

RELATIONSHIPS AND PREDICTIONS OF MARITAL QUALITY AND STRESS AMONG
AFRICAN AMERICAN PARENTS OF CHILDREN WITH AND WITHOUT AUTISM
SPECTRUM DISORDER

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RELATIONSHIPS AND PREDICTIONS OF MARITAL QUALITY AND STRESS AMONG
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DEDICATION

I dedicate this dissertation to my beloved son River whose diagnosis of autism spectrum disorder changed me forever. From a spiritual perspective, the word River represents a life source and divine blessings. Because of River, I have found new meaning in life. River encourages me to discover success by overcoming life's obstacles. Just as River has added meaning and encouragement to me, I hope to impact other individuals by offering valuable research and practices to families affected by disabilities.

ABSTRACT

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Autism spectrum disorder (ASD), the most rapidly growing childhood disability in America, affects people of all ethnicities, social classes, and genders. Autism spectrum disorder (ASD) not only impacts the person who is diagnosed, but the entire family system. For instance, parenting a child with ASD has been linked with elevated parental stress and decreased marital quality. Although ASD awareness has recently increased, research is lacking in non-dominant populations such as African Americans. This study addresses the gaps in literature pertaining to African American parents of children with ASD.

The purpose of this study was to examine the relationships and predictions of marital quality and stress among African American parents of children with and without ASD. Pearson's chi-squares, Fisher's exact tests, and binary logistic regressions were employed as statistical analyses for investigating the data from the *2011-2012 National Survey of Children's Health (NSCH)* (CAHMI, 2012c).

According to the findings, a statistically significant relationship occurred in divorce rates between 65,115 Caucasian parents of children with and without ASD. However, there was not a statistically significant relationship in divorce rates between the 7,085 African American parents of children with and without ASD. Likewise, results indicated no statistical significant relationships existed between 3,548 married African American parents of children with and without ASD and marital quality. Findings also

revealed no statistical significant relationship among 48 African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality.

Parent-related and *child-related* stressors were used to predict membership of parents with children and without ASD. Using logistic regression analysis with 693 participants, the largest statistically significant predictors for having a child with ASD were *child-related stressors* including (a) increased needs and demands and (b) child's problems. The next largest statistically significant predictors for a parent having a child with ASD ($n = 3,587$) were *parent-related* stressors including (a) coping and perceived challenges and (b) health care access and quality. Limitations of the current study, clinical implications, and directions for future research were discussed.

KEY WORDS: Autism spectrum disorder (ASD), African Americans, Marital quality, Parent-related stress, Child-related stress

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CHAPTER I

INTRODUCTION

Autism Spectrum Disorder (ASD) is the nation's fastest growing disability and the cause still remains a great mystery to scientists, counselors, parents, doctors, and the general public (Hartley, Mihaila, Otolara-Fadner, & Bussanich, 2014; Palmer & Shore, 2012; Vacca, 2013). Recent estimates from the Centers for Disease Control and Prevention (CDC) (2012, 2013a, 2014b) indicated that ASD affects from 1 to 68 through 1 to 88 children in the United States. Despite the high estimates, limited research has been dedicated to finding a cure and a definite cause for ASD ("*1 in 88 Children*", 2012; Palmer & Shore, 2012).

Regardless of the fact there is no known cure for ASD, researchers have indicated that with early interventions and treatments, children with ASD can achieve demonstrated improved abilities across several domains (El-Ghoroury, & Krackow, 2012; Peters-Scheffer, Didden, Korzilius, & Sturmey, 2011). For example, researchers have indicated advantages to providing interventions for families affected by ASD (Johnson, 2012; Montes & Halterman, 2011). Common interventions have included applied behavioral analysis (ABA), physical therapy, occupational therapy, and speech therapy (Anderson, Liang, & Lord, 2014; Axelrod, McElrath & Wine, 2012; D'Elia et al., 2014; Harvard College, 2010; Schwichtenberg & Poehlmann, 2007; Tilton, 2010).

Within the treatment and interventions for children with ASD, many variables have been studied. For example, it has been researched that parents of children with ASD have experienced health issues including elevated stress levels (Bluth, Roberson, Billen, & Sams, 2013; Steijn, Oerlemans, Aken, Buitelaar, & Rommelse, 2014). In

particular, Bluth et al. (2013) examined how parents of children with ASD reported lower levels of marital satisfaction, which has often lead to divorce (Bluth et al., 2013). Other researchers have studied these same effects of higher stress levels, depression, and decreased marital quality related to parenting children with ASD (Bluth et al., 2013; Griffith, Hastings, Nash, & Hill, 2010; Hayes & Watson, 2013; Karst & Hecke, 2012). The problem is that most interventions focus on the person identified as having ASD, yet, Goldner and Drentea (2009) have found that the entire family is affected when someone has ASD. Thus, the treatment for ASD is lacking in that there are limited family-based treatment being offered in comparison to the individual treatment of patients with ASD.

Overview of Autism Spectrum Disorder

According to medical professionals and researchers, ASD is a spectrum of neurological conditions that influences the processing, integrating, and organizing of information and drastically impairs communication, social interaction, physical functions, mental abilities, and emotional growth (American Psychiatric Association, 2013; Bluth et al., 2013; Coplan, 2010). A broad scope of intensity, symptoms, behavior, forms of disorders, and individual differences are included in ASD (American Psychiatric Association, 2013; Coplan, 2010; Exkorn, 2005; Tilton, 2010; Turkington & Anan, 2007). Although ASD affects development in several categories, it is mostly represented by communication and socialization problems (American Psychiatric Association, 2013; Tilton, 2010).

Etiology and Treatment

Even though ASD may be considered the most rapidly growing disability in the nation (*"1 in 88 Children"*, 2012; Hartley et al., 2014; Palmer & Shore, 2012; Vacca, 2013), the search for the cause, the cure, and effective treatment continues (Karst & Hecke, 2012; Naseef, 2013; National Institute of Neurological Disorders and Stroke (NINDS), 2009; O'Brien, 2007; Palmer & Shore, 2012). For instance, researchers have been unable to pinpoint an exact cause of ASD (NINDS, 2009; O'Brien, 2007; Palmer & Shore, 2012; Turkington & Anan, 2007). Yet, experts have claimed that ASD may be triggered by a combination of genetic and environmental factors (NINDS, 2009; O'Brien, 2007; Palmer & Shore, 2012; Tilton, 2010; Turkington & Anan, 2007).

Although experts are ambiguous regarding the cause of ASD, they have discovered effective early interventions that improve various developmental domains (NINDS, 2009; Peters-Scheffer et al., 2011; Ravindram & Myers, 2012; Turkington & Anan, 2007). Several researchers claimed sensory integration, ABA, speech therapy, and occupational therapy have increased the cognitive and functional abilities of some children with ASD (Anderson et al., 2014; Axelrod et al., 2012; D'Elia et al., 2014; Harvard College, 2010; Schwichtenberg & Poehlmann, 2007). For example, in a study of 142 participants with ASD, Anderson et al. (2014) conducted a study to predict the outcome of children diagnosed with ASD. As predicted, the participants who participated in early interventions like those previously stated reported the most positive outcomes regarding cognitive abilities and repetitive behaviors associated with ASD when compared with participants who did not receive ASD interventions.

