibility. Participants are partnered with another student and asked to remove their shoes to complete stretches using a standard sit-and-reach box. With one leg outstretched, foot flat against the side of the box, and the other leg bent so that the foot is flat against the ground. Participants will use both hands to stretch out along the top of the box as far as possible while still being able to hold the stretch for at least two seconds. Each leg measurement will be taken a total of three times.

Design and Analysis

This research study uses a quantitative cross-sectional correlational design with slight retrospective measures (PSS-10 asks participants to recall certain aspects over the last month). Parents will respond to PSS-10 measures on one occasion and results will be determined for average scores and also compared for correlational significance against their child's PSS-10 results as well as fitness testing measures. Children's PSS-10 results will also be compared to their own fitness scores for significance. Spearman's rank (rho) correlation coefficients will be used to determine dependence between the two groups and these variables (parents & children). Specifically, the correlation between reported parental perceived stress levels and reported perceived stress levels of their children, parental perceived stress levels and fitness levels of their children, and reported perceived stress levels of children and their own fitness levels.

In addition, multiple socio-demographic variables will also be analyzed for further statistical significance using a one-way analysis of variance (ANOVA) to compare means between the demographic groups of both parents and children. All statistics will be analyzed using the SPSS software.

CHAPTER IV
DATA AND ANALYSIS

Description of Participants

Table 1 displays a demographic description of the parent participants involved in the study (n=13). Of the 13 parent participants, the mean age was 41.62 with a standard deviation of 6.27. Four (30.7%) mothers were between the ages of 30-36, three (23.1%) between 37-42, five (38.5%) between 43-49 and one (7.7%) 50 or above. The sample consisted entirely of females (100%) whom were also mothers of the children enrolled in the Homeschool Physical Education Program (HPEP). The average number of children per participating homeschool family was 3.31 with a standard deviation of 1.79 (note: even children ineligible for the study was still accounted in this description). Of the mothers, 2 (15.4%) had one child, 1 (7.7%) had two children, 6 (46.2%) had three children, 2 (15.4%) had four children, 1 (7.7%) had five children and 1 (7.7%) had eight children. The mothers were also mostly all married (n=12) (92.3%) and only one mother was single (n=1) (7.7%). All mothers had at least a high school diploma (n=3) (23.1%) and many had attained post-secondary education as well such as a bachelor's degree (n=7) (53.8%) or graduate degree (n=3) (23.1%). None had less than a high school education or were currently working towards graduate degrees. Their employment status is also described and most of the sample mothers identified themselves as stay-at-home parents (n=11) (84.6%), a few identified part-time work employment (n=2) (15.4%) and none were identified as having full-time employment status.

Table 1

Demographic Information of Parents

		Frequency	Percentage
Age	30-36	4	30.7
	37-42	3	23.1
	43-49	5	38.5
	50>	1	7.7
Gender	Male	0	0.00
	Female	13	100.00
Number of Children	1	2	15.4
	2-3	7	53.8
	4-5	3	23.1
	>5	1	7.7
Marital Status	Single	1	7.7
	Married	12	92.3
Education Level	No High School Diploma	0	0.00
	High School Diploma	3	23.1
	Bachelor's Degree	7	53.8
	Current Graduate Work	0	0.00
	Graduate Degree	3	23.1
Employment Status	Stay-at-Home Parent	11	84.6
	Part-Time Employed	2	15.4
	Full-Time Employed	0	0.00

Table 2 is a demographic description of the children participants of the study sample (n=19). Of the 19 participating children, the mean age was 12.37 with a standard deviation of 2.49. Five (26.3%) children were between the ages of 9-10, seven (36.8%) between 11-12, two (10.5%) between 13-14 and five (26.3%) between 15-16. The sample consisted of 11 females (57.9%) and 8 males (42.1%).

Table 2

Demographic Information of Children

		Frequency	Percentage
Age	9-10	5	26.3
	11-12	7	36.8
	13-14	2	10.5
	15-16	5	26.3
Gender	Male	8	42.1
	Female	11	57.9

Results

Table 3 represents descriptive statistics for parent participant's responses on the PSS-10 survey. PSS-10 scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (4, 5, 7 & 8) and then summing across all scale items. The least a participant can score is a 0 (indicating no level of perceived stress) and the maximum a participant can score is a 40 (indicating high level of perceived stress). Of the 13 parent participants, the lowest score was a 6 out of 40 and the highest score was a 30 out of 40. The mean score for all 13 participants was 14.46 with a standard deviation of 5.71, indicating a relatively low level of perceived stress (36.2%) of maximum score 40.

