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Emotional Health of Parents and the Association of Mental Illness among Children

Ashley Wilson

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INTRODUCTION: Mental illness is a major public health problem, and has been observed as early as infancy and persists throughout childhood into adulthood. Mental illness among children can severely impair a development, academic achievement, and the ability to live a productive life. Emotional dysregulation among parents may be a risk factor for mental illness among their children. The aim of this study was to evaluate aspects of poor emotional health of parents and mental health problems among children, aged 6-17 years old in the state of Georgia and nationally.

METHODS: Data on 66,920 children between the ages of 6-17 years from the 2011-2012 National Survey of Children's Health (NSCH) were utilized. Poor emotional health in parents was defined as self-reported health status and stress levels. Adverse childhood experiences (ACEs) and substance abuse exposure were reported by parents, who served as proxy respondents for their children. Children's mental health problems were defined as parents reporting that their child had depression, behavioral/conduct problems, and anxiety. State level weighted estimates of the prevalence of mental health problems among children from Georgia were compared to national estimates from the NSCH. Multiple logistic regression models were used to determine the weighted adjusted odds ratio (AOR) for the association between parents' emotional health status with select mental disorders in children (using alpha level =0.05).

RESULTS: Estimates of mental health conditions of depression, anxiety, and behavioral problems among children 6 to 17 years in Georgia were 5.2%(95% CI: 3.0-7.4) for males and 6.5 %(95% CI: 3.5-9.5) for females; national estimates among children were (8.5%, 95% CI: 7.9-9.2) for males and 6.1% (95% CI: 5.5-6.7) for females. Results from the multiple logistic regression indicated that parents' emotional dysfunction was significantly associated with mental health problems among children at the state and national levels. AORs at the state level for mental health conditions in children were 2.5 (95% CII: 0.6-10.1) for fathers who reported poor overall health and 0.2 (95% CI: 0.1-1.6) mothers who reported their poor overall health. At the national level there was an increased AOR for mental health conditions in children with reports of poor overall health from their mothers (AOR: 4.72 95% CI: 3.6-6.2) and fathers (AOR: 3.8 95% CII: 2.9-4.9). Parental stress also increased the likelihood of mental health problems among children at the states level, (AOR: 4.7 95% CII: 1.5-14.1); acknowledgment of substance abuse (AOR: 3.795% CII: 1.4-9.8); and reports of adverse childhood experiences (AOR: 1.8 95% CI 0.7-4.5). Similar findings were observed at the national level.

CONCLUSION: Given the results of this study, parental emotional health appears to be a factor that is strongly associated with mental health problems among children. Understanding that parental emotional health is a predictor of mental health problems in children can inform current parenting interventions and increase awareness of the need for family mental health services.

Emotional Health of Parents and the Association of Mental Illness among Children

by

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APPROVAL PAGE

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Author's Statement Page

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CHAPTER I

INTRODUCTION

1.1 Background

Mental illness is a global public health problem and contributes to the overall burden of chronic diseases worldwide. According to the Morbidity and Mortality Weekly Report, approximately 450 million individuals suffer from some form of mental illness ("The Role of Public Health in Mental Health Promotion", 2016); however, the heavy burden of mental illness is largely underestimated and overlooked (Ngui, Khasakhala, Ndetei, & Roberts, 2010). Mental illness is often associated with distress and impaired functioning and commonly refers to diagnosable mental disorders, in which, alterations of the mood, behavior, and thinking transpires ("CDC - Mental Health Basics - Mental Health", 2016).

In a recent review of the literature, the global prevalence of mental disorders was stated to be between 12.2% and 48.6% (Tomlinson & Lund, 2012). Within an annual assessment, approximately 30% of the population suffers from mental disorders and roughly two thirds of those affected do not receive the care they need (Ngui, Khasakhala, Ndetei, & Roberts, 2010). In regards of suffering, individuals affected by mental illness display a diminishing quality of life. Without proper maintenance of this chronic disease and assistance, mental disorders will continue to account for a huge proportion of disabilities in comparison to other chronic diseases such as cancer and heart disease (Reeves et al., 2011). Researcher Ngui and colleagues projected the total burden of mental disorders will increase to 15% by the year 2020 and the most common disorders

such as depression and anxiety will immobilize more individuals than those dealing with the complications of AIDS, heart disease, and accidents combined (Ngui, Khasakhala, Ndetei, & Roberts, 2010).

The steady increase of mental illness overall has amplified surveillance of the disease especially among children. The impact on children and the stigma associated with mental illness are undoubtedly of interest. There has been a mere absence of empirical data on the context and magnitude of mental conditions from national aspects representing the youth. In comparison to the last decade, within recent years the prevalence, diagnosis, and treatment of mental illness has improved; in addition to, initiatives to address statistics of mental health in children, courtesy of the efforts of National Institute of Mental Health (Merikangas et al., 2010). The onset of mental illness has been observed as early as infancy and persists throughout childhood. If left untreated, mental conditions can severely impair a child's development, academic achievement, and the ability to live a productive life ("Child and adolescent mental health", 2016). Researchers Merikangas and colleagues investigated the lifetime prevalence of mental disorders and the proportion associated with impairment among US adolescents, concluding that the majority of mental disorders emerged prior to adulthood. Furthermore, there were high prevalence rates of mental illness and 1 in 5 youth met criteria for severe impairment and distress due to their mental condition (Merikangas et al., 2010).

According to the World Health Organization, between 10-20% of children and adolescents experience mental disorders worldwide ("Child and adolescent mental health", 2016). Within the United States, roughly 13-20% experience mental disorders

within a given year and only a few undergo adequate healthcare (Perou et al., 2013 and Merikangas et al., 2010) This is most likely due to the scarcity of mental health interventions to prevent and promote mental health (Patel, Flisher, Hetrick, & McGorry, 2007).

Morbidity and Mortality Weekly Reports of the CDC states that at least 40% of children have more than one type of mental disorder (Perou et al., 2013). In addition, mental disorders among youth commonly occur with other chronic health conditions, i.e. Diabetes (Perou et al., 2013). The most pervasive of childhood mental illness is both mood and anxiety disorders; often characterized by depression, sadness, fear, and or low-self-esteem, respectively (Reid, 2014). In 2010, mood disorders such as depression, were reported as the most common diagnosis for hospital stay among children in the United States.; reports giving an increase from 10 to 17 per 10,000 within the population (Perou et al. , 2013). Included in the vast burden of mental illness among children were behavioral and conduct disorders. Researchers Merikangas et al. documented and investigated the onset of major mental disorders among adolescents. The researchers concluded that among this group of individuals, within 50% of adolescents displayed signs of anxiety disorders by the age of 6, behavior disorders were exposed by the age of 11, and mood disorders were developed by age 13 (2010). Correspondingly with research previously mentioned, the National Comorbidity Survey Replication-Adolescent Supplement reported the onset as well as the prevalence among 10,123 adolescents. The study revealed anxiety disorders to being the most prevalent within 31.9%, followed by behavioral disorders being dominant in 19.1%, mood disorders to be 14.3% and lastly an overall prevalence of mental disorders to affect 22% of adolescents; all factors once again

contributing the overall burden of disease among young people (de Girolamo, Dagani, Purcell, Cocchi, & McGorry, 2011).

The source and complexity of suffering from mental disorders among children is due to several factors. For example, sociodemographics, healthcare, family, and the community have been associated with increased risk for mental, behavioral, and developmental disorders (Bitsko et al. 221-226). However, in the scope of current research, family related aspects i.e., parents' display of emotions; has emerged as an integral determinant for mental illness within children (Reid, 2014). Parents and the entire family are the most influential determinant regarding a child's lifestyle and values, thus the health and well-being of children are linked to parent's physical, social, and emotional health (Schor, 2003). Positive parenting is the greatest recipe for the best start in life for children and is fundamental for reducing mental health. Conversely, when parents display signs of adverse parenting such as unsupportive relationships or lack of parental involvement, this is where characteristics of decreased levels of emotional health come into play. Boe et al, mentioned how characteristics of the above are associated with elements such as anxiety, depression, hostility behaviors, etc. in adolescents and children (Bøe et al., 2013).

1.2 Purpose of Study

The research area of focus will provide additional understanding between emotional health of parents and the correlation of mental illness in children, not only at the national level, but more specifically at the state level in Georgia; in order to increase mental health surveillance and improve the use of mental health interventions. Various studies focus on the efficacy of parents' emotional health and the association of mental

illness in children at a national level. However, limited studies are available to assess the association at a state/local level (Reid, 2014). The research objective is to examine the relationship of decreased levels of emotional health in parents and the association of mental health problems in children at a state and local levels within Georgia, in comparison to the national level.

Mental illness is one of many chronic diseases that has inadequate visibility, policy attention, and funding (Tomlinson & Lund, 2012). Published data from the World Health Organization implies that within the last ten years, only slight allocation of resources for mental health care has occurred (Tomlinson & Lund, 2012). The scope of the study will take into context previous and current literature pertaining to the topic, while examining effects of mental health problems among children. Moreover, recommendations for acknowledgement of mental illness will be proposed for public health officials to take initiative and reduce the prevalence of mental illness.