To date, most of the ASD treatment is offered to the person who has ASD and not the entire family (Falk, Norris, & Quinn, 2014; Schwichtenberg & Poehlmann, 2007). This treatment view is problematic, because ASD affects the entire family and not just the individual diagnosed with ASD (Karst & Hecke, 2012; Meadan, Halle, & Ebata, 2010; Sikora et al., 2013). For instance, Schwichtenberg and Poehlmann (2007) conducted *t*-tests and multiple regression analyses with data collection from 41 mothers of children diagnosed with ASD who were receiving ABA interventions. After analyzing the research findings, Schwichtenberg and Poehlmann (2007) supported the need for family ASD interventions to help mothers with depressive symptoms associate with caring for a child with ASD.

Prevalence

Based on statistical reporters, ASD is prevalent across the globe and does not discriminate against ethnicity or socio-economic class (CDC, 2013a; NINDS, 2009; Shore & Rastelli, 2006). On the other hand, differences in gender exist, because boys are four to five times more likely to be diagnosed with ASD than are girls (CDC, 2013a; Coplan, 2010; NINDS, 2009; Palmer & Shore, 2012). The CDC (2014b) conveyed a recent rise from 1 in 88 children to 1 in 68 children in the United States who are being diagnosed with an ASD. In reaction to recently elevated rates of children being diagnosed with ASD, several researchers have considered ASD to be an epidemic (*"1 in 88 Children"*, 2012; Coplan, 2010; Shore & Rastelli, 2006; Turkington & Anan, 2007).

Autism Spectrum Disorder and Cultural Issues

Although some ASD interventions are highly effective, they lack in cultural responsiveness (El-Ghoroury, & Krackow, 2012; Jarquin, Wiggins, Schieve & Van

Naarden-Braun, 2011; Montes, & Halterman, 2011; Peters-Scheffer et al., 2011; Samadi & McConkey, 2011). Several researchers have found that cultural components such as ethnicity, parental perceptions, belief systems, religion, and values may affect the diagnosis and treatment process for families affected by ASD (Bluth et al., 2013; Boyd & Correa, 2005; Falk et al., 2014; Karst & Hecke, 2012; Meadan et al., 2010). For example, ethnicity may impact parents' and professionals' perceived observations and associated meanings of the child's symptoms (Chaidez, Hansen, & Hertz-Piccioto, 2012; El-Ghoroury, & Krackow, 2012; Kirsch, 2014; Mandell & Novak, 2005; Samadi & McConkey, 2011).

Cultural factors such as parental cognitions and socioeconomic support were found to be predictors of anxiety, stress, and depression for parents of children with ASD in Falk et al.'s (2014) study. Yet, Falk et al. (2014) claimed that problems exist in current ASD support services, because they lack a holistic view of parents' individual life experiences. In short, religion, culturally based hidden rules, relationships, support systems, and financial resources are some cultural components that impact accessibility and participation in ASD treatment (Becker, Krodel, & Tucker, 2009; Bluth et al., 2013; Falk et al., 2014).

Despite the existence of cultural factors that impact ASD diagnosis and treatment, much of the ASD research and treatment methods have been highly influenced by studies conducted with majority heterogeneous, upper class Caucasian participants (Ben-Sasson, Soto, Martínez-Pedraza, & Carter, 2013; Brobst, Clopton, & Hendrick, 2009; Carr & Lord, 2012; Cuccaro et al., 2007; Mandell & Novak, 2005; McHatton & Correa, 2005; Samadi & McConkey, 2011). However, few studies including African American

participants have been conducted (Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Montes & Halterman, 2011). Hence, the lack of multicultural research and practices may be problematic for non-dominant groups, such as African Americans (Broder-Fingert, Shui, Pulcini, Kurowski, & Perrin, 2013; Carr, & Lord, 2013; Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Montes, & Halterman, 2011).

One ethnic related problem with ASD treatment is that African Americans reported lower ratings of family-centered care in comparison to Caucasians in a study of 1, 869 participants conducted by Montes and Halterman (2011). Similarly, Burkett, Morris, Manning-Courtney, Anthony, and Shambley-Ebron (2015) reported that African Americans delayed participating in ASD treatment due to cultural factors such as distrustful experiences with ASD professionals. Due to the low participation levels of the African American population in research studies and ASD treatment practices, certain variables like stress levels and marital quality are inadequately addressed among African American parents of children with ASD (Ennis-Cole, Durodoye, & Harris, 2013; Falk et al., 2014; Julien, 2014; Montes & Halterman, 2011; Sell, Giarelli, Blum, Hanlon, & Levy, 2012).

Ethnic Differences in Autism Spectrum Disorder Diagnoses

As previously mentioned, one component of culture that is underrepresented in ASD studies is ethnicity (Broder-Fingert et al., 2013; Carr & Lord, 2013; Chaidez et al., 2012; Kirsch, 2014). For instance, not much of the empirical research examines ethnic related factors regarding ASD diagnoses (Carr & Lord, 2012; Montes & Halterman, 2011; Sell et al., 2012). Yet, a study conducted by Sell et al. (2012) yielded results that called for more ethnic related studies regarding ASD diagnoses. For example, Sell et al.

(2012) performed an investigation with 343 African American and Caucasian children in the Philadelphia County. Following their analyses, Sell et al. (2012) reported that when compared to African American children, Caucasian children met more ASD-related criteria based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)*.

Some researchers who have examined diagnosis of non-dominant culture, including African American, have indicated that it may be due to under-diagnosis and misdiagnosis (Carr, & Lord, 2013; Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011). One reason for racial differences in diagnoses may be due to the nature of the assessment. Professionals heavily rely on reported behavior observations when evaluating ASD criteria (American Psychiatric Association, 2013; Ball, 2008; NINDS, 2009; Robledo & Ham-Kucharski, 2005; Tilton, 2010). According to some researchers, ethnicity may impact parents' and professionals' perceived observations and associated meanings of the child's symptoms (Chaidez et al., 2012; El-Ghoroury, & Krackow, 2012; Kirsch, 2014; Mandell & Novak, 2005; Samadi & McConkey, 2011). More research is recommended to evaluate the influence of ethnicity regarding ASD diagnoses (Broder-Fingert et al., 2013; Carr & Lord, 2013; Cuccaro et al., 2007; Kirsch, 2014; Montes & Halterman, 2011; Samadi & McConkey, 2011).

Impact of Autism Spectrum Disorder on Married Parents

Parents of all ethnicities are affected by ASD (Ben-Sasson et al., 2013; Karst, & Hecke, 2012; Goldner, & Dretea, 2009; Palmer & Shore, 2012). Several researchers have claimed that parents of children with ASD reported higher levels of stress in comparison to parents of children without disabilities and more than parents of children

with other disabilities (Bluth et al., 2013; Eisenhower, Baker, Blacher, 2005; Griffith et al., 2010; Hastings et al., 2005; Olsson & Hwang, 2002; Miranda, Tárraga, Fernández, Colomer, & Pastor, 2015; Pisula, 2007). For instance, Griffith et al. (2010) completed an investigation of 57 mothers and children with ASD, Down syndrome, and other disorders. The disability groups were equally represented with 19 children with ASD, 19 children with Down syndrome, and the remaining 19 with mixed disabilities.