Table 3

Perceived Stress Levels of Homeschooling Parents

N	Minimum	Maximum	Mean	SD
13	6.00	30.00	14.46	5.71

Table 4 represents descriptive statistics for children responses on the PSS-10 survey. PSS-10 scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. The least a participant can score is a 0 (indicating no level of perceived stress) and the maximum a participant can score is a 40 (indicating high level of perceived stress). Of the 19 child participants, the lowest

score was a 0 out of 40 and the highest score was a 24 out of 40. The mean score for all 19 participants was 13.32 with a standard deviation of 5.49, indicating a similar perceived stress pattern as the parent participants (33.3%) of maximum score 40.

Table 4

Perceived Stress Levels of Homeschooling Children

N	Minimum	Maximum	Mean	SD
19	0.00	24.00	13.32	5.49

Table 5 displays the association between the perceived stress level of homeschooling parents and their children’s perceived stress level. In other words, PSS-10 results from parents are being tested for correlational significance with PSS-10 results from their children. Results determined that based upon Spearman’s rho correlation coefficient 0.20 and p-value .412 that no significant association exists between the parent’s perceived stress level and their children’s perceived stress level. Although not statistically significant, the correlation coefficient suggests a positive association stating that as parent’s perceived stress increases by 1, child perceived stress increases by 0.20. Conversely, as child perceived stress increases by 0.20, parent perceived stress increases by 1.

Table 5

Association Between Perceived Stress Levels of Homeschooling Parents and Their Children

	Parent’s Perceived Stress Level	
	Spearman’s rho	p
Child’s Perceived Stress Level	.20	.412

Table 6 displays descriptive statistics of pre-existing FITNESSGRAM data collected on the HPEP children prior to the study. The FITNESSGRAM protocols use criterion-referenced

health standards which define Healthy Fitness Zones (HFZ) for which a participant score determines their placement. Participant scores will fall under 1 criterion for each fitness measures. The Child Push-Up, Child Curl-Up and Child Sit-and-Reach only define a Healthy Fitness Zone (HFZ) or Not Healthy Fitness Zone (Not HFZ) status which take into account a participant's age, gender, and score. The Child BMI defines three criteria of placement as Healthy Fitness Zone, Needs Improvement-Some Risk (NI-Some Risk) or Needs Improvement-High Risk (NI-High Risk) and takes into account a participant's age, gender, height and weight. The Child PACER defines two criteria of placement as Healthy Fitness Zone or Needs Improvement-High Risk and takes into account a participant's age, gender, and number of laps completed. Some children's data are missing from Table 5 due to absence during fitness testing or exclusion by FITNESSGRAM protocols based upon age restriction (FITNESSGRAM does not define criteria for their age). Results from Table 5 show that for Child PACER 11 (57.9) children fell under the HFZ criteria and 2 (10.5%) fell under NI-High Risk, Child Push-Up 11 (57.9%) HFZ and 4 (21.1%) Not HFZ, Child Curl-Up 14 (73.7%) HFZ and 1 (5.3%) Not HFZ, Child Sit-and-Reach 8 (42.1%) and 11 (57.9%) Not HFZ, Child BMI 12 (63.2%), 3 (15.8%) NI-Some Risk and 2 (10.5%) NI-High Risk.