1.3 Research Questions

The research questions that will be addressed in the study are:

1. How does emotional health among parents impact mental illness in children?

Comparison between Georgia state levels and national level will be made.

Hypothesis #1: Poor emotional health status in parents will be associated with mental health problems among children 6 to 17 years of age in Georgia and nationally.

2. Does the association between emotional health in parents and mental health problems in children differ when examined separately for mothers and fathers?

Hypothesis #1: The association between emotional health in parents and mental health problems in children will be greater for mothers with emotional health problems compared to fathers with emotional health problems.

3. Is sex associated with mental illness in children when parents report decreased levels of emotional health?

Hypothesis #1: Sex is associated with mental illness in children when parents report decreased levels of emotional health.

CHAPTER II

LITERATURE REVIEW

Mental illness rates among children are unapologetically high and are important public health issues due to the prevalence, early onset, and disease impact (Perou et al. , 2013). Mental illness adversely affects health outcomes. The prevalence of mental disorders in children is predominant due to the onset during childhood and lasting throughout adulthood. Studying individual markers for decreased levels of emotional health in parents enables the investigation of mental illness in children.

Different aspects that affect mental illness in children will be evaluated. For example, parental substance abuse, stress levels, and adverse childhood experience; all perceived as decreased emotional health in parents. The most prevalent aspects of mental disorders in children will be examined, such as depression, anxiety, and behavior/conduct problems. High rates of anxiety disorders, mood disorder, and behavior disorders have all been studied within children suffering from mental illness (de Girolamo, Dagani, Purcell, Cocchi, & McGorry, 2011).

2.1 Emotional Health

The scope of emotional health, often referred to as the emotional well being, is defined as a perception of satisfaction, happiness, cheerfulness, or peacefulness amongst an individual ("CDC - Mental Health Basics - Mental Health", 2016). Emotional health, though less studied as a single context, has been documented as a link to mental illness among children. As previously mentioned, the Report of the Task Force indicates that the health of children is linked to their parents' physical, social, and emotional health practices (2003). In addition, Reid observed that emotional health in parents increases the

risk for mood and anxiety disorders among Florida children. Reid found that 8% of children were living with a parent who reported poor emotional health and within the 8%, 4.5% reported a mood or anxiety disorder. Furthermore, the odds of developing a mood or anxiety disorder in association with parents who displayed poorer emotional status was five times greater in comparison to those children whose emotional status was good (Reid, 2014).

2.2 Stress

Acute, chronic, or traumatic stress-related spectrums of life are a substantial part of mental health. Divorce and unemployment are related to acute stressors, whereas chronic stressors may include work-family conflict or insufficient income. Physical or sexual assault or abuse is examples of traumatic stress. These various categories of stress contribute to mental health outcomes such as substance abuse, alcohol dependence, or major depressive disorders (Thoits, 2010). As well, these stressors can severely impact emotional health. Stress can alter the ability of a person to care for themselves and their family due to the conditions of physical or emotional tension. Common reactions to stressful events are typically signs of shock, frustration, or even a disinterest in usual activities. Not to mention, depression and anxiety are emotions associated with stress as well ("Coping with Stress", 2015).

Elements of stress for parents, i.e. the workplace, can have adverse effects on their physical health. Stress can also undermine parents' confidence and emotional well-being; parents may also bring home their frustration. Parents who experience high levels of stress and strain also have children who progress less than others children. Thus, parental stress has an adverse impact on their children (Schor, 2003 and Ponnet et al.,

2012). Stress may increase the risk of mental illness among parents, affect parenting skills, and resources. Ultimately, this may “foster an environment at odds with healthy child development.” (Meadows, McLanahan, & Brooks-Gunn, 2007). There are additional life stressors, such as unemployment, that’s responsible for depression and anxiety, as well as child behavior problems. Ponnet et al. documented parenting stress and depressive symptoms of mother as a determinant of parent-child communication. Positive parent-child communication is related to early child adjustment, fewer depressive symptoms, and fewer delinquent behaviors. Conversely, lower quality of parent-child communication is when parents experience higher levels of stress, which leads to them being more demanding and less responsive in their parenting style; as well as less involved with their children. Children then suffer from social impairment, lower academic performance, and increased rates of depression. In conclusion of the research, Ponnet et al. also documented that parenting stress was associated with less open parent-child communication (2012).

2.3 Adverse Childhood Experiences and Childhood Mental Disorders

Adverse childhood experiences (ACE) are common with an enduring association between health risk behaviors, health status, and disease (Felitti et al., 1998). Felitti et al. took to assess exposures during childhood that impact the following outcomes as an adult: quality of life, healthcare, disease, and mortality. Childhood exposures that deterred health outcomes as adults were defined as childhood abuse: psychological, physical, and sexual abuse. The other portion was defined as household dysfunctions: mental illness, exposure to substance abuse, criminal behavior, spousal violence, and criminal activity within the household. Researchers documented a cumulative impact between the

relationship of child abuse or household dysfunction and risk factors for cause of death among adults; the most prevalent of childhood exposure, effecting 25.6% of adults was substance abuse. As ACE increased, so did health risk factors such as suicide attempts, depression, and smoking. Furthermore, disease and poor health increased due to adverse childhood exposures; signifying that these experiences severely impact the health status within adults (1998).

In addition, Dube et al. investigated how ACE can lead to numerous negative health outcomes such as STD, depressed affects, suicide attempts alcoholism, etc. among birth cohorts between 1900-1978. ACE scores were described as self-reported exposures to childhood events ranging from 0-8 (2003). The study revealed that risk of negative health outcomes increased as ACE scores among participants increased. ACE increased the initiation of risky adolescent behaviors such as illicit drug use. Dube et al. examined the relationship between ACE and illicit drug use among adolescents. Results revealed that ACE increased the use of illicit drugs with a 2-to-4- fold increase by the age 14 and increased the use into adulthood (2003).

Childhood experiences impacts parenting (Szilagyi et al., 2016). Parents who experience difficulties such as neglect, household dysfunction, or abuse may experience challenges when caring for infants (Steele et al., 2016). O'Neal and colleagues investigated that ACE has lasting penalties for a parent and for their children. The study used military families that were civilians and active-duty to examine the impact of ACE on children. As reported, parents who experienced early stressful experiences revealed to have poorer physical health, depressive symptoms, and the inability to display a positive parenting environment. The poor functioning outcomes of parenting due to ACE was

related to poor outcomes in children as well. For instance, these children experienced fewer social connections, depressive symptoms, and diminishing physical and mental health (O'Neal, Richardson, Mancini, & Grimsley, 2016).

Early childhood experiences influence how adults parent their children. ACE is considered a risk factor for unhealthy parent-child relationships (Steele et al., 2016). For instance, children who experience parental neglect and abuse or parental substance abuse are at risk for conduct- disordered behavior and may cause mental health problems.

According to researchers McGilloy et al., conduct disorder is a primary cause of disability in childhood. Researchers also mention that early onset of behavioral problems may be due to low parental warmth and involvement. Conversely, a positive parent-child relationship can lead towards a positive behavioral adjustment in children (2014).

Moreover, reports from the Task Force for Family imply that behavior problems among children may be due to the families' inability to cope with high levels of stress they are experiencing (2003). Hser and colleagues revealed that family problems were significant for externalizing behaviors in children (2013). Tully, Iacono, and McGue explored influences upon adolescents and found that when parents experienced major depression, this was linked to major depression and disruptive, behavior disorders in adolescents (2008).

2.4 Parenting and Substance Abuse

Terms of parental substance abuse are a risk factor for adverse outcomes in children. Children, whose parents suffer from substance abuse, tend to experience higher rates of maltreatment, behavioral, social, and emotional issues (Lewis, Holmes, Watkins, & Mathers, 2014). Researcher Wolfe focused on alcohol use disorder as context of

substance abuse. The study mentioned nearly 18% of adults abused alcohol and near 13% became physically dependent within the United States. Alcohol abuse makes nature of employment and positive family roles very difficult. Furthermore, mental health of children is vulnerable to parental alcohol abuse. From the scope of the research, Wolfe concluded that a great deal of significance between alcohol abuse disorders and child internalizing and externalizing problems. As well, the significance between the preceding remained as a profound effect on child's mental health even after controlling for cofounders such as SES, sex, race, and marital status (2016). Lewis et al. evaluated the use of interventions to reduce impact that parental substance abuse displays on children after participation in the Supporting Kids and Their Environment program (SKITE). In the SKITE program, numerous improvement among children were display, such as decreased in "thought problems", anxiousness, depression, and a reduction in aggressive behavior; all which were common experiences of children whose parents were suffering from substance abuse (2014).