After performing ANOVAs and *post-hoc* analyses on the disability groups, Griffith et al. (2010) suggested that children with ASD were rated as having more problem behaviors than Down syndrome and other cognitive disabilities. Consequently, mothers parenting children with ASD indicated higher stress levels than Down syndrome and other disabilities groups according to Griffith et al. (2010). One limitation to the study by Griffith et al. (2010) was the absence of the participants' ethnic demographics. Thus, ethnic considerations for the reported findings by Griffith et al. (2010) remain unclear.

Parental Stress

Other researchers also reported elevated stress levels for parents of children with ASD in comparison to other parents (Bluth et al., 2013; Eisenhower et al., 2005; Harper, Dyches, Harper, Roper, & South, 2013; Hartley et al., 2014; Karst, & Hecke, 2012). Gaps in the literature exist regarding the indirect relationship between cause and effect patterns for multiple ASD stress variables that contribute to parents' elevated stress levels (Bluth et al., 2013; Eisenhower et al., 2005; Sawyer et al., 2010). Furthermore, parental stress levels related to ASD may be categorized into two groups: *child-related* stress and *parent-related* stress (Bluth et al., 2013; Harper et al., 2013; Tilton, 2010).

Child-related stress. *Child-related* stress variables consist of the child's unique characteristics such as the ASD level of severity, age and developmental stages, behavior problems, and adaptive behaviors (Baker-Ericzén, Brookman-Frazee, & Stahmer, 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; Osborne & Reed, 2010; Tilton, 2010). The previously mentioned *child-related* traits have been linked to high levels of parental stress as well as low marital quality and divorce predictors (Bluth et al., 2013; Hartley et al., 2010; Steijn et al., 2014). Even though most of the ASD *child-related* stress studies have contributed to ASD intervention planning (Hock, Timm, & Ramisch., 2012; Ramisch, Timm, Hock, & Topor, 2013), the vast majority of the ASD *child-related* stress studies were conducted with mainly Caucasian participants (Ben-Sasson et al., 2013; Brobst et al., 2009; Carr & Lord, 2012; Mandell & Novak, 2005; McHatton & Correa, 2005; Samadi & McConkey, 2011).

For example, Walsh, Mulder, and Tudor (2013) identified the child's behavior problems as predictors of parental stress in a study of 148 participants. However, the ethnic groups of participants were 83% Caucasian, 10% Hispanic, 6% African American, 4.5% Asian or Pacific Islander, 2.3% Native American or Alaskan Native, and 2.3% other ethnicity. Therefore, more studies involving African Americans and ASD *child-related* stress levels are warranted.

Parent-related stress. Comparable to *child-related* stress factors, some *parent-related* stress variables were linked to increased parental stress levels and decreased marital quality levels (Benson & Kersh, 2011; Brobst et al., 2009; Harper et al., 2013). Although results were mixed (Abbott, 2013; Hock et al., 2012; Johnson, 2012), the most relevant *parent-related* stress factors included the following: (a) ambiguous loss,

(b) time demands, (c) financial demands, (d) social stressors, (e) lifestyle changes, (f) medical and special services, (g) role division, (h) pile-up stress and stress proliferation, and (i) increased marital stress and conflicts (Baker-Ericzén et al., 2005; Hartley et al., 2010; O'Brien, 2007; Tilton, 2010). Inconsistent findings have existed for each of these *parent-related* stressors (Benson & Kersh, 2011; Bluth et al., 2013; Hock et al., 2012; Johnson, 2012; Manning, Wainwright, & Bennett, 2011; Sawyer et al., 2010). Nevertheless, the consensus among researchers is that parents of children with ASD experience all of the above mentioned stress factors in varying degrees and at different life stages (Bluth et al., 2013; Hartley et al., 2010; O'Brien, 2007; Tilton, 2010).

One significant study by Hartley et al. (2010) involved 391 parents of children with ASD and 391 parents of children who were not diagnosed with ASD. Hartley et al. (2010) examined several of the above mentioned parental stressors in relation to marital quality and divorce predictors. Based on Hartley et al.'s (2010) report, *child-related* and *parent-related* stress variables were linked to family functioning disruptions, decreased marital quality, and divorce predictors. Moreover, according to Hartley et al. (2010) the divorce rate for parents of children with ASD was higher than the parents of children who were not on the spectrum. Even though Hartley et al. (2010) cited findings that supported family interventions, the study was limited to the states of Wisconsin and Massachusetts. In addition, 93% of the participants in the study by Hartley et al. (2010) were Caucasian. A comparable study for African Americans in the literature was unavailable.

Divorce Probability for Parents of Children with Autism Spectrum Disorder

In contrast to the previous findings by Hartley et al. (2010), other researchers have claimed that differences did not exist in marital quality nor were there differences in

divorce rates for parents of children with ASD when compared with other parents (Abbott, 2013; Freedman, Kalb, Zablotsky, & Stuart, 2012; Hock et al., 2012; Johnson, 2012; Johnson & Simpson, 2013; Meadan et al., 2010). Concurrently, over the past decade, the general population divorce rates in the United States have ranged from 40% to 50% (Afifi, Davis, Denes, & Merrill, 2013; Baucom, Epstein, Kirby, & Falconier, 2011; Bottom, 2013; Brown, & Porter, 2013; Sbarra, & Beck, 2013). Yet, opposing views pertaining to the statistics for divorce rates among parents of children with ASD were cited (Benson & Kersh 2011; Freedman, et al., 2012; Hock et al., 2012). For instance, Medical News Today (2007) and Sicile-Kira (2008) cited an 80% divorce rate for parents of children with ASD. Years later, several other researchers have challenged the 80% divorce rate claiming duplicated studies revealed mixed results (Benson & Kersh, 2011; Bluth et al., 2013; Freedman, et al., 2012; Hock et al., 2012; Kennedy Krieger Institute, 2010).

Regardless of divorce rate discrepancies, parents of children with ASD have experienced greater demands and stressors than comparison groups in numerous studies (Bluth et al., 2013; Hartley et al. 2010; Karst & Hecke, 2012; Manning et al., 2011; Sicile-Kira, 2010). In keeping with statements made by a number of examiners, parents of children with ASD were unable to adjust to the significant ASD related challenges they encountered, and their marital relationships were weakened (Bluth et al., 2013; Brobst et al., 2009; Hartley et al., 2010). Due to inconsistent findings and a lack of culturally reflective studies, more research is required in order for professionals to gain clarity regarding the interaction of confounding stress variables and culturally related

perceptions of ASD effects on the marital relationship (Bluth et al., 2013; Goldner & Drentea, 2009; Kirsch, 2014).