Table 6

Frequencies and Percentages of Pre-Existing FITNESSGRAM Data Collected from HPEP Children

		Frequency	Percentage
Child PACER	HFZ	11	57.9
	NI-High Risk	2	10.5
Child Push-Up	HFZ	11	57.9
	Not HFZ	4	21.1
Child Curl-Up	HFZ	14	73.7
	Not HFZ	1	5.3
Child Sit-and-Reach	HFZ	8	42.1
	Not HFZ	11	57.9
Child BMI	HFZ	12	63.2
	NI-Some Risk	3	15.8
	NI-High Risk	2	10.5

Table 7 represents statistical output for correlational significance between the perceived stress levels of homeschooling parents and their children's fitness levels acquired from pre-existing FITNESSGRAM data. When comparing parent's perceived stress levels to their children's fitness levels, one fitness measure of Child's Sit-and-Reach (n=19) was found to be significant at alpha=0.05 with Spearman's rho (-0.500) and p-value=.029. No other significance was noted at the 0.05 level with regards to Child's PACER (n=13) with Spearman's rho (-0.174) and p-value=.570, Child's Push-Up (n=15) with Spearman's rho (-0.212) and p-value=.448, Child's Curl-Up (n=15) with Spearman's rho (-0.282) and p-value=.308, or Child's BMI (n=17) with Spearman's rho (-0.189) and p-value=.467.

Table 7

Association Between Perceived Stress Levels of Homeschooling Parents and Their Children's Fitness Levels

	Parent's Perceived Stress Level	
	Spearman's rho	<i>p</i>
Child PACER	-0.174	.570
Child Push-Up	-0.212	.448
Child Curl-Up	-0.282	.308
Child Sit-and-Reach	-0.500*	.029*
Child BMI	-0.189	.467

*Significant at $p < 0.05$

Table 8 represents statistical output for correlational significance between the perceived stress levels of homeschooling children and their children's fitness levels acquired from pre-existing FITNESSGRAM data. When comparing Child's Perceived Stress Levels to their own individual FITNESSGRAM data, no significance was found at the 0.05 level with regards to Child's PACER (n=13) with Spearman's rho (-0.087) and p-value=.777, Child's Push-Up (n=15) with Spearman's rho (-0.177) and p-value=.528, Child's Curl-Up (n=15) with Spearman's rho (-0.376) and p-value=.167, Child's Sit-and-Reach with Spearman's rho (-0.108) and p-value=-.660 or Child's BMI (n=17) with Spearman's rho (-0.062) and p-value=.813

Table 8

Association Between Perceived Stress Levels of Homeschooling Children and Their Own Fitness Levels

	Child's Perceived Stress Level	
	Spearman's rho	<i>p</i>
Child PACER	-0.087	.777
Child Push-Up	-0.177	.528
Child Curl-Up	-0.376	.167
Child Sit-and-Reach	-0.108	.660
Child BMI	-0.062	.813

Table 9 represents the Parent's Perceived Stress Level in comparison to the demographic characteristics of the parent and child sample populations. One-way ANOVA's were used to determine significance in variance among the means between the demographic groups. No significance was noted when comparing Parent's Perceived Stress Level to Age ($F=0.359$), Marital Status ($F=0.192$), Education Level ($F=2.183$), Employment Status ($F=0.769$), Total Number of Children in Family ($F=1.645$), Child Age ($F=0.306$) or Child Gender ($F=1.923$).

Table 9

Comparison of the Parent Stress Levels in Comparison to the Parent and Child Demographic Characteristics

	Parent's Perceived Stress Level	
	F	<i>p</i>
Age	0.359	.899
Education Level	2.183	.235
Employment Status	0.769	0.652
Total Number of Children in Family	1.645	.227
Child Age	0.306	.928
Child Gender	1.923	.276

Table 10 represents the Children's Perceived Stress Level in comparison to the demographic characteristics of the parent and child sample populations. One-way ANOVA's were used to determine significance in variance among the means between the demographic groups. No significance was noted when comparing Children's Perceived Stress Level to Age (F=1.683), Marital Status (F=0.), Education Level (F=0.371), Employment Status (F=0.897), Total Number of Children in Family (F=1.051), Child Age (F=0.880) or Child Gender (F=1.051).

Table 10

Comparison of the Child Stress Levels in Comparison to the Parent and Child Demographic Characteristics

	Child's Perceived Stress Level	
	F	p
Age	1.683	.293
Education Level	0.371	.886
Employment Status	0.897	.569
Total Number of Children in Family	1.051	.544
Child Age	0.880	.593
Child Gender	1.051	.544

Note: Marital Status was excluded for not meeting assumption of ANOVA test

Table 11 displays the frequencies and percentages from parent responses on all 10 questions on the PSS-10 with ratings of how often (Never, Almost Never, Sometimes, Fairly Often, Very Often). When participants were asked to rate their nervousness and stress, the majority (78.9%) responded they Sometimes have felt this way in the past month. It was also determined that when participants were asked to rate how often they felt difficulties were piling up so high that they could not overcome them, the majority (73.7%) of participants responded these feelings occurred Almost Never to Never in the last month. However, it was also found that a majority (78.9%) of participants felt confident in their ability to handle personal problems at least Fairly Often. In addition, when asked how often that they felt on top of things, 57.9% of participants responded that they have felt this way at least Fairly Often in the last month.