2.5 Anxiety and Depression among children

Depression and anxiety are forms of mental illness that can affect children. Anxiety and depressive disorders in children, adolescents, and young adults may be diminishing and tremendous (Asselmann, Wittchen, Lieb, & Beesdo-Baum, 2014). Anxiety disorders is labeled as the most frequent of all the mental disorders among adolescents. During periods of childhood, adolescence, and young adulthood, individuals are at a high-risk of developing anxiety disorders. Studies reveal that there was more prevalence of anxiety among females for this particular mental illness and will less likely decrease over the course of adolescence (Asselmann & Beesdo-Baum, 2015). The onset

of anxiety often occurs very early within childhood, usually around the ages of 2-3 years old.

An important area that has contributed to child anxiety is parenting (Wood et al., 2003). Parents may influence childhood anxiety disorders due to parenting factors such as being overbearing or even experiences of their own anxiety. Specifically, certain factors such as maternal over involvement and control have been isolated as the focus for child anxiety disorders (Lazarus et al., 2016). Wood et al., conducted a meta-analysis to understand the significance between parenting and child anxiety. Within review of the context, Wood et al. examined three major parenting dimensions concerning child anxiety: parental control, acceptance, and modeling of anxious behavior. The control category for parenting style and behavior was defined as excessive regulation of a child's action, overprotection, or controlling how child thinks or feels. Acceptance was referred to as parental warmth, acceptance of their child's feeling or behavior, and active listening. Lastly, modeling of anxious behavior involved explaining problems to children as irresolvable or encouraging children to view problems as a disaster (2003). Results of the meta-analysis implied that the context of parenting behaviors was integral for explaining linkages between parenting and childhood anxiety. Out of the three dimensions listed previously, observed parental controlling behaviors within parent-child interactions was linked to increased shyness and child anxiety within various studies (Wood et al., 2003).

Lazarus et al. investigated the association between mother and father challenging behaviors and childhood anxiety. In the study, challenging parenting behavior was comprised of how well parents influence risk-taking, assertiveness, fright; all in which

induce competence and anxiety prevention in children. Parents completed a Challenging Parenting Behaviors Questionnaire (CPBQ) that assessed once again, aspects of competition, social daring, assertiveness, risk-taking, etc. For example, a particular question asking within the questionnaire stated “If my child thinks he/she cannot do something, I encourage them to try again.” In final investigation of the research, authors concluded that as parents displayed challenging behavior, child anxiety symptoms decreased. As well, fathers were documented as displaying more risk-taking and competitive behaviors than mothers, ultimately reducing anxiety among their child (2016). Overall, this study is consistent with previous finding that parents impact child anxiety disorders.

In addition to anxiety, adolescent depression can be associated with outcomes such as poor academic performance, social difficulties, and substance abuse. Adolescent depression is more common among females rather than males and many are hesitant to seek professional help for their mental illness. Thus, individuals who refuse to seek assistance bypass diagnosis and many display symptoms that persist throughout adulthood. Children and adolescents who have a better understanding of their feelings, thoughts, and actions will achieve a greater understanding of their mental behaviors (Garmy, Berg and Clausson, 2015). Depression, anxiety, and social anxiety in children are associated with the manner in which they interact with their parents.

CHAPTER III

METHODS

3.1 Data Source

The data for the purpose of this study were obtained from the 2011-2012 National Survey of Children's Health (NSCH- Data Resource Center for Child and Adolescent Health", 2016). The dataset for the health survey is publically available and represents the physical and emotional health of children, ages 0-17 years old ("SLAITS - National Survey of Children's Health", 2016). Factors pertaining to the health and well-being of children are also represented and includes variables such as medical homes (medical care for infants, children, and adolescents), family interactions, parental health, school and after-school experiences, and access to safe neighborhoods. Information for the NSCH is available at the state-level as well as local level. Currently, the survey is conducted in all 50 states and D.C. As well, the survey is conducted in the Virgin Islands, but that requires a separate dataset from the United States. During 2011-2012, 95,677 surveys were completed nationally for NSCH and around 1,811-2,200 per state. Results of the survey were weighted to represent the population for non-institutionalized children (NSCH- Data Resource Center for Child and Adolescent Health", 2016).

3.2 Study Population

The current study used a cross-sectional study design with data that was collected using random telephone survey that samples non-institutionalized children ages 0-17 years old. Data collection for the NSCH and NS-CSHCN surveys were conducted using the "State and Local Area Integrated Telephone Survey" or SLAITS. This approach was developed by the National Center for Health Statistics (NCHS), where telephones were

randomly dialed to identify households with one or more child under the age of 18 years old and to collect information on a variety of health topics at the state and local levels. Respondents for the survey was parents or guardians who was knowledgeable of the health and healthcare of the child. ("SLAITS - National Survey of Children's Health", 2016 and (NSCH- Data Resource Center for Child and Adolescent Health", 2016).

3.3 Inclusion and Exclusion Criteria

This current study performs secondary analysis on data provided by the NSCH. For the purpose of this study, the population of interest was children ages 6-17 years old; children below the age of 6 years old were excluded. Respondents for Georgia were compared to National findings. There were a total of 1,848 parent respondents for Georgia. Among the total respondents for Georgia, the sample size was 1,240 children within the household between the ages 6-17. For national analysis, the total sample size was 65,680 children between the ages 6-17.

3.4 Measures/Variables

Age:

Age is identified as the selected child's age at the time of the interview. The variable '*ageyr_child*' included children from the ages 0-17 years old. However, for this analysis ages 6-17 years old were selected and the variable was renamed '*age*'. As well, this variable was grouped into three specific age ranges:

(1)6-10 year old

(2)11-14 year old

(3)15-17 year old

Race:

The classification of races among children is identified by the variable ‘*racer*’ within the survey. However, the variable was renamed ‘*race*’ and the grouping for the variable remained the same.

(1)White

(2)Black

(3)Other

Sex:

Sex is the biological characteristics of the selected child within the survey. The category for grouping the sex of the child remained the same; however the variable was renamed ‘*sex*’ as (1) Male and (2) Female.

Education Level of Parents:

Education Levels of Parents assesses the levels of education obtained by each parent. The NSCH provided two variables that evaluated education levels: ‘*educ_momr*’ and ‘*educ_dadr*’ that were renamed ‘*educmom*’ and ‘*educdad*’, respectively. The category for each education level remained the same: (1) < High School Education, (2) High School Graduate, and (3) > High School Education.

These variables listed previously will be tested as confounders when examining the relationship of poor emotional health in parents and mental health problems in children ages 6-17 years old.

Family Structure:

Family structure will be based on self-report from parents about the structure of the household and the marital combination. The variable ‘*fam_mar_cohab*’ was renamed

'family' and regrouped into 3 categories: (1) Single-parent household that included: single mothers who were never married or mothers who were married, but living separately from their spouse. (2) Two-parent household that included parents that was married or cohabiting. (3) The *'others'* category was comprised of formerly married parents, never married parents, or no parents within the household.

Relationship:

A frequency analysis was assessed to determine the count and relationship of the respondents to the selected child. As well, the frequency count was determined to investigate the total number of mothers and fathers responding on behalf of the child or the other parent. A cross tabulation was evaluated for the overall health status of the parents and the association of mental health problems among the selected child. This cross tabulation was also controlled for the relationship the responding parent had towards the selected child. However, this information was for analysis explanation purposes and not added to the tables.

Dependent Variables

Mental Health Problems:

Mental Health problems are defined as parent reports of mental problems within their children. The CDC defines mental illness as diagnosable mental disorders that affect thinking, mood, and/or behavior ("CDC - Mental Health Basics - Mental Health", 2016). Thus, the following variables are chosen as the scope of mental health among this dataset and will be determined by the following questions:

Mental Health Problems: (3 items)

Depression: "Does [S.C.] currently have depression?"

Anxiety: "Does [S.C.] currently have anxiety problems?"

Behavior/conduct problems: "Does [S.C.] currently have behavioral or conduct problems?"
("SLAITS - National Survey of Children's Health", 2016)

These variables were grouped into a single category to answer 'Does your child have mental health issue?' and coded (1) Yes and (2) No. 'Mentalprob' is the new variable for an overall summary of mental health problems among children ("SLAITS - National Survey of Children's Health", 2016).

The survey included a question about a physician's diagnosis of mental health. In order to validate parental reports of mental health problems amongst their child, a cross-tabulation between the doctor's diagnosis of mental health problems and parental reports of mental health problems was assessed. The associated p-value ($p=0.1349$) from the chi-square did not reveal a statistical significance between a doctor's diagnosis of mental health and parental reports of mental health problems amongst children.

Independent Variables

The independent variables will include variable pertaining to the emotional health status of parents. The answers to these questions are self-reported re-categorized into new variables.

Poor Emotional Health:

Emotional Health within the purpose of this study is defined as overall self-evaluation of health, stress-related questions, references to substance abuse, and adverse childhood experiences to the following question:

Overall Emotional and Mental Health of Parents: (2 items)

The overall emotional and mental health of parents were assessed using self-reports. The following questions were asked and answered pertaining to their health status:

"Would you say that, in general, [[S.C.]'s [MOTHER TYPE]'s / your] mental and emotional health is excellent, very good, good, fair, or poor?"
("SLAITS - National Survey of Children's Health", 2016).