Statement of the Problem

Experts consider ASD to be an epidemic, as well as the number one developmental disability in the nation (“*1 in 88 Children*”, 2012; Hartley et al., 2014; Palmer & Shore, 2012; Vacca, 2013). Despite high occurrences of ASD among all ethnic groups, limited research exists concerning stress proliferation and multicultural effects on married parents (Benson, 2006; Bluth et al., 2013; Carr & Lord, 2012; CDC, 2013a; Goldner & Drentea, 2009; Hock et al., 2012; Kirsch, 2014). The demands of parenting a child with ASD are more dramatic than the challenges of parenting a child with no disability and also greater than the demands of parenting a child with other disabilities (Bluth et al., 2013; Eisenhower et al., 2005; Griffith et al., (2010). These challenges are exacerbated based on the severity of the ASD symptoms and ethnic related issues (Benson & Karlof, 2009; Carr & Lord, 2012; El-Ghoroury & Krackow, 2012; Falk et al., 2014; Kirsch, 2014; LaTaillade, 2006; Pozo, Sarriá, & Brioso, 2014). Moreover, the effects of additional ethnic related stressors are underreported, due to the fact that limited studies involving non-dominate groups, such as African American families, are present (Carr & Lord, 2012; Cuccaro et al., 2007; Kirsch, 2014; Montes & Halterman, 2011).

As mentioned before, married parents of children with ASD experience elevated stress levels and low marital quality levels (Benson & Kersh, 2011; Bluth et al., 2013; Harper et al., 2013). Nonetheless, cause and effect patterns for ASD *child-related* and *parent-related* stress variables are lacking in the literature review (Bluth et al., 2013; Eisenhower et al., 2005; Freedman et al., 2012; Karst & Heck, 2012; Sawyer et al.,

2010). Also, contradictory findings pertaining to divorce rates for parents of children with ASD exist in the literature review (Benson & Kersh, 2011; Freedman, et al., 2012; Hock et al., 2012; Kennedy Krieger Institute, 2010). Lastly, studies involving African Americans are almost non-existent (Carr & Lord, 2012; Kirsch, 2014; Montes & Halterman, 2011). As a result of scarce research relating to African Americans affected by ASD and mixed findings regarding marital quality, stress levels, and divorce rates in general, more analyses are warranted (Bluth et al., 2013; Carr & Lord, 2012; El-Ghoroury & Krackow, 2012; Hock et al., 2012; Karst & Hecke, 2012; Kirsch, 2014; Montes & Halterman, 2011).

Considering the previously cited research gaps and mixed findings regarding married parents of children with and without ASD, the following ASD related investigations are warranted. As long as discrepancies in divorce rates exist, it is critical to determine the relationships associated with divorce rates for parents of children with and without ASD. Also, the relationships in marital quality and stress levels among African American parents of children with and without ASD necessitates an examination, because few to no studies have been conducted regarding the effects of ethnicity on ASD related marital quality levels and stress levels (Carr & Lord, 2012; El-Ghoroury & Krackow, 2012; Kirsch, 2014; Montes & Halterman, 2011). Thus, analyses are required to establish relationships and predictive natures in marital quality and stress levels of African American and Caucasian parents with and without ASD.

Purpose of the Study

The purpose of this study was to examine: (a) the relationships among ethnicity (African American and Caucasian), parents of children with and without ASD, and

divorce rates; (b) the relationship between African American parents of children with and without ASD and marital quality; (c) the relationships among African American parents of children with ASD, levels of ASD severity, and marital quality; (d) the predictive nature of parental stress variables (*parent-related, child-related*) on having a child with or without ASD; and (e) the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels.

Significance of the Study

With ASD on the rise, families, physicians, professionals, and educators may benefit from increasing multicultural ASD awareness as it pertains to stress and marital issues (*"1 in 88 Children"*, 2012; Abbott, 2013; Bluth et al., 2013; Carr & Lord, 2012; CDC, 2014b; El-Ghoroury & Krackow, 2012; Goldner & Drentea, 2009; Kirsch, 2014; LaTaillade, 2006; Montes & Halterman, 2011; NINDS, 2009; Vacca, 2013). Low marital quality, including marital dissatisfaction, brought on by the stresses of parenting a child with ASD may ultimately lead to separation or divorce (Bluth et al., 2013; Freedman et al., 2012; Hartley et al., 2010; Karst, & Hecke, 2012). Furthermore, higher ASD severity levels and ethnic related factors may have a strong influence on low marital quality (Brobst et al., 2009; Kirsch, 2014; LaTaillade, 2006).

Although low marital quality and marital dissatisfaction may often lead to divorce (Bluth et al., 2013; James, 2015a; Karst & Hecke, 2012), current research does not support a direct cause and effect link between the marital dissatisfaction resulting from parenting a child with ASD and the probability of divorce (Abbott, 2013; Hock et al., 2012; Meadan et al., 2010.) In fact, mixed findings for divorce rates of parents of children with ASD existed in the literature review (Benson & Kersh, 2011; Bluth et al.,

2013; Freedman, et al., 2012; Hartley et al., 2010; Hock et al., 2012; Karst & Hecke, 2012; Kennedy Krieger Institute, 2010). Nevertheless, a relationship exists between a higher divorce rate for parents of children with ASD in comparison to parents of children who were not on the spectrum (Abbott, 2013; Bluth et al., 2013; Dotinga, 2010; Hartley et al., 2010; Meadan et al., 2010).

The majority of the studies involving families affected by ASD regarding marital quality, divorce rates, and stress levels have included large percentages of Caucasian participants and small percentages, if any, of African Americans (Carr & Lord, 2012; Kirsch, 2014; Gay, Mills & Airasian, 2006; Lunenburg & Irby, 2008; Mandell & Novak, 2005; Maxwell, 2005; Samadi & McConkey, 2011). Consequently, generalizability of most of the ASD current literature to the African American population is inappropriate. Thus, the results of this study may contribute to the limited literature regarding the impact of having children with ASD on African American couples. In addition, the findings in this investigation may be utilized to demonstrate the importance of ASD culturally responsive couple and family interventions.

Definition of Terms

Several of the terms related to ASD are used interchangeably, and should be noted. The following key terms will be discussed in this study.

Ambiguous Loss

A mourning process that parents of children with autism go through that is similar to what one would experience after a loved one dies (Boss, 2010).

ASD

Autism Spectrum Disorders. A spectrum of neurological disorders that impairs communication, social, emotional, physical, and mental abilities. Also referred to as PDD or autism (American Psychiatric Association, 2000, 2013; Tilton, 2010; Turkington & Anan, 2007).

Autism

Also referred to as autistic disorder, which was originally identified by Leo Kanner in 1943 (Peck, 1998). Commonly used term for *Autism Spectrum Disorders (ASDs)* or *Pervasive Developmental Disorders (PDDs)* (Shore & Rastelli, 2006; Tilton, 2010). Autism is a neurological problem that affects the processing, integrating, and organizing of information that significantly weakens communication, social relations, physical abilities, mental processing, and emotional development (American Psychiatric Association, 2013; Bluth et al., 2013; Coplan, 2010).

Child-related Stress

A source of parental stress that pertains to specific child characteristics such as ASD severity level, age and developmental stages, behavior problems, and adaptive behavior (Baker-Ericzén et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; Osborne & Reed, 2010; Tilton, 2010).

Family Stress Theory

A theory examined by McCubbin and Patterson (1983) in which various stressors along with their effects on the family process of adjustment and adaptation are considered over time.

Marital Satisfaction

The degree to which a married couple considers themselves to be happy (Lavner & Bradbury, 2010).