Table 11

Frequencies and Percentages on PSS-10 Responses for Parents

	Never	Almost Never	Sometimes	Fairly Often	Very Often
In the last month, how often have you been upset because of something that happened unexpectedly?	1 (5.3)	2 (10.5)	14 (73.7)	2 (10.5)	--
In the last month, how often have you felt that you were unable to control the important things in your life?	1 (5.3)	10 (52.6)	6 (31.6)	2 (10.5)	--
In the last month, how often have you felt nervous and "stressed"?	--	--	15 (78.9)	4 (21.1)	--
In the last month, how often have you felt confident about your ability to handle your personal problems?	--	--	4 (21.1)	7 (36.8)	8 (42.1)
In the last month, how often have you felt that things were going your way?	--	--	6 (31.6)	11 (57.9)	2 (10.5)
In the last month, how often have you found that you could not cope with all the things you had to do?	5 (26.3)	7 (36.8)	5 (26.3)	--	2 (10.5)
In the last month, how often have you been able to control irritations in your life?	--	6 (31.6)	7 (36.8)	5 (26.3)	1 (5.3)
In the last month, how often have you felt that you were on top of things?	2 (10.5)	--	6 (31.6)	9 (47.4)	2 (10.5)
In the last month, how often have you been angered because of things that were outside of your control?	1 (5.3)	6 (31.6)	8 (42.1)	4 (21.1)	--
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	8 (42.1)	6 (31.6)	3 (15.8)	2 (10.5)	--

Table 12 displays the frequencies and percentages from child responses on all 10 questions on the PSS-10 with ratings of how often (Never, Almost Never, Sometimes, Fairly Often, Very Often). When asked how often they felt confident about their ability to handle personal problems, the majority (79.0%) responded they felt this way at least Fairly Often in the last month. When asked how often they felt things were going their way, only 15.8% rated this feeling Almost Never to Never in the last month. In addition, when asked how often they have felt nervous and

stressed, almost half (42.2%) of participants rated Almost Never to Never feeling this way and another almost half (42.1%) of participants rated Fairly Often feelings in the last month.

Table 12

Frequencies and Percentages on PSS-10 Responses for Children

	Never	Almost Never	Sometimes	Fairly Often	Very Often
In the last month, how often have you been upset because of something that happened unexpectedly?	4 (21.1)	7 (36.8)	8 (42.1)	--	--
In the last month, how often have you felt that you were unable to control the important things in your life?	6 (31.6)	4 (21.1)	8 (42.1)	1 (5.3)	--
In the last month, how often have you felt nervous and "stressed"?	4 (21.1)	4 (21.1)	3 (15.8)	8 (42.1)	--
In the last month, how often have you felt confident about your ability to handle your personal problems?	--	1 (5.3)	3 (15.8)	9 (47.4)	6 (31.6)
In the last month, how often have you felt that things were going your way?	1 (5.3)	2 (10.5)	3 (15.8)	10 (52.6)	3 (15.8)
In the last month, how often have you found that you could not cope with all the things you had to do?	5 (26.3)	7 (36.8)	6 (31.6)	1 (5.3)	2 (10.5)
In the last month, how often have you been able to control irritations in your life?	--	3 (10.5)	7 (36.8)	9 (47.4)	1 (5.3)
In the last month, how often have you felt that you were on top of things?	--	--	7 (36.8)	9 (47.4)	3 (15.8)
In the last month, how often have you been angered because of things that were outside of your control?	2 (10.5)	7 (36.8)	6 (31.6)	4 (21.1)	--
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	3 (15.8)	8 (42.1)	8 (42.1)	--	--

Table 13 shows descriptive statistics for parent responses to all 10 questions on the PSS-10. When asked how often they have felt nervous and stressed in the last month, the mean score for participant ratings was 2.21 with standard deviation 0.419, indicating an average rating of

“Fairly Often”. When asked how often they felt confident in their ability to handle personal problems in the last month, the mean score for participant ratings was 0.79 with standard deviation 0.787, also indicating an average rating of “Fairly Often”.