“Would you say that, in general, [[S.C.]’s [FATHER TYPE]’s / your] mental and emotional health is excellent, very good, good, fair, or poor?
(S.C. = selected child) ("SLAITS - National Survey of Children’s Health", 2016).

These variables were re-coded and categorized to (1) Fair/Poor Health and (2) Excellent/Good Health. As well, a new variable was created: ‘*mommyhealth*’ and ‘*daddyhealth*’ that evaluated “How is your overall emotional and mental health?” (“SLAITS - National Survey of Children’s Health”, 2016).

ACE: (7 items ACE1, ACE3-8)

ACE1: “Since [S.C.] was born, how often has it been very hard to get by on your family’s income, for example, it was hard to cover the basics like food or housing?”

ACE3: “Did [S.C.] ever live with a parent or guardian who got divorced or separated after [S.C.] was born?”

ACE4: “Did [S.C.] ever live with a parent or guardian who died?”

ACE5: “Did [S.C.] ever live with a parent or guardian who served time in jail or prison after [S.C.] was born?”

ACE6: “Did [S.C.] ever see or hear any parents, guardians, or any other adults in [his/her] home slap, hit, kick, punch, or beat each other up?”

ACE7: “Was [S.C.] ever the victim of violence or witnessed any violence in [his/her] neighborhood?”

ACE8: “Did [S.C.] ever live with anyone who was mentally ill or suicidal, or severely depressed for more than a couple of weeks?” (“SLAITS - National Survey of Children’s Health”, 2016).

Adverse childhood experiences were assessed for children. Parents completed the survey for the following items, categorized as adverse childhood experiences. In addition, parents completing the survey served as the representation for their child’s ACE exposure. This variable was created to understand risk factors that affect children. As listed, ACE exposure for the intent of this study included ACE’s 1, 3, and 4-8. For the purpose of this study, each ACE was dichotomized into new variables and a single variable, ‘*ACEexpo*’ was created for the purpose of this study that examined “*Adverse Childhood Experience exposure?*” coded (1) Yes and (2) No.

Stress: (4 items)

In this particular study, stress was evaluated based on responses to the following questions that if parents felt aggravated or annoyed from parenting. This was included as an aspect of decreased levels of emotional health in parents.

In general, how well do you feel you are coping with the day to day demands of [parenthood / raising children]?

“During the past month, how often have you felt [S.C.] is much harder to care for than most children [his/her] age?”

“During the past month, how often have you felt [he/she] does things that really bother you a lot?”

“During the past month, how often have you felt angry with [him/her]?” ("SLAITS - National Survey of Children's Health", 2016).

Each variable was renamed and dichotomized to two categories of (1) Sometimes/Usually/Always and (2) Never/Rarely for 'was dichotomized to (1) Not Very well and (2) Very Well. In addition, once these items were re-categorized into a new variable that assesses "Are you stressed?" with codes, (1) Yes and (2) No.

Substance Abuse:

This particular section evaluates if the selected child lives were among exposures to substance abuse. 'ACE9' is a part of the original ACE study from researchers, Felitti et al, (1998). The following question was singled as a factor of poor emotional health of parents and a risk for mental health problems among children for the purpose of this study. Similar to the other ACE's, ACE 9 was evaluated for the children. ACE 9 is a status for substance abuse exposure among children, in which responses were completed by their parents. As mentioned previously with the other ACE's, parents served as a proxy for their child's substance abuse exposure.

ACE9: "Did [S.C.] ever live with anyone who had a problem with alcohol or drugs?" ("SLAITS - National Survey of Children's Health", 2016). The variable was recoded as (1) Yes and (2) No and a renamed '*substance*'.

3.5 Data Analysis

Statistical Analysis Software (SAS) 9.4 was used to analyze data and compute statistical testing. All estimates were weighted. Descriptive variables were derived using sociodemographic variables. Prevalence estimates for poor emotional health in parents and mental health problems in children were calculated. Adjusted odds ratio and 95% confidence intervals were calculated using multivariable logistic regression; in order to determine the relationship between decreased levels of emotional health and mental issues. Covariates included in all models to control for confounding included age, race of children, education level of parents, and overall family structure.

CHAPTER IV

RESULTS

4.1 Descriptive Characteristics

Descriptive characteristics of children and the parents residing within the state of Georgia are shown in table 1. Overall, there were 1,240 children in the database; however, due to missing data in the ‘*race*’ and ‘*sex*’ category, the frequency for these two variables will not equal 1,240. The majority of the sample size was between the ages of 6-12 years old (45.5%), ‘male’ (50.9%), and ‘white’ (50.9%). The percentage of the study population with mental health issues was 5.8%, whereas 94.2% did not possess any mental health problems.

Nearly 6% of the children who displayed mental health problems lived in a two-parent household, where the parents were either currently married or cohabiting. In addition, 2% of children and adolescents resided within a single parent household with their mother. Roughly 9% of children had no parents in the house, parents were formerly married, or parents were never married—also known as the ‘*Others*’ category in table 1. More than half of both the mothers (65.9%) and fathers (62.2%) received higher than a high school education.

Prevalence of poor/ fair overall health of mothers was 8.4%, which was higher than for fathers (3.2%). Additional elements of poor emotional health were measured such as stress levels of parents, adverse childhood experiences (ACE), and substance abuse. Majority of parents (52.4%) answered ‘*Yes*’ to being stressed; moreover, parental reports of adverse childhood experiences and exposure to household substance abuse amongst children, was 49% and 10.8% of respectively.

There were descriptive characteristics for national data as well within table 1. There were a total of 65,680 in the database for national data. Similar to Georgia data, majority of the children selected were between the ages 6-12 (41.2%), white (66.4%), and male (51.2%). Also, 7.3% of children displayed mental health problems, whereas 92.7% did not display mental health problems. The majority of the selected children resided within a two-parent household (72.6%). Furthermore, 19.6% resided within a single-parent household and 7.8% fell within the 'Other' category for family structure.

In coincidence with Georgia data, most parents received beyond a high school education; 64.0% of mothers received beyond a high school education and 61.6% of fathers did as well. Poor/fair overall health for mothers was 7.5%; however, was 4.6% for fathers. Parental reports of ACE amongst children were 50% for being exposed and 50% for not being exposed. Most parents believed they were stressed (50.7%) and parental reports of exposure to substance abuse were 12.9% versus those parental reports of no exposure to substance abuse (87.1%).

4.2 Prevalence Data of mental health problems among children

Table 2 presents the prevalence of mental health problems comparing Georgia data to the National data. The national level had a total of 65,680 total reports, whereas Georgia had a total of 1,240 reports.

The prevalence of mental health issues for children between the ages of 6-17 in Georgia was 5.2% (95% CI: 3.0-7.4) for 'males' and 6.5% (95% CI: 3.5-9.5) for 'females'. However, focusing on the national prevalence, the majority, 8.5% (95% CI: 7.9-9.2), was 'males' and 6.1% (95% CI: 5.5-6.7) was 'females'. Race displayed a minor

variance in those children with mental health problems at the state level. For instance, more reports of mental health problems were among 'Whites' (8.0%, 95% CI: 5.0-10.9), but within close proximity was the 'Others' category (7.8%, 95% CI: 0.6-15.0) for Georgia findings. As for national data, the prevalence of mental health problems among children was 7.8% (95% CI: 7.2-8.3) for 'Whites' and 6.2% (95% CI: 5.1-7.2) for those children within the 'Others' category. The occurrence of mental health issues for 'Blacks' was 7.4% (95% CI: 6.1-8.6) in reference to national data and 2.9% (95% CI: 0.7-5.1) for state findings.

The correlation of mental health problems based on family structure is displayed in table 2 as well. Among these children with mental health problems, Georgia data displayed that 4.9% (95% CI: 1.1-8.8) were living in a 'single-parent home', 5.1% (95% CI: 3.2-7.0) were within a 'two-parent household', and about 15% (95% CI: 3.7-25.5) fell into the 'Others' category. In comparison, the national data revealed that 5.6% (95% CI: 5.2-6.1) of children with mental health problems resided within a 'two-parent household', and 11.8% (95% CI: 10.5-13.0) lived in a 'single-parent home'. Conversely, majority of the children (12.2%, 95% CI: 10.0-14.4) at the national level fell within the 'Others' category as their family structure.

Furthermore, table 2 displayed the education level of the each parent. Nationally, most children (7.7%, 95% CI: 6.8-8.7) with mental health problems resided with their mothers, who were a high school graduate. In contrast, Georgia data displayed that more children (5.9%, 95% CI: <0.01-12.4) resided with their mother who had less than a high school education. National prevalence revealed that 7.5% (95% CI: 5.96-8.93) of children with mental health problems lived with mothers with less than a high school education;

around 6.7% (95% CI: 6.2-7.3) of these children lived with mothers who completed more than a high school education. At the state level, 5.3% (95% CI: 3.4-7.3) of children showed signs of mental health issues when mothers had advanced education beyond high school and 3.9% (95% CI: <0.01-7.9) when their mothers were high school graduates.