Marital Quality

The status of a married couple's relationship that is based on multiple dimensions of measurements, such as levels of marital satisfaction or happiness, marital communication levels, and marital conflict levels (James, 2015a).

Multicultural Theory

A multi-dimensional treatment approach that was developed by Sue, Ivey, and Pedersen in 1996. Multicultural theory incorporates both intercultural and intracultural issues within a range of cultural populations. (Schwazbaum & Thomas, 2008).

Parents of Children with ASD Stress Model

A research based, systemic stress model customized to address the experiences of parents of children with ASD. The model includes a variety of independent and dependent variables that impact parents as individuals and parents as a couple. The interacting effects of intervening factors, such as support and resources, are explained as having the tendency to compound and influence other stressors related to parenting a child with ASD. Child characteristics, parental perceptions, couple relationship status, numerous family stressors, and interaction patterns are addressed in this model (Bluth et al., 2013).

Pervasive Developmental Disorder (PDD)

An umbrella of neurological conditions that affects communication, social, emotional, physical, and mental development. Also referred to as ASD or autism (American Psychiatric Association, 2000, 2013; Shore & Rastelli, 2006; Tilton, 2004, 2010).

Parental Stress

A state of tension, anxiety, or worry that results when a life occurrence or change creates a state of imbalance in an individual or family. The exact causes of this stress are related to the child's ability level and family circumstances and may be categorized in two groups: *child-related* stress and *parent-related* stress (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010).

Parent-related Stress

A source of parental stress that pertains to specific parent and family issues such as parenting and caregiving burdens, time demands, financial strains, advocating for and accessing medical and educational services, social obstacles, and family adjustments (Baker-Ericzén et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; Osborne & Reed, 2010; Tilton, 2010).

Severity Level of Autism Spectrum Disorder

The degree of autism spectrum disorder (ASD) symptoms, developmental delays, and problematic behaviors (Benson, 2006; Tilton, 2010).

Stressor

A life experience, change, or child characteristic (subjective and objective) that creates an imbalance in the family system and results in anxiety or worry (Bluth et al., 2013; McCubbin & Patterson, 1983).

Stress Pile-up

The accumulation of different factors--social, occupational, and personal, that may not necessarily relate to ASD but create tension, anxiety, or worry on an individual or family that may exaggerate the effects of the strain created by ASD (Manning et al., 2011; McCubbin & Patterson, 1983).

Stress Proliferation

The tendency of stressors to promote other stressors in additional domains of life. The influence of life stress on family adaptation (Benson, 2006; Benson & Karlof, 2009).

Theoretical Framework

As previously mentioned, parental stress for parents of children with ASD include *child-related* stress and *parent-related* stress (Bluth et al., 2013; Harper et al., 2013; Tilton, 2010). As a result of parental stress, adjustments may occur within the family structure; and in many cases, the marital relationship became strained (Benson, 2009; Hartley et al., 2010; Sicile-Kira, 2010; Tilton, 2010). Four noteworthy family stress theories are applicable in explaining how parental stress factors, such as a child's ASD severity level, may result in excessive stress for couples and how the combined stress factors ultimately decrease marital quality or increase divorce probability (Benson, 2009; Bluth et al., 2013; Sicile-Kira, 2010; Tilton, 2010). These four main family stress models are: (a) Hill's family stress model, (b) double ABCX model, (c) stress proliferation, and

(d) parents of children with ASD stress model (Benson, 2009; Bluth et al., 2013; Hill, 1949; Manning et al., 2011; McCubbin & Patterson, 1983).

Earlier family stress models like Hill's family stress model depicted family behavior in response to a family crisis (Hill, 1949; McCubbin & Patterson, 1983). An illustration of the Hill's family stress model would have been when an ASD diagnosis of ASD was believed by family members to be a family crisis. Then, the family structure would subsequently result in a strained marital relationship or a marital dissolution.

In contrast to Hill's family stress model, the double ABCX model, stress proliferation, and the parents of children with ASD stress model considered additional factors that were more ASD specific (Benson, 2009; Bluth et al., 2013; McCubbin & Patterson, 1983). In the double ABCX model, a stressor was identified as a life circumstance or shift that influenced the family thereby resulting in an imbalance in the family social system (McCubbin & Patterson, 1983). A diagnosis of ASD would have been the dominant stressor when applying the double ABCX model. McCubbin and Patterson (1983) described how the impact of a stressor and a crisis led to family outcomes that mirrored several interrelated variables. Stressors brought about by personal, family, or society determined the path of family adjustment and adaptation.

Autism Spectrum Disorder Stress Models

In accordance with Benson (2006) and Bluth et al. (2013), neither Hill's ABC-X model nor McCubbin and Patterson's (1983) double ABCX model, addressed the ongoing day to day stressors that parents of children with ASD endured. When multiple factors, such as social isolation and financial strains, were mingled and lived daily, they depicted the outcomes of stress proliferation (Benson, 2009). Thus, stress proliferation is

the propensity of stressors to influence multiple stressors in other domains of life (Benson, 2009). Examples of these multiple stressors include marital, social, and financial stress (Benson, 2006; Tilton, 2010). Therefore, these factors combined and impacted numerous areas of the couple's lives simultaneously.

In comparison to stress proliferation, the parents of children with ASD stress model encapsulated the intervening factors in different family occurrences. These ASD related stressors, as described by Bluth et al. (2013) consisted of child characteristics and a lack of family resources, for instance. In addition, the parents of children with ASD stress model emphasized the need for increased awareness regarding the influence of ASD related stress factors on marital relationships (Bluth et al., 2013).

Multicultural Theory

The multicultural theory was developed by Sue, Ivey, and Pedersen in 1996, because traditional theories such as behavioral, humanistic, and psychodynamic, were based on Western perspectives and mostly suited for Caucasian middle-class males (Schwarzbaum & Thomas, 2008). The multicultural theory is a multi-dimensional approach for working with culturally diverse clients (Schwarzbaum & Thomas, 2008). According to Schwarzbaum and Thomas (2008), professionals who base treatment on the multicultural theory present interventions that match the family's language and cultural framework. Thus, this culturally responsive approach may be beneficial for families from various cultures who live with ASD.

Due to ethnic differences in families of children with ASD, a multicultural theory should be applied when treating African American families affected by ASD (Boyd & Correa, 2005; Broder-Fingert et al., 2013; Carr, & Lord, 2013; Darling, Senatore, &

Strachan, 2012; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Kirsch, 2014; Mandell & Novak, 2005; Montes, & Halterman, 2011). Researchers have discovered cultural factors, such as ethnicity, are associated with ASD diagnoses, treatment accessibility and treatment participation (Ennis-Cole et al., 2013; Gourdine, Baffour, & Teasley, 2011; Meadan et al., 2010; Sell et al., 2012). However, the majority of ASD related studies consisted of few to no African American participants (Carr & Lord, 2012; Kirsch, 2014; Montes & Halterman, 2011).