Table 13

PSS-10 Descriptive Statistics for Parent Responses

	Range	Mean	SD
In the last month, how often have you been upset because of something that happened unexpectedly?	3	1.89	0.658
In the last month, how often have you felt that you were unable to control the important things in your life?	3	1.47	0.722
In the last month, how often have you felt nervous and “stressed”?	1	2.21	0.419
In the last month, how often have you felt confident about your ability to handle your personal problems?	2	0.79	0.787
In the last month, how often have you felt that things were going your way?	2	1.21	0.631
In the last month, how often have you found that you could not cope with all the things you had to do?	4	1.32	1.204
In the last month, how often have you been able to control irritations in your life?	3	1.95	0.911
In the last month, how often have you felt that you were on top of things?	4	1.53	1.073
In the last month, how often have you been angered because of things that were outside of your control?	3	1.79	0.855
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	3	0.95	1.206

Table 14 shows descriptive statistics for parent responses to all 10 questions on the PSS-10. When asked how often they have felt nervous and stressed in the last month, the mean score for participant ratings was 1.79 with standard deviation 1.228, indicating an average rating of

“Sometimes”. When asked how often they felt confident in their ability to handle personal problems in the last month, the mean score for participant ratings was 0.95 with standard deviation 0.848, indicating an average rating of “Fairly Often”.

Table 14

PSS-10 Descriptive Statistics for Child Responses

	Range	Mean	SD
In the last month, how often have you been upset because of something that happened unexpectedly?	2	1.21	0.787
In the last month, how often have you felt that you were unable to control the important things in your life?	3	1.21	0.976
In the last month, how often have you felt nervous and “stressed”?	3	1.79	1.228
In the last month, how often have you felt confident about your ability to handle your personal problems?	3	0.95	0.848
In the last month, how often have you felt that things were going your way?	4	1.37	1.065
In the last month, how often have you found that you could not cope with all the things you had to do?	3	1.16	0.898
In the last month, how often have you been able to control irritations in your life?	3	1.53	0.772
In the last month, how often have you felt that you were on top of things?	2	1.21	0.713
In the last month, how often have you been angered because of things that were outside of your control?	3	1.63	0.955
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	2	1.26	0.733

CHAPTER V SUMMARY, CONCLUSIONS AND RECCOMENDATIONS

Summary

This study examined five research questions to determine what the perceived stress levels of homeschooling parents and children are and what level of association exist in regards to mental and physical health status of the children. By both parents and their children answering the PSS-10 survey questions, as well as examining pre-existing fitness data from the HPEP children, a greater sense for these possible associations were determined. The summary findings of this study are presented by the following five research questions.

Research Question 1. The first research question aimed to determine the perceived stress levels of homeschooling parents. It was hypothesized that homeschooling parents will have higher levels of perceived stress due to the nature of their role as both parent and teacher simultaneously. The mean score on the PSS-10 for parents was 14.46 with standard deviation 5.71 or approximately 36.2% of the maximum score of 40 indicating relatively low level of perceived stress. However, a majority (78.9%) of parents responded that “sometimes” they have felt nervous and stressed in the past month. Another 21.1% rated they had nervous and stressful feelings “fairly often” in the past month. None of the parent participants rated their past month as “never” or “almost never” experiencing nervousness and stressfulness. On the four “positively” stated items combined of the PSS-10, 63.2% of parents responded with a rating of “very often” indicating they are comfortable and confident in their abilities to handle or control various life responsibilities and stresses. According to Cohen & Janicki-Deverts (2012), these findings indicate a level of perceived stress lower (1.68) than the United States national average of 16.14 on the PSS-10 for women in 2009 during an eNation Survey of 2,000 adults. These results were very surprising as the researcher

hypothesized a much different outcome due to the nature of the homeschool parent and combining stresses of being not only a parent, but a teacher as well.