Pertaining to fathers at both the national and state level, when fathers reported having less than a high school education, the prevalence for mental health problems among children was the highest in both Georgia and national analysis; The analysis was 6.9% (95% CI: <0.01-15.5) for Georgia and 7.2% (95% CI: 5.4-8.9) for national data. In addition, national prevalence for children when their fathers reported being a high school graduate was 6.5% (95% CI: 5.6-7.4). Furthermore, 5.4% (95% CI: 4.8-6.0) of children portrayed mental health problems when their fathers received beyond a high school education. Georgia data frequencies for these children with mental health problems were 6.1% (95% CI: 2.2-10.1) when fathers were high school graduates and 4.6% (95% CI: 2.4-6.8) when fathers completed beyond high school.

Poor emotional health of parents characterized by parental stress levels and the overall health status of mothers and fathers are listed in table 2. As well, parental reports of ACE and exposure to household substance abuse among children are also listed in table 2. The prevalence estimates for mental health issues were about 9% (95% CI: 0.5-17.5) when mothers reported '*poor/fair*' health at the state level and 19.1% (95% CI: 16.5-21.7) for the national level. Mental health problems at the national level was 17.1% (95% CI: 13.9-20.3) when fathers reported '*poor/fair*' overall health and about 18.2% (95% CI: <0.01-36.8) in reference to state level data. When analyzing factors of stress within parents, the relation of mental health problems in children was 11.9% (95% CI:

11.1-12.7) for national estimates and 9.6% (95% CI: 6.4-12.8) for state level estimates. The estimates of mental health conditions were 11.3% (95% CI: 10.6-12.2) and 7.7% (95% CI: 4.7-10.7) at the national and state level, respectively for parental reports of ACE amongst children. Moreover, mental health problems among children were slightly higher for Georgia (17.8, 95% CI: 8.1-27.6) than the national data (16.5%, 95% CI: 14.9-18.2) with parental reports of exposure to household substance abuse among children.; however, there was no significant differences between state level and national data.

4.3 Prevalence Data of Mental Health problems among children, stratified by sex

The prevalence of mental health problems among children in reference to poor emotional health is shown in table 3. In addition, the data within this table is stratified by sex at the national level and state level prevalence data. A total of 46.3% of children were females and 53.6% were males at the state/local level. Yet, 51.8% and 48.1% of children were male and female, respectively at national estimates. Proxy

In Georgia, when mothers reported having a poor health status, the estimates for mental health problems were greater for females (9.8%) than males (6.8%). Yet, estimated frequencies for national data were quite different: when mothers reported '*poor/fair*' health status, the prevalence for females was 18.2% and 20.1% for males. Data was similar for when fathers reporting having a '*poor/fair*' health status; the prevalence for mental health problems at the national level was 19.9% for males and 14.1% for females. On the other hand, both males (18.5%) and females (18.1%) displayed similar estimates for the Georgia data.

Parental stress, household exposure to substance abuse, and ACEs were examine in association with mental health problems amongst children at both the national and

state level for Georgia. When parents reported high levels of stress, 14.5% of female children had mental health problems at the national level and 10.5% of females at the state level; at the national level, 8.6% of male children and 13.6% of males at the state level had mental health problems with reported parental stress. Based on national data, 13.2% of males, who were exposed to ACE, exhibited mental health problems compared to 9.4% of females. For parental reports of ACE at the state level, the prevalence of mental health problems was the same for male and female children (7.6%). Parental reports of substance abuse among children were 18.6% for males compared to 10.1% for females at the national level; estimates for mental health problems were 17.3% for males and 18.3% for females at the state level for parental reports of substance abuse.

4.4 Multivariable Logistic Regression

Table 4 displays a multivariable logistic regression that includes odds ratio, 95% confidence intervals, and p-values for significance. The multivariable regression combines characteristics of mental health problems in children and all contributing factors of poor emotional health in parents in order to observe the impact between these two variables.

Unadjusted: A measure of unadjusted analysis for national data is presented in table 4. With the exception of *'mothers' education level'* (p-value = 0.1446), each variable displayed a significant association (p-value = <0.0001) between parents' emotional health and mental health conditions among children. However, in the unadjusted category for state level data, statistical significance was displayed for the variables *'overall health of the fathers'* (p-value = 0.0404) and *'stress'* (p-value = 0.003). The variables *'substance abuse'* (p-value = <0.0001), and *'age group'* (p-value = 0.0016) also displayed

significance. The other variables listed under state level data were not statistically significant.

For the national data, ages 11-14 were 1.2 times the odds (OR=1.2, 95% CI 1.1-1.5) to experience mental health problems compared to the reference group. Nonetheless, children ages 15-17 were 1.8 times the odds of experiencing mental health problems than the reference group (95% CI 1.5-2.0). Looking at the state level odds, children between the ages 15-17 were 3.0 times the odds (OR=3.0, 95% CI 1.4-6.8) to develop mental health conditions than those in the age group 6-10. Furthermore, ages 11-14 were more likely (OR=3.5, 95% CI 1.7-7.3) to experience mental health issues compared to the reference group (ages 6-10) and the age group 15-17.

In the race category, '*Black*' (OR=0.9, 95% CI 0.8-1.2) and '*Others*' (OR=0.8, 95% CI 0.6-1.0) were less likely to struggle with mental health problems compared to '*Whites*' at the national level. State/local finding revealed similar odds ratio to the national data. Both of the races '*Black*' (OR=0.3, 95% 0.1-0.8) and '*Others*' (OR=0.9, 95% CI 0.3-2.9) were less likely to have mental health problems compared to those children who were '*White*'. Statistics for sex revealed that '*males*' were 1.4 times the odds (95% CI 1.3-1.7) of experiencing mental health problems than '*females*' in evaluation of national data. The crude analysis for sex at the state level displayed that males were 0.8 time the odds (95% CI 0.4-1.6) to develop mental health issues.

When assessing parents at the national data for reports of '*Others*' as their family structure, children were more likely (OR=2.7, 95% CI 2.2-3.3) to have mental health problems than those who resided in a two-parent household. Also, children were 2.3 (95% CI 1.9-2.6) times the odds exhibiting mental health problems when parents

disclosed their resident as a *'single-family household'*. For Georgia findings, the odds ratio for children and mental health problems was 0.9 (95% CI 0.4-2.4) with reports of a *'single-family household'* compared to the reference group. The odds for mental health problems increased to 3.1 (95% CI 1.2-8.3) with reports of *'Others'* as the family structure compared to a two-parent household.

National statistical data revealed the odds of mental health problems among children was 0.9 (95% CI 0.8-1.2) when mothers received less than a high school education compared to mothers who were high school graduates. Furthermore, when mother completed more than a high school education, the odds for mental health problems among children was 0.8 (95% CI 0.7-1.0) compared to mothers who were high school graduates. However, the odds ratios for Georgia were larger than national statistics for mental health problems when mother's education levels were exposed. When mothers completed less than a high school education, the odds ratio for mental health problems among children was 1.5 (95% CI 0.3-7.8) and 1.4 (95% CI 0.4-4.5) when they had beyond a high school education in reference to those who were high school graduates.

Moreover, in regards to Georgia data, children were 0.7 times the odds (95% CI 0.3-1.8) for mental health problems when their fathers received more than a high school education versus when their fathers were high school graduates. Nonetheless, the odds of mental health problems among children increased when their fathers completed less than a high school education (OR=1.1, 95% CI 0.3-5.2). The data for national levels showed similar results. Fathers who received less than a high school education increased the odds (OR=1.1, 95% CI 0.8-1.5) of mental health problems in their children compared to

fathers who were high school graduates. As well, as fathers reported having beyond a high school education, the odds for mental health in children was 0.8 (95% CI 0.7-1.0).

The crude odds ratios based on the association of emotional health in parents are listed in table 4. In respects to national data, when mothers reported poor overall health, children were 3.5 times the odds (95% CI 2.9-4.2) for mental health problems in comparison to those mothers who reported excellent/good health. At the state level, children were 1.7 times the odds of displaying mental health problems (95% CI 0.6-5.1) when mothers reported poor overall health compared to those who reported excellent health. When fathers reported decreased overall health, children were 2.8 (95% CI 2.2-3.5) and 3.9 (95% CI 1.1-14.3) times the odds at the national level and within Georgia, respectively, to display mental health problems.

In addition, for parental stress at the national level, the odds of mental health problems among children were 5.0 (95% CI 4.2-5.9) times the odds for mental health problems when parents were not stressed. At the national level, mental health problems among children were 3.7 (95% CI 3.3-4.3) times the odds with parental reports of ACE compared to those children with no ACEs. The odds of mental health problems for those exposed to household substance abuse was 3.1 (95% CI 2.7-3.6) compared to children with no exposure to substance abuse.