The lack of African American ASD research may be problematic, because in a qualitative study, Kirsch (2014) stated African American parents of children with ASD experience some unique ethnic related stressors that Caucasians may not experience. For instance, Kirsch (2014) reported African American mothers are more likely to assume primary caretaking responsibilities for children with or without disabilities. Also, LaTaillade (2006) stated African Americans' discrimination experiences affect marital quality. Therefore, more multicultural responsiveness is warranted for ASD family interventions (Bluth et al., 2013; Burkett et al., 2015; Darling et al., 2012; Ennis-Cole et al., 2011).

Traditional ASD treatment methods do not address African American issues in the same way that multicultural counseling theory does (Carr & Lord, 2012; Goldner & Drentea, 2009; Kirsch, 2014; Mandell & Novak, 2005; LaTaillade, 2006; Montes & Halterman, 2011). Moreover, African American's experiences and perceptions of privilege, power, and oppression, for instance, may create cultural barriers that inhibit participation in ASD interventions (LaTaillade, 2006; Montes & Haltermn, 2011; Schwarzbaum & Thomas, 2008). Furthermore, a number of researchers indicated that

African Americans, when compared to Caucasians were less likely to obtain ASD related treatment services (Broder-Fingert et al., 2013; Jarquin et al., 2011; Sell et al., 2012).

Therefore, multicultural family therapy may be instrumental in improving ASD treatment for African American families (Broder-Fingert et al., 2013; Carr, & Lord, 2013; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Montes, & Halterman, 2011; Schwarzbaum & Thomas, 2008).

Research Questions

1. What is the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates?
2. What is the relationship between African American parents of children with and without ASD and parents' marital quality?
3. What is the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality?
4. Which parental stress variables (*parent-related, child-related*) best predicts whether a married African American parent will have a child with ASD or without ASD?
5. What is the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels?

Limitations

This study was limited to the use of archival data that was based on telephone surveys. Thus, some meaning may have been lost due to the inability to observe nonverbal cues and body language. Another limitation is gender underrepresentation. For instance, most of the feedback was obtained from mothers. Consequently, results may have been different had more feedback from fathers been obtained. Lastly, the

target population for this study include parents of children with ASD. The respondents' parental relationship to the selected child in this study does not differentiate between biological or adoptive parents. Thus, the researcher may not determine differences between biological and adoptive parents' responses.

Delimitations

This research is delimited to parents in the United States who agreed to participate in a telephone survey from the *2011-2012 National Survey of Children's Health (NSCH)* (Child and Adolescent Health Measurement Initiative [CAHMI], 2012b, 2012d). Thus, findings may not be useful worldwide. Another delimitation is the absence of data for family coping and resiliency factors. Although these two variables are closely related to this study, coping and resiliency factors were not included on the archival data set. The study is delimited to married African American parents of children with ASD.

Assumptions

The following assumptions were made in this analysis:

1. The diagnosis of ASD was based on parental reporting rather than actual medical records. Thus, the assumption was that the parents' responses regarding the identification of ASD for their child were accurate.
2. The children's ethnicity was provided. However, the ethnicity of the parents was not addressed on the survey. Consequently, the assumption was for every child identified as African American, at least one of the parents of the children was also identified as African American. This assumption may be problematic in situations where the parents are adoptive rather than biological parents.
3. Considering that this survey was conducted in 2011-2012, which was before

the 2015 supreme court ruling allowing gay couples nationwide to marry (Barnes, 2015), the assumption is that the reported married status on the *2011-2012 National Survey of Children with Special Health Care Needs (NS-CSHCN)* (CAHMI, 2012a, 2012b, 2012c) refers to heterogeneous couples as opposed to same-sex couples.

Organization of the Study

This dissertation is divided into five chapters. The format for this investigation is described in the following manner. Chapter I consists of: (a) an introduction to the study, (b) statement of the problem, (c) purpose of the study, (d) significance of the study, (e) definition of terms, (f) theoretical framework, (g) research questions, (h) limitations, (i) delimitations, (j) assumptions, and (k) organization of the study.

Chapter II is comprised of the literature review which is organized by: (a) purpose statement, (b) literature review methods, (c) autism spectrum disorder overview, (d) changes in the *Diagnostic and Statistical Manual of Mental Disorders*, (e) ethnic differences in autism spectrum disorder diagnoses, (f) notable studies of ethnic differences in autism spectrum disorder diagnoses, (g) summary of autism spectrum disorder, (h) impact of autism spectrum disorder on married parents, (i) parental stress, (j) notable studies of autism spectrum disorder impact on married parents, (k) summary of autism spectrum disorder impact on married parents, (l) divorce probability for parents of children with autism spectrum disorder, (m) notable studies of divorce probability for parents of children with autism spectrum disorder, (n) summary of divorce probability for parents of children with autism spectrum disorder, (o) theoretical conceptualizations, (p) summary, and (q) research questions. The themes present in the literature are increased stress levels and lower marital quality for parents of children with ASD in

comparison to parents of children who are not on the spectrum (Bluth et al., 2013; Brobst et al., 2009; Gau et al., 2012; Griffith et al., 2010; Harper et al., 2013; Hartley et al. 2010; Karst & Hecke, 2012; Miranda, et al., 2015; Sicile-Kira, 2010). Another present theme in the review of literature is the lack of research involving African American parents (Carr & Lord, 2012; Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Kirsch, 2014; Montes & Halterman, 2011).

Chapter III is the methodology section. Chapter III is organized as follows: (a) research design, (b) participants, (c) instrumentation, (d) data collection, (e) data analyses, and (f) summary. Chapter IV entails: (a) discussion of the demographic data and (b) findings of the quantitative analyses. Lastly, Chapter V is the: (a) summary of the study and (b) discussion of the findings with implications for further research regarding ASD for African American families.

CHAPTER II

LITERATURE REVIEW

The literature review is organized by: (a) purpose statement, (b) literature review methods, (c) autism spectrum disorder overview, (d) changes in the *Diagnostic and Statistical Manual of Mental Disorders*, (e) ethnic differences in autism spectrum disorder diagnoses, (f) notable studies of ethnic differences in autism spectrum disorder diagnoses, (g) summary of autism spectrum disorder, (h) impact of autism spectrum disorder on married parents, (i) parental stress, (j) notable studies of autism spectrum disorder impact on married parents, (k) summary of autism spectrum disorder impact on married parents, (l) divorce probability for parents of children with autism spectrum disorder, (m) notable studies of divorce probability for parents of children with autism spectrum disorder, (n) summary of divorce probability for parents of children with autism spectrum disorder, (o) theoretical conceptualizations, (p) summary, and (q) research questions.

Purpose Statement

The purpose of this study was to examine: (a) the relationships among ethnicity (African American and Caucasian), parents of children with and without ASD, and divorce rates; (b) the relationship between African American parents of children with and without ASD and marital quality; (c) the relationships among African American parents of children with ASD, levels of ASD severity, and marital quality; (d) the predictive nature of parental stress variables (*parent-related, child-related*) on having a child with or without ASD; and (e) the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels.

Literature Review Methods

The literature search process began with an electronic search of academic databases and the Internet. Some of the databases were PsycINFO (Psychological Abstracts), Psychology and Behavior Sciences Collection, PsycArticles, and ERIC (Educational Resource Information Clearinghouse). The following key words were utilized in the search engine: autism, ASD, marital quality, marital satisfaction, stress, divorce, family, African American, ethnicity, culture, stress models, divorce rates, disabilities, and parents.