Research Question 2. The second research question aimed to determine the level of perceived stress experienced by homeschooling children. It was hypothesized that homeschooling children will experience increased levels of perceived stress as well due to the assumed perceived stress of their parents. Results showed that children followed a similar pattern of their parents with an overall mean score of 13.32 with standard deviation 5.49 or approximately 33.3% of the maximum score 40, indicating a relatively low level of perceived stress. Survey results indicated that 42.1% of children responded that they “almost never” or “never” felt nervous or stressed over the past month. However, another 42.2% children rated their feelings of nervousness and stress as “fairly often” over the past month. Among the four combined positive responses of the PSS-10, the mean score (after reverse coding) was 1.27 equivalent to a “fairly often” rating in level of confidence to handle life responsibilities and stresses.

No current literature established norm scores on the PSS-10 for children to compare to the sample population. However, studies such as the *Stress in America Findings* conducted by the American Psychological Association (2010) indicate that children and adolescents are experiencing increasing levels of stress for a variety of reasons related to both academics, personal and family circumstances. There has also been a notion in previous literature that children’s health is directly influenced by their parent’s health behaviors (Hohepa, Scragg, Schofie, Kolt & Schaaf, 2009). The closely similar mean scores (1.14 difference) between PSS-10 for homeschooling parents and their children indicate this may be evident in this sample population. In addition, the average perceived stress scores also suggest the children are experiencing lower levels of perceived stress similar to that of their parents.

Research Question 3. The third research question sought to determine if the previously stated association exists between the homeschool parent and their children. Specifically, the third research questions aimed to determine if the perceived stress levels of homeschooling parents had an association with the perceived stress levels of their children. It was hypothesized that parents who report higher levels of perceived stress will have an increased positive association with their child's perceived stress level. In other words, as parents perceived stress increases, their children's perceived stress will increase as well. Results showed that no significant correlation existed between the compared results of the PSS-10 for parents and the PSS-10 for children. Spearman's rho (0.20) and p-value=.412 indicated no significant correlation at the 0.05 level. Though not significant, this correlation suggests that a positive correlation does exist and as parent perceived stress increases by 1 on the PSS-10, their child's perceived stress increases by 0.20 (alternatively as child's perceived stress increases by 0.20 on the PSS-10, their parent's perceived stress increases by 1).

Research Question 4. The fourth research question sought to determine if the perceived stress levels of homeschooling parents had an association with their children's fitness levels taken from pre-existing FITNESSGRAM data. It was hypothesized that parents who reported a higher level of perceived stress would have a negative association with their children's fitness levels. The results showed that a significant correlation exists between Parent's Perceived Stress Level and Child's Sit-and-Reach score. Spearman's rho (-.500) p-value=.029 indicate this significance at the 0.05 level. This indicates a significant negative correlation does exist between the two variables. However, this could be due to the fact this was the only fitness measure which contained the full sample of children (n=19) providing enough power to detect significance. Interestingly, this was also the only fitness measure in which the majority (57.9%) of children fell under the Not Healthy

Fitness Zone criteria. The remaining fitness measures including Child's PACER (n=13), Child's Push-Up (n=15), Child's Curl-Up (n=15) and Child's BMI (n=17) all possessed some level of incomplete data from participants and showed no significance when compared to their parent's perceived stress level. However, the Spearman's rho correlation coefficient suggests negative correlations for all fitness measures. Although insignificant, this indicates that as parent's perceived stress increases, physical fitness levels tend to decrease for their child.

Research Question 5. The final research question aimed to determine if homeschooling children's perceived stress level have an association with their own fitness levels. It was hypothesized that children who report higher levels of perceived stress will have a negative association with their fitness level. Results showed no correlational significance between children's perceived stress level and any of the five fitness measures including Child PACER, Child's Push-Up, Child's Curl-Up, Child's Sit-and-Reach or Child's BMI. However, although statistically insignificant, the results followed a similar pattern in comparison to parent's perceived stress, indicating negative correlations between the variables. Therefore, it can be suggested that as child's perceived stress levels increase, their fitness levels tend to decrease as well.