The odds ratio for mental health issue among children reviewing state level data was 6.4 (95% CI 2.4-17.6) with reports of increased stress from parents compared to those parents with no stress. For children with reported ACEs, the odds for mental health problems were 2.0 (95% CI 1.0-4.02) compared to those children with no ACEs. For

children with exposure to household substance abuse, the odd ratio was 4.7 times the odds (95% CI 2.2-10.3) compared to children with no exposure to substance abuse.

Adjusted: The probability of mental health problems according to the association of emotional health of parents is displayed in table 4. All variables remained statistically significant (p-value = <0.0001) and displayed associations of mental health problems among children, notably in evaluation of national data. At the state level, all of the variables were statistically significant in regards to association of mental health problems among children. In other words, each variable under the state level data were not statistically different.

The odds ratios after controlling for the covariates age group, race, sex, family structure, and parents' education level are within table 4 as well. Increased adjusted odd ratios (AOR) for mental health problems among children were found with reports of poor overall health of mothers (OR=4.7, 95% CI 3.6-6.2) and fathers (OR=3.5, 95% CI 2.9-4.9) at the national level. Nonetheless, the adjusted odds ratio for mental health problems among children at the national level increased with parental stress (OR=5.2, 95% CI 4.2-6.4) compared to no parental stress. When parents reported adverse childhood experiences among their child, the odds for mental health problems in children was 3.2(95% CI 2.6-3.8) compared to children with no ACEs; however the odds for mental health problems was 3.0 ((95% CI 2.5-3.7) when parents reported exposure to household substance abuse among children compared to no exposure to substance abuse.

The adjusted odd ratios for the relationship between decreased levels of emotional health of parents and mental health problems for Georgia was 0.2 (95% CI 0.1-1.6) with reports of poor overall health by mothers compared to excellent health of mothers. Also

at the state level, the risk of mental health problems among children was 2.5 times the odds (95% CI 0.6-10.1) when fathers reported poor overall health both compared to excellent/good health of fathers. Mental health problems were 4.7 times the odds among children with reports of stress from parents (95% CI 1.5-14.1) compared to no parental stress. The odds of mental health problems was 1.8 (95% CI 0.7-4.5) times greater for children with exposure to ACEs compared to those children with no ACEs. The odds for mental health problems in children exposed to substance abuse was 3.7 times (95% CI 1.4-9.8) greater compared to children not exposed to substance abuse.

CHAPTER V DISCUSSION

The purpose of this study was to assess the relationship between decreased levels of emotional health in parents and mental health problems in children, using the 2011-2012 NSCH survey data. Various crude and adjusted odds ratio and p-values were examined to distinguish the impact of these associations. The results from this study highlight significant relationship between parents' emotional dysfunction and mental health outcomes.

5.1 Discussion by Hypothesis

Hypothesis: Poor emotional health status in parents will be associated with mental health problems among children 6 to 17 years of age in Georgia and nationally.

It was hypothesized that Georgia will have higher levels of poor emotional health among parents and mental health problems in children. In reference to table 2, when investigating the decreased emotional health of parents (overall health of mother and father, stress level, and parental reports of ACE and household substance abuse exposure among children) and mental health problems within children, national data demonstrated higher estimates for the association of mental illness for the majority of the chosen variables, in comparison Georgia. Although national findings were superior, in regards to the variables '*overall health status for fathers*' and '*substance abuse*', mental health problems among children was lower at the national level in comparison to state level; The prevalence for mental illness among children was 18.2% (95% CI: <0.01-36.8) for state level and 17.1% (95% CI: 13.9-20.3) for national data with reports of '*overall health status for fathers*'. The prevalence for mental health problems among children was 16.5% (95% CI: 14.9-18.2) at the national level and 17.8% (95% CI: 8.1-27.6) at the state level

for parental reports of exposure to household substance abuse amongst children (Table 2).

Adjusted odds ratios were higher at the national level than at the state level; however for parental reports of substance abuse among children, the adjusted odds ratios were higher at the state level than the national level. For children with exposure to household substance abuse, the odds for mental health problems in children was 3.7 (95% CI 1.4-9.8) for state level data, but 3.0 times the odds (95% CI 2.5-3.7) for national findings (Table 4). Although these results were different than what was hypothesized, these findings were consistent with research provided by Reid. As noted within the literature review, Reid concluded that Florida prevalence of mental health among children due to the emotional status of their parents were lower than the national findings (2014).

Hypothesis: Mental illness among children will increase when mothers report their emotional health status compared to when fathers report their emotional health status.

When mothers reported having overall poor health at the national level, more children (19.1%, 95% CI: 16.5-21.7) had increased mental health problems relating to the emotional health of parents. When fathers reported poor status for their general health, approximately 17.1% (95% CI: 13.9-20.3) of children experienced mental health issues. Thus, at the national levels when examining prevalence data for mental health problems among children, mothers caused more prevalence of mental health problems than fathers. However, at the state level, fathers' reports of poor emotional health resulted in 18.2% (95% CI: <0.01-36.8) of children experiencing mental health issues. In reference to

mothers, when a poor overall health status was revealed, 9.0% (95% CI: 0.5-17.5) of children were affected (Table 2).

Table 4 displays the odds ratios for mental health problems among children. When looking at national data for the unadjusted and adjusted odds ratios, there were increased odds for children's mental health problems when mothers reported their overall health status in comparison to when fathers reported their overall poor health. The unadjusted odds ratio displayed children to be 3.5 times the odds (95% CI 2.9-4.2) of displaying mental health problems when mothers reported their overall health status, but 2.8 times the odds (95% CI 2.2-3.5) when fathers reported their overall health. Adjusted data displayed that children were 4.7(95% CI 3.6-6.2) times the odds of mental health problems with reports of overall health from their mothers; however 3.8(95% CI 2.9-4.9) times the odds of mental health problems with reports from their fathers.

However, reviewing state level data of unadjusted and adjusted odds ratio, mental problems in children increased when fathers stated decreased levels of health. For instance, unadjusted odds ratio displayed that children were at 3.9 times the odds (95% CI 1.1-14.2) of mental health problems with reports of overall health from their fathers, but 1.7 times the odds (95% CI 0.6-5.1) with reports from their mothers. Adjusted data revealed that children were 2.5 times the odds (95% CI 0.6-10.1) of mental health problems with reports of overall health from their fathers and 0.2 times the odds (95% CI 0.1-1.6) from reports of poor overall health from mothers.

From the frequency count for relationship of the respondent to the selected child, the results displayed more mothers responding to the questions pertaining to the selected

child than fathers. If more mothers were responding to questions pertaining to the child, then they were most likely responding to questions about the child's father.

As mention within the methods, a cross tabulation between the overall health of each parent and mental health problems between their children were evaluated; while controlling for the relationship of the responding parent to the child. When controlling for mothers as the respondents for the health survey, the '*poor/fair*' overall health of mothers and association of mental health problems among children displayed an increase in comparison to controlling for fathers as the respondents. Likewise, there was an increase of association between the analysis for the '*poor/fair*' overall health of fathers and mental health problems among children when controlling for the mothers as the respondents versus the fathers as the respondents. Hence, the reduced adjusted odds for the overall health status of mothers and the association of mental health problems in children at the state level (Table 4) and increase adjusted odds overall health of the fathers and mental health among children.

Previously mentioned within the literature review, Lazarus et al. investigated the association between mother and father challenging behaviors and childhood anxiety. In the conclusion of the study, fathers lower the anxiety level and disorders among their children due to their encouragement and parenting challenges (2016). This investigation by Lazarus et al. is consistent in particular with results at the national level but not for state level data, where fathers' poor emotional health displayed an increase in mental health in children. The results for this study showed that there was indeed an increase in the prevalence and odds of mental health problems among children ages 6-17 when mothers reported their poor emotional health at the national level. However, there was a

decrease of mental health problems among children at the state level with reports of poor emotional health from their mothers.

Hypothesis: Sex is associated with mental illness in children when parents report decreased levels of emotional health

Overall, reviewing the frequency data in table 1, there were more males within this particular investigation than females. In table 2, the prevalence of mental health problems increased with males (8.5%, 95% CI: 7.9-9.2) than with females (6.1%, 95% CI: 5.5-6.7) for national data estimates; however, this was opposite for Georgia data. In regards to Georgia statistics for the prevalence of mental health problems, more females (6.5%, 95% CI: 3.5-9.5) experienced mental health problems than males (5.2%, 95% 3.0-7.4).

Table 3 shows the association between sex and mental health problems among children. In reference to national data, when mothers reported poor overall health, the weighted percentage of mental health problems was higher for males (20.1%) than females (18.2%). Meaning, more males displayed higher levels of mental health disparities when their parents reported having poor health. These results were also consistent for males when fathers reported their poor health status. When fathers reported having poor overall health, the prevalence for mental health among males was 19.9%, but 14.1% for females. However, when parents were stressed, more females (14.5%) suffered from mental health problems than males (13.6%). In the discussion of national data, there is a difference in gender results when parents reported poor emotional health i.e. males displayed more mental health problems.