Although the electronic search lead to the accumulation of hundreds of articles, some of them were not relevant to this study. However, more relevant articles were identified by searching the reference lists of the articles that were originally retrieved from the databases listed above. This method was effective in locating appropriate literature. A reading and analysis of the cited works of various studies and related references were conducted. Then, this process was repeated until a point of saturation was obtained where no new pertinent studies appeared in the search (Randolph, 2009). The end result equated to approximately 120 relevant articles.

Due to the fact that the original search resulted in hundreds of articles, many of which were not directly related to the study of parents of children with ASD regarding stress levels and marital quality, a method of inclusion and exclusion to add focus to the research was employed. For example, the criteria of children with ASD was included while the topic of adults with ASD was excluded. Next, a concentration on married parents rather than all family members or extended family was performed. Due to the 2015 supreme court ruling allowing gay couples nationwide to marry (Barnes, 2015),

attempts were made to verify that the married couples in the more recent selected studies were heterogeneous couples.

Also, purposive sampling was utilized during the article selection process. Consequently, the central articles related to ASD were examined. For example, a reliance was placed on articles that met one of the following criteria: (a) informed the theory that drove the study, (b) made a strong claim related to a component of the study, (c) related to the topic, (d) supported the argument, (e) put ideas into context of a bigger picture, (f) described the current status of ASD research, and (g) reflected the recognition of ASD related works (Lunenburg & Irby, 2008). By using the criteria listed above, a construction of definitions that differentiated relevant from irrelevant ASD studies was obtained (Cooper, 1982). Then, the irrelevant studies that did not meet at least one of these guidelines were excluded.

One illustration of this inclusion and exclusion process involves the inclusion of the study by Bluth et al. (2013) and the exclusion of the study by Baron et al. (2007). The article by Bluth et al. (2013) was often cited, because it presents a new stress model called parents of children with ASD stress model. The parents of children with ASD stress model is more ASD related than some of the former stress models, such as McCubbin and Patterson's (1983) double ABCX model. Thus, Bluth et al.'s article met several of the criteria listed above, because the parents of children with ASD stress model informed the theory that guides this study. Likewise, Bluth et al.'s (2013) parents of children with ASD stress model is related to the topic on stress related ASD factors, and it supports the claims of how having children with ASD impacts married parents.

Unlike Bluth et al.'s (2013) research, Baron et al.'s (2007) investigation did not meet any of Lunenburg and Irby's (2008) seven objectives listed above. Although the purpose of Baron et al.'s (2007) was to determine the associations related to marital satisfaction, none of the presented variables consisted of parenting a child with ASD or any other disability. Based on Lunenburg and Irby's (2008) literature review technique, the addition of Baron et al.'s (2007) article was unnecessary for the topic of ASD related variables. As a result, the study by Baron et al. (2007) was excluded from this investigation.

Once the inclusion and exclusion process was saturated, the review was organized by utilizing a mixed organizational format (Randolph, 2009). For instance, the review began with an introduction. Next, an explanation of the literature review method was presented. Then, the results were portrayed in a conceptual format followed by a discussion of research results from notable studies. Afterwards, the research questions were listed. Lastly, conclusion of the review was provided.

The conceptual format mentioned above was based on the ASD central themes that were recognized in the review process. The existing themes in the literature are elevated parental stress levels and decreased marital quality for parents of children with ASD in comparison to parents of children who are not on the spectrum (Bluth et al., 2013; Brobst et al., 2009; Gau et al., 2012; Griffith et al., 2010; Harper et al., 2013; Hartley et al. 2010; Karst & Hecke, 2012; Miranda, et al., 2015; Sicile-Kira, 2010). Another outcome in the review of literature is the lack of research involving African American parents (Carr & Lord, 2012; Cuccaro et al., 2007; El-Ghoroury, & Krackow,

2012; Kirsch, 2014; Montes & Halterman, 2011). The literature themes were identified by focusing on the ASD research outcomes and ASD research practices.

While concentrating on research outcomes in the literature review, it was noted that methodological flaws that included a lack of diversity in the selection of participants existed. In effect, the research findings may not be generalized to non-dominant groups affected by ASD, such as African Americans. Thus, a review of ASD research practices revealed a practical need for African Americans that are not currently being met. An outcomes-oriented review of ASD may be instrumental in ascertaining a lack of information on a specific research outcome, thereby determining a reasonable need for an ASD outcome study (Randolph, 2009).

During the investigation of ASD related research outcomes present in the selected studies, meaningful findings from both quantitative and qualitative studies were located. Yet, a focus on quantitative analyses was more prevalent in comparison to qualitative analyses. Usually, the quantitative studies involved more participants than did the qualitative. For instance, Nealy, O'Hare, Powers, and Swick's (2012) and Carr and Lord's (2012) investigate mothers' perspectives of parenting children with ASD; however, Nealy et al.'s (2012) qualitative study consist of only eight mothers while Carr and Lord's (2012) quantitative study consist of 110 mothers. Considering the current investigation involved results from 3,587 married African American parents who participated in the *2011-2012 National Survey of Children with Special Health Care Needs (NS-CSHCN)* (CAHMI, 2012c), it was logical to focus more attention to the research outcomes and data analyses that involved the most participants affected by ASD.

Thus, the more meaningful outcomes and analyses came from the quantitative studies in the literature review in comparison to the qualitative studies.

Several authors in this review have used quantitative measures in their investigations. Authors such as Hastings et al. (2005) and Meirsschaut, Roeyers, and Warreyn, (2010) have reported findings from correlation analyses consisting of Pearson r or *Spearman's rho*. For instance, Hastings et al. (2005) have examined Pearson's correlations to determine whether or not the child's adaptive skills or severity ratings are associated with the parent's anxiety levels. When testing for statistical significance of ASD variables, some of the authors in this review have also included results from t scores or *chi square* scores (Darling et al., 2012; Foody, James, & Leader, 2014; Gau et al., 2012). The correlation analyses are helpful in determining the degree to which ASD variables, such as stress and ASD severity levels, are related to parenting children with ASD (Lunenburg & Irby, 2008).

Also, researchers such as Brobst et al. (2009) and Meirsschaut et al. (2010) have employed one-way analyses of variance (ANOVAs) to determine differences between parents of children with and without ASD. Other statistical findings present in this review resulted from t -test, *chi-square* tests, post-hoc analyses, analyses of covariance (ANCOVAs), multivariate analyses of variance (MANOVAs), and regression analyses (Ben-Sasson et al., 2013; Griffith et al., 2010; Sikora et al., 2013; Steijn et al., 2014). Out of all statistical analyses reported in this review, the most often used were regression analyses. For instance, Broder-Fingert et al. (2013), Benson and Karlof (2009), and Hartley et al. (2010) have all utilized regression analyses to examine the impact of having children with ASD on families.

In comparison to Broder-Fingert et al. (2013) and Hartley et al. (2010), logistic regression will be used in the current study to determine the probability of parents' stress levels and marital quality levels. Similar to Darling et al.'s (2012) study, *chi-square* tests will be employed in the current study. Also like Darling et al. (2012) who have compared stress levels for categorical groups of fathers of children with and without disabilities, an investigation of divorce rates for married parents of children with and without ASD by using *chi-square* tests will be performed.