Additional Findings

In addition to the original five research questions, several demographic characteristics of the homeschooling parent and child samples were also analyzed for further statistical significance. When comparing means for significance in variance between parent's perceived stress levels and the demographic characteristics of parent and child sample populations, no significance can be reported. The same is true when comparing child's perceived stress levels to the demographic characteristics. However, the greatest F-score value was noted when comparing parent's perceived stress levels to their education level (2.183). According to the World Health Organization, an individual's education level (especially lower), is likely linked with poorer health and stress.

Conclusion

Overall, the results of this study provided further insight into the homeschool family environment, which is remarkably unique, exceedingly understudied, but rapidly growing in popularity across the United States. Although limited statistical significant information can be reported, several intriguing findings were drawn from this study. While perceived stress levels have been widely examined and reported among a multitude of populations, currently, no research exists which has examined the perceived levels of stress experienced by individuals in homeschooling family populations. Determining the average levels of perceived stress experienced by both homeschooling parents and their children are important contributions to the growing literature on the homeschool community as well as the national and global stress concern.

As literature has previously suggested, a number of factors have considerable influence on the health and well-being of children; especially parents. Though the association between parents perceived stress levels and their children's perceived stress levels was found to be statistically insignificant, it still revealed an existing positive relationship between the two variables; further indicating possible influence of parental health behavior contributing to their children's health outcomes even in the homeschool environment.

It also was determined that a negative relationship exists between both parent perceived stress levels and child perceived stress levels with the child's fitness levels. Literature also has reflected that stress is a deterrent of a variety of health outcomes, including physical fitness. Though statistically insignificant, this study was able to determine that a similar relationship exists within the homeschool environment as well.

Homeschool families are increasing tremendously each year and are quickly becoming a substantial demographic in the United States. As health professionals all across the United States continue to strive for physical and mental healthfulness for all citizens, it is imperative researchers

continue to examine any and all causes of deter for accomplishing this objective. As homeschool family numbers continue to rise, it is crucially important to begin further examining their role in this equation. This study was able to further provide pivotal information necessary for capturing a deeper analysis and clearer picture of the homeschool family environment's impact on the pursuit of national and global health excellence.

Recommendations for Further Research

It is recommended that future researchers focus on further examining the influence of sociodemographic factors on the perceived stress levels of homeschooling families. These variables were cited recurrently throughout the literature as being highly contributable to an individual's level of experienced stress and should be further examined in the homeschool population as well. Researchers should also aim to determine the influence of specific stressors on homeschooling children such as academic pressures, relationships, etc. In addition, researchers should attempt to use more accurate measures of stress such as using cortisol swabs as this has been shown to be highly indicative of one's stress level. Lastly, it is also recommended that researcher attempt to capture a larger sample of the homeschool population in multiple geographic locations. The relatively small sample size (n=32) and geographic location in this study were limiting factors, but these results are still highly relevant and meaningful. However, if the sample size was much larger and encompassed a larger geographic region, there would be increasing opportunity to detect stronger correlations to make generalizations for the entire rapidly growing homeschool population.

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Appendix A

Email to Enrolled HPEP Families

Dear Families,

I hope this email finds you well. I wanted to take a minute to inform you about the upcoming research study that I will be conducting at IUP this year. The study will start during the HPEP [date]. The purpose of this study is to determine the health status of homeschooling families with the ultimate goal of developing resources and trainings that can help maintain or improve the overall health of local families.

If you decide to participate you and your child(ren) would complete a short 10-item stress survey which would be done on the [date].

If you are willing to participate in this study, I will have voluntary consent forms for the parents and assent forms for your children in grades 4-12 on [date] to review and sign (see attached both consent and assent). I hope you will consider participating in my study because the things I will learn from this study will help me and others learn more about fitness and health of homeschooling families.

If you have any questions or concerns about this study, please feel free to call (717)385-7408, or email, l.s.windish@iup.edu, me at any time. I am looking forward to working with you and your families and to having a successful semester in the Homeschool Physical Education Program.

Take care,

Lance Windish, BS.Ed
Graduate Assistant
Department of Kinesiology, Health, and Sport Science
230 Zink Hall
1190 Maple Street Indiana, PA 15705
Phone: (717)385-7408
Fax: (724)357-3777
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Faculty Sponsor

David A. Wachob, D.Ed, CAPE, CHES
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233 Zink Hall
Indiana University of Pennsylvania
Indiana, PA 15705
Phone: (724)357-3194
Fax: (724)357-3777
E-Mail: d.wachob@iup.edu

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730).