In regards to state-level estimates, the data was slightly different than the national level. When fathers reported poor overall health, more males (18.5%) displayed mental health problems than females (18.1%); this was consistent with national data. Prevalence data was fairly opposite for mental health problems among children when mothers reported their poor overall health. When mothers revealed poor overall health, females (9.8%) displayed more indications of mental health problems than males (6.8%) (Table 3).

As parents reported both adverse childhood experiences and exposure to household substance abuse among their children, mental health problems were greater among males compared to females (Table 3). However, when parents revealed to be stressed, more females (14.5%) displayed signs of mental health than males (13.6%) at the national level. At the state-level, females displayed higher prevalence for each variable, except the '*overall health status of father*'. Conversely, with parental reports of ACE amongst children, the prevalence for mental health problems was the same among male and female children at the state-level (7.6%) (Table 3). The data at the state-level was consistent with the findings of researchers Garmy et al. who investigated that mental illness such as depression tended to be higher in females than males (2015).

5.2 Strength and Limitations

There are several strengths and limitations for this research. For instance, a particular strength would be the large sample size collected within the survey; furthermore, the survey has been assessed three times from the year 2003-2012. The NSCH has a total of 95,677 respondents, which allows for an accurate assessment of the

relationship of decreased levels of emotional health in parents and mental health conditions within children. An additional strength of this study is that it includes information for both parents such as education levels and health status. The NSCH also provided a weighted variable data to compensate for missing or refused information as well as overpopulated and under populated groups.

A limitation for this study is the data for this survey was based on self-report from parents. This could result in recall bias if participants did not recollect such information or response bias if they gave false information. Due to false or insufficient information, this could cause an underestimation of the association between parents' emotional dysfunction and mental health problems among children. Also, this study only took into account parents' responses for determining if they believe their child had the following mental health issues: depression, anxiety, or behavioral/conduct disorders. This particular study did not account whether parents were asked if doctors had previously diagnosed their child with any type of mental health problems. As mentioned previously, this study only examined the three types of mental health problems: depression, anxiety, and behavioral/conduct issues. There could have been additional mental health problems mentioned such as autism, ADD, ADHD, Asperger disorder, etc.

There were reduced adjusted odds for poor overall health of mothers and the association of mental health problems among children; however the adjusted odds for the relationship between poor health of the fathers and mental ill in children increased. As a result, this could be due to response bias. For example, majority of the survey respondents were mothers; responding to questions for themselves, the children, and the fathers. Thus, mothers could be falsely answering questions for themselves, their child,

and/or for the fathers. There's a potential for mothers being focused on their own emotional health and unaware of their child's mental disorder, which could be another plausible reason for response bias and reduce odds among the association. Often mothers are the sole caretakers for children and may be a need to feel superior and display the representation of a 'fit' mother for the instances of their children; thus this could be another reason for falsely answering questions about themselves, which leads towards the reduced odds.

5.3 Implications

It is important to understand that the health and behaviors of parents severely impact the mental disorders in their children. At the state-level, when mothers reported their poor overall health status, the majority of children showed significance mental health problems. There should be more programs to increase positive parent-child interaction especially among mothers and children to help diminish these mental disorders; there should be programs executed at a community level, targeting parents to improve their emotional health while simultaneously improving their parenting skills.

Mothers may be missing the signs of mental illness among their children. Future studies should dedicate focus to understanding maternal health and dysregulation. The emphasis of future studies on maternal health could identify the impact or association that mothers have on childhood mental illness. This particular research could potentially lead towards warning signs and signals for parents if they believe their children may be experiencing mental health problems.

As previously mentioned, the onset of mental illness has been observed during infancy and may persist throughout childhood ("Child and adolescent mental health",

2016). Biological plausibility for the purpose of this study is due to epidemiological evidence between pre-exposure of adverse childhood events and brain dysfunction. Exposure to ACE may lead towards brain dysfunction; thus, affecting overall health and quality of life (Anda et al., 2005). Researchers Anda et al. concluded that early exposure of ACE leads towards stress on the developing brain; ultimately, resulting in impairments in brain function and development (2005). Seeking evidence into the biological cause of mental illness may assist with further reduction and surveillance of mental illness problems.

Further research examining how emotional health of patients relates to mental illness is needed, especially at each state level. Health officials at state level can create their own programs to reduce mental illness prevalence among children. Implementing platforms to challenge children and target their specific mental illness are a few ideas. For example, if a child suffers from depression, creating activities that assist in coping with depression or minimize depression can be a way to target mental health. Ultimately, this adjustment to managing mental health can result in positive behaviors, better academic performance, and lifestyle transformations. Challenging children, being supportive and encouraging reduces anxiety, depression, or behavioral issues. Educating parents, guardians, teachers to recognize signs of mental illness can be life-changing strategies because the sooner mental illness is documented, the sooner these children can start receiving the care they need.

5.4 Recommendations

Nearly 40% of countries do not have mental health policies. Nonetheless, over 90% of countries do not have any mental health policies to include children and adolescents (Afifi, 2007). Recommending strong and positive mental health programs is a protection against future mental disorders (Sturgeon, 2007). Bringing awareness to mental illness and promoting positive behaviors should be strategic for health officials. Researcher Sturgeon recommended multiple programs to help reduce mental illness problems by targeting early mental health. The first program consisted of home visiting, entitled the Prenatal and Infancy Home Visiting Program. This program focuses on several behaviors such as conduct disorders and substance abuse among children (2007). Georgia health officials can implement school recommendations as well. Effective programs that increase mental health promotion and target issues such as aggression or improve problem-solving abilities are The Good Behavior Game or LIFT (Linking the Interests of Families and Teachers Program) (Sturgeon, 2007).

5.5 Conclusion

Multiple research studies focus on mental illness at the national level, but few studies focus on diminishing mental health at the state-level. Statistically, significant associations between poor emotional health of parents and the relation to mental health problems were found. Additionally, each variable at the national level determined to cause poor emotional health within parents was associated with increase mental health problems among children. These results showed a great significance. In reference to Georgia's data, there was statistical significance when parents were stressed and with parental reports of household substance abuse. This study serves as formative research

and inspires further investigation of the association of parents' emotional health and mental health problems in children at the state level. The results from this study reveal how important it is to increase awareness of mental illness. Public health interventions programs that acknowledge mental illness among children would be beneficial.

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TABLES

Table 1: Demographics of Children in Georgia and Nationally aged 6-17 years old, using the National Survey of Children's Health

	Frequency(#) N=1240	Weighted (%)	Frequency (#) N=65680	Weighted (%)
Sociodemographic Characteristics				
<i>Children</i>				
Age				
6-12	509	45.5	25768	41.2
11-14	391	28.4	21468	33.1
15-17	340	26.2	18444	25.7
Total		100.0		100.0
Race				
White	735	50.9	47793	66.4
Black	348	37.5	6548	15.2
Other	126	11.6	9626	18.4
Missing	31		1713	
Total		100.0		100.0
Sex				
Male	664	50.9	33986	51.2
Female	574	49.1	31607	48.8
Missing	2		87	
Total		100.0		100.0
Mental Health Problem				
Yes	75	5.8	4835	7.3
No	1165	94.2	60827	92.7
Total		100.0		100.0
<i>Parent Emotional Health</i>				
(Overall)Health Status of Mother				
Fair/Poor	75	8.4	3965	7.5
Excellent /Good	1165	91.6	61715	92.5
Total		100.0		100.0

(Overall) Health Status of Father				
Fair/Poor	38	3.2	2359	4.0
Excellent /Good	1202	96.8	63321	96.0
Total		100.0		100.0
ACE				
Exposure	526	49.0	29125	50.0
No Exposure	714	51.0	36555	50.0
Total		100.0		100.0
Stress				
Yes	601	52.4	31528	50.7
No	639	47.7	34152	49.3
Total		100.0		100.0
Substance Abuse				
Yes	138	10.8	8282	12.90
No	1102	89.2	57398	87.1
Total		100.0		100.0
Education Level				
Mother				
<High School	79	13.2	4364	14.1
=High School	177	20.9	10992	21.9
>High School	850	65.9	44026	64.0
Missing	134		6298	
Total		100.0		100.0
Father				
<High School	67	12.0	3882	14.1
=High School	180	26.0	11353	24.3
>High School	661	62.2	35852	61.6
Missing	332		14593	
Total		100.0		100.0
Family Structure				
Single Parent Household	237	26.3	10374	19.6
Two Parent Household	879	64.8	49447	72.6
Other	109	8.9	5061	7.8
Missing	15		798	
Total		100.0		100.0

**ACE: Adverse childhood experience among children. ACE includes ACE1, ACE3, ACE4, ACE5, ACE6, ACE7, and ACE8; Substance Abuse: ACE9 N=Number of total participants for each variable Frequency (#)= frequency data and unweighted*

Table 2: Prevalence of Mental Health problems among children, comparing Georgia to National Findings

Sociodemographic Characteristics	GA N=1,240	US N=65,680
<i>Children</i>	<i>Yes% (95% CI)</i>	<i>Yes% (95% CI)</i>
<i>Race</i>		
White	8.0(5.0-10.9)	7.8(7.2-8.3)
Black	2.9(0.7-5.1)	7.4(6.1-8.6)
Other	7.8(0.6-15.0)	6.2(5.1-7.2)
<i>Sex</i>		
Male	5.2(3.0-7.4)	8.5(7.9-9.2)
Female	6.5(3.5-9.5)	6.1(5.5-6.7)
<i>Parent Emotional Health</i>		
<i>(Overall)Health Status of Mother</i>		
Fair/Poor	9.0(0.5-17.5)	19.1(16.5-21.7)
Excellent /Good	5.5(3.7-7.4)	6.4(5.9-6.8)
<i>(Overall) Health Status of Father</i>		
Fair/Poor	18.2(<0.01-36.8)	17.1(13.9-20.3)
Excellent /Good	5.4(3.6-7.2)	6.9(0.2-6.5)
<i>Stressed</i>		
Yes	9.6(6.4-12.8)	11.9(11.1-12.7)
No	1.6(0.1-3.1)	2.6(2.2-3.0)
<i>ACE</i>		
Exposure	7.7(4.7-10.7)	11.3(10.6-12.2)
No Exposure	4.0(1.82-6.23)	3.3(2.95-3.68)
<i>Substance Abuse</i>		
Yes	17.8(8.1-27.6)	16.5(14.9-18.2)
No	4.4(2.7-6.0)	5.9(5.5-6.4)
<i>Education Level of Parents</i>		
<i>Mother:</i>		
<High School	5.9(<0.01-12.4)	7.5(6.0-8.9)
=High School	3.9(<0.01-7.9)	7.7(6.8-8.7)

>High School	5.3(3.4-7.3)	6.7(6.2-7.3)
Father :		
<High School	6.9(<0.01-15.5)	7.2(5.4-8.9)
=High School	6.1(2.1-10.1)	6.5(5.6-7.4)
>High School	4.6(2.4-6.8)	5.4(4.8-6.0)
Family Structure		
Single Parent Household	4.9(1.1-8.8)	11.8(10.51-13.0)
Two Parent Household	5.1(3.2-7.0)	5.6(5.2-6.1)
Other	14.6(3.7-25.5)	12.2(10.0-14.4)

%= weighted data; 95 CII%= 95% Confidence Intervals for weighted data percentages

Table 3: Prevalence of Mental Health problems among children, comparing Georgia to National Findings; stratified by male and females

Mental Health Problems among children

<i>Parental Emotional Health</i>	GA N=1240 Missing=2		US N=65680 Missing=87	
	Males=664	Females=574	Males=33986	Females=31607
	<i>Yes (%)</i>	<i>Yes (%)</i>	<i>Yes (%)</i>	<i>Yes (%)</i>
<i>(Overall) Health Status of Mother</i>				
Fair/Poor	3 (6.8)	5 (9.8)	460(20.1)	347 (18.2)
Excellent/Good	39 (5.1)	28 (6.0)	2421 (7.6)	1621 (5.1)
Total	(11.9)	(15.8)	(27.7)	(23.3)
<i>(Overall) Health Status of Father</i>				
Fair/Poor	3 (18.5)	3(18.1)	229(19.9)	151 (14.1)
Excellent/Good	39 (5.0)	30(5.9)	2652 (8.0)	1817 (5.8)
Total	(23.5)	(24.0)	(27.9)	(19.9)
<i>Stress</i>				
Yes	35 (8.6)	25 (10.5)	2417 (13.6)	616 (14.5)
No	7 (1.8)	8 (1.3)	464 (2.7)	1352 (4.8)
Total	(10.4)	(11.8)	(16.3)	(19.3)
<i>ACE</i>				
Yes	28 (7.6)	18 (7.6)	2060 (13.2)	1405 (9.4)
No	14 (3.1)	15 (5.1)	821 (3.8)	563 (2.8)
Total	(10.7)	(12.7)	(17.0)	(12.2)
<i>Substance Abuse</i>				
Yes	12 (17.3)	9 (18.3)	856 (18.6)	1563 (10.1)
No	30 (3.9)	24 (4.9)	2025 (7.0)	405 (2.5)
Total	(21.2)	(23.2)	(25.6)	(12.6)

****Wtd.% =Weighted percentage; Total=Percentage total***

Table 4: Multivariable Logistic Regression analysis for the relationship between emotional health among parents and mental health problems among children, ages 6-17 in GA and the US.

	<i>Mental Health Problems among children</i>							
<i>Variables</i>	GA				US			
<i>Parent Emotional Health</i>	Unadjusted OR (95% CI)	P-Value	Adjusted OR (95% CI)	P-Value	Unadjusted OR (95% CI)	P-Value	Adjusted OR (95% CI)	P-Value
Overall Health Status of the Mother:								
Poor/Fair	1.7(0.6-5.1)	0.3485	0.2 (0.1-1.6)	0.0184	3.5 (2.9-4.2)	<0.0001	4.7 (3.6-6.2)	<0.0001
Excellent/Good	1.0		1.0		1.0		1.0	
*Ref.								
Overall Health Status of the Father:								
Poor/Fair	3.9(1.1-14.3)	0.0404	2.5(0.6-10.1)	0.0059	2.8(2.2-3.5)	<0.0001	3.8 (2.7-4.9)	<0.0001
Excellent/Good	1.0		1.0		1.0		1.0	
*Ref.								
Stress								
Yes	6.4 (2.4-17.6)	0.0003	4.7(1.5-14.1)	<0.0001	5.0 (4.2-5.9)	<0.0001	5.2(4.2-6.4)	<0.0001
No *Ref.	1.0		1.0		1.0		1.0	
ACE								
Yes	2.0(1.0-4.0)	0.0595	1.8(0.7-4.5)	0.0051	3.7(3.3-4.3)	<0.0001	3.2 (2.6-3.8)	<0.0001
No *Ref.	1.0		1.0		1.0		1.0	
Substance Abuse								
Yes	4.7(2.2-10.3)	<0.0001	3.7 (1.4-9.8)	<0.0001	3.1(2.7-3.6)	<0.0001	3.0 (2.5-3.7)	<0.0001
No *Ref.	1.0		1.0		1.0		1.0	
Children								
Age								

6-10*Ref. 11-14 15-17	1.0 3.5(1.7-7.3) 3.0 (1.4-6.8)	0.0016	1.0 3.0 (1.3-7.4) 1.8 (0.8-4.7)	0.0301	1.0 1.3(1.1-1.5) 1.7 (1.5-2.0)	<.0 0001	1.0 1.2(1.0-1.5) 1.8 (1.4-2.2)	<0.0001
Race								
White *Ref. Black Other	1.0 0.3 (0.1-0.8) 0.9 (0.3-2.9)	0.0587	1.0 0.2 (0.1-0.8) 0.1 (0.03-1.08)	0.0237	1.0 0.9 (0.8-1.2) 0.8 (0.64-0.95)	0.0368	1.0 0.9 (0.6-1.3) 0.6(0.5-0.8)	<0.0001
Sex								
Male Female*Ref.	0.8 (0.4-1.6) 1.0	0.5047	1.0 (0.5-2.3) 1.0	0.0230	1.4 (1.3-1.7) 1.0	<0.0001	1.4(1.2-1.7) 1.0	<0.0001
Family Structure								
Single-Parent Two-Parents *Ref. Other	0.9 (0.4-2.4) 1.0 3.1 (1.2-8.3)	0.0540	1.1 (0.5-2.5) 1.0 3.0 (1.2-7.7)	0.0341	2.3 (1.9-2.6) 1.0 2.7 (2.2-3.3)	<0.0001	2.3 (2.0-2.7) 1.0 2.3(1.9-2.9)	<0.0001
Education Level								
Mother:								
<High School =High School *Ref. >High School	1.5 (0.3-7.8) 1.0 1.4 (0.4-4.5)	0.8262	2.6 (0.4-18.5) 1.0 3.2(0.7-15.5)	0.0173	0.9 (0.8-1.2) 1.0 0.9(0.7-1.0)	0.1446	0.9(0.6-1.3) 1.0 1.0 (0.8-1.3)	<0.0001
Father:								
<High School =High School *Ref. >High School	1.2 (0.3-5.2) 1.0 0.7 (0.3-1.8)	0.7210	1.8 (0.4-7.9) 1.0 0.5(0.1-1.8)	0.0319	1.1(0.8-1.5) 1.0 0.8(0.7-1.0)	0.0298	1.2 (0.8-1.7) 1.0 0.7(0.6-0.9)	<0.0001

Ref=Reference category ; CI= 95% Confidence Interval; OR=Odds Ratio. Adjusted for: age group, education level, family structure, race, and sex; Single-Parent: Single Parent Household; Two-Parent= Two Parent Household