Appendix B
Site Approval Letter

Indiana University of Pennsylvania

Department of Kinesiology, Health, and Sport
Science Zink Hall, Room 225
1190 Maple Street
Indiana, PA 15705

Phone: 724-357-2771
Fax: 724-357-3777
Internet: <http://www.iup.edu/healthphysed/>

February 27, 2016

Dear Dr. Wachob:

I am writing this letter to introduce you to a study that I will be conducting with homeschooling families. I will be conducting a research study that will compare stress levels and fitness levels with the homeschool population.

The purpose of this project is to determine the relationship between parental stress levels with their child(ren)'s stress and fitness levels. Results of this study will be presented and published.

As the Director of the Homeschool Physical Education Program, I am writing you to specifically request site approval to participate in my study. I am interested in working with your program participants as part of my project. Please complete and return this letter to me at your earliest convenience. If you have any questions please do not hesitate to ask.

This project will be approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730) prior to starting this study.

Thank you very much for your time and consideration.

Lance Windish, BS.Ed
Graduate Assistant
Department of Kinesiology, Health, and Sport Science
230 Zink Hall, 1190 Maple Street Indiana, PA 15705
Phone: (717)385-7408
Fax: (724)357-3777
E-Mail: l.s.windish@iup.edu

SITE APPROVAL LETTER:

(Please check one)

Yes, I give permission for you to conduct this research study within the IUP Homeschool Physical Education Program, which is housed within the KHSS Department Services at Zink Hall.

No, I do not give permission for you to conduct this research study within the IUP Homeschool Physical Education Program, which is housed within the KHSS Department Services at Zink Hall.

Signature 

Date 2/27/16

Appendix C
PSS-10 for Parents

Name: _____

Age: _____

Gender (Circle): **M** **F**

Circle: **Mother** **Father** **Guardian**

Number of

Children _____

Marital Status (Circle): **Single**

Married

Education Level (Circle): **No High School Diploma**

High School Diploma

Bachelor's Degree

Current Graduate Work Graduate

Graduate Degree

Employment Status (Circle):

Full-Time Employed

Part-Time Employed

Stay-At-Home Parent

Perceived Stress Scale PSS-10 for Parents

0 = Never

1 = Almost Never

2 = Sometimes

3 = Fairly Often

4 = Very

Often

1.) In the last month, how often have you been upset because of something that happened unexpectedly?

0

1

2

3

4

2.) In the last month, how often have you felt that you were unable to control the important things in your life?

0

1

2

3

4

3.) In the last month, how often have you felt nervous and “stressed”?

0

1

2

3

4

4.) In the last month, how often have you felt confident about your ability to handle your personal problems?

0 1 2 3 4

5.) In the last month, how often have you felt that things were going your way?

0 1 2 3 4

6.) In the last month, how often have you found that you could not cope with all the things you had to do?

0 1 2 3 4

7.) In the last month, how often have you been able to control irritations in your life?

0 1 2 3 4

8.) In the last month, how often have you felt that you were on top of things?

0 1 2 3 4

9.) In the last month, how often have you been angered because of things that were outside of your control?

0 1 2 3 4

10.) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

0 1 2 3 4

Appendix D
PSS-10 for Children

Name: _____

Age: _____

Gender (Circle): M F

Perceived Stress Scale PSS-10 for Children

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1.) In the last month, how often have you been upset because of something that happened unexpectedly?

0 1 2 3 4

2.) In the last month, how often have you felt that you were unable to control the important things in your life?

0 1 2 3 4

3.) In the last month, how often have you felt nervous and “stressed”?

0 1 2 3 4

4.) In the last month, how often have you felt confident about your ability to handle your personal problems?

0 1 2 3 4

5.) In the last month, how often have you felt that things were going your way?

0 1 2 3 4

6.) In the last month, how often have you found that you could not cope with all the things you had to do?

0 1 2 3 4

7.) In the last month, how often have you been able to control irritations in your life?

0 1 2 3 4

8.) In the last month, how often have you felt that you were on top of things?

0 1 2 3 4

9.) In the last month, how often have you been angered because of things that were outside of your control?

0 1 2 3 4

10.) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

0 1 2 3 4