A causal-comparative research design was used (Brewer & Kuhn, 2010; Gay et al., 2006; Lunenburg & Irby, 2008) by utilizing survey data from the *2011-2012 National Survey of Children's Health (NSCH)* (CAHMI, 2012c). The causal-comparative research design was the most appropriate design for this study as analyses did not involve any manipulation of the independent variable. For each analysis, archival data pertaining to married African American parents was employed. Moreover, the selection of the causal-comparative research design best served the purpose in this study to determine relationships and predictive natures on parents' stress levels and parents' marital quality.

Autism Spectrum Disorder Overview

Autism Spectrum Disorder is a spectrum of neurological conditions that affects the processing, integrating, and organizing of information and significantly impairs communication, social interaction, physical functions, mental abilities, and emotional growth (American Psychiatric Association, 2013; Bluth et al., 2013; Coplan, 2010). Autism spectrum disorder is called a spectrum because of the wide range of intensity, symptoms and behavior, types of disorders, and individual differences (American Psychiatric Association, 2013; Coplan, 2010; Exkorn, 2005; Tilton, 2010; Turkington &

Anan, 2007). Although ASD affects development in several domains, it is mostly characterized by communication and socialization problems (American Psychiatric Association; Tilton).

Prevalence

Researchers have reported that ASD is evident worldwide and is prevalent among every ethnic group and every socio-economic class (CDC, 2013a; NINDS, 2009, Shore & Rastelli, 2006). Boys are diagnosed with ASD four to five times more than girls (CDC, 2013a; Coplan, 2010; NINDS, 2009). Families all over the world struggle with the hardships and emotional effects of rearing a child with ASD. Some experts have considered ASD as an epidemic due to the rapid increase in diagnosed ASD (Coplan, 2010; Shore & Rastelli; Turkington & Anan, 2007).

Due to the increase in ASD diagnoses, more ASD related studies have been recently conducted in an effort to increase ASD awareness. According to the most recent report by the Center for Disease Control (2014b), approximately 1 in 68 children in the United States has been diagnosed with an ASD. This rate is higher than the 2012 release that cite 1 in 88 children in the United States has been diagnosed with an ASD (*"1 in 88 Children"*, 2012; Abbott, 2013; Bluth et al., 2013; CDC, 2012, 2014a, 2014b; NINDS, 2009; Vacca, 2013). However, experts have argued about whether or not the increase in numbers indicates a true increase or is a reflection of increased awareness and early diagnosis (CDC, 2014b; Coplan, 2010; Exkorn, 2005).

Regardless of the reason for the increase in people being diagnosed with ASD, there are advantages to increased public awareness related to ASD. A lack of knowledge is linked to higher stress levels in parents of children with ASD (Hartley, et al., 2010;

Moh & Magiati, 2012; O'Brien, 2007). In addition, marital adaptability is affected by the level of expertise in the area of ASD (Johnson, 2012).

Signs and Symptoms of Autism

The characteristics of ASD usually appear during the first three years of childhood and symptoms span over a life time (American Psychiatric Association, 2013; Exkorn, 2005; Turkington & Anan, 2007). Unlike other disorders such as Down syndrome, children with ASD do not have any physical characteristics that distinguish them from children not diagnosed with ASD (Exkorn, 2005; Turkington & Anan, 2007). However, Tilton (2010) claimed that some common signs and symptoms of ASD that differ from children without ASD and contribute to parental stress are:

(a) expressive and receptive communication and social deficits, (b) insistence on routine and resistance to change, (c) appearing to be “off in their own little world”, (d) resistance to physical closeness such as hugging, (e) attachment to “odd” toys such as kitchen utensils, (f) parallel play (playing beside other children rather than interactively with them) and lack of imaginative play, (g) sudden and apparently unexplainable anger and tantrums, (h) repetitive behaviors and obsessive-compulsive disorder, (i) splinter skills (excelling in a particular skill that is above the apparent IQ level), and (j) appearing to have sensory overload in normal environments (p. 3).

Etiology and Treatment

Etiology and treatment for ASD are controversial among professionals, which creates parental debates about the causes and treatment options for ASD (Karst & Hecke, 2012). Although no known causes of ASD exist, experts have suspected that the disorder

may be influenced by a combination of a genetic predisposition and some environmental trigger occurring either before or after birth (CDC, 2013a; NINDS, 2009; O'Brien, 2007; Turkington & Anan, 2007). The lack of knowledge about the causes of ASD contributes to parents' sense of confusion (Karst & Hecke, 2012; Macintosh, & Dissanayake, 2006; O'Brien, 2007), and the potential of genetic influences may cause couples to blame on one another (NINDS, 2009; O'Brien, 2007; Tilton, 2010). This ambiguity along with a natural tendency to find blame may create marital conflict and marital dissatisfaction among parents of children with ASD (NINDS, 2009; Tilton, 2010; O'Brien, 2007).

Despite the lack of knowledge regarding the causes of ASD, researchers have agreed ASD interventions may reduce ASD symptoms and improve functions of persons with ASD (Eikeseth, Hayward, Gale, Gitlesen, & Eldevik, 2009; Klintwall, Eldevik, & Eikeseth, 2015; Peters-Scheffer et al., 2011; Tilton, 2010). Yet, parents and professionals may find it difficult to find the best ASD treatment, because of various ASD intervention options and mixed treatment outcomes (Anderson et al., 2014; Axelrod et al., 2012; Eikeseth, 2009; Eikeseth et al., 2009; Klintwall et al., 2015; Ravindran & Myers, 2012; Tilton, 2010). Nevertheless, practitioners have made successful gains in research based treatment options including: (a) behavior modifications, such as applied behavior analysis (ABA); (b), diet and nutrition modification; (c) drug therapy; (d) speech therapy; (e) occupational therapy; and (f) physical therapy (Tilton, 2010).

As previously stated, the ASD treatments listed above yield mixed reports of effectiveness (Eikeseth, 2009; Eikeseth et al., 2009; Klintwall et al., 2015). However, researchers have identified the following predictable variables for positive ASD treatment outcomes: (a) treatment intensity, (b) the timing of the interventions, (c) variations in

child characteristics, and (d) environmental factors (Anderson et al., 2014; Axelrod et al., 2012). For instance, speech therapy, occupational therapy, and physical therapy are often effective in developmental areas such as communication and fine and gross motor skills, especially when therapy starts before age five (NINDS, 2009; Peters-Scheffer et al., 2011; Tilton, 2010; Turkington & Anan, 2007).

Despite debatable approaches to treat ASD, a consensus among researchers is that early diagnosis and interventions yield the most noticeable improvements in ASD symptoms (Eikeseth et al., 2009; Klitwall et al., 2015; Peters-Scheffer et al., 2011; Tilton, 2010). For example, children who receive an early intervention, such as ABA, show progress in behavior and social skills over time (Peters-Scheffer et al., 2011; Exkorn, 2005; Hall & Graff, 2012). Due to the fact that early interventions are effective, experts recommend an early diagnosis (American Psychiatric Association, 2013; Exkorn, 2005; Rivard, Terroux, Parent-Boursier, & Mercier, 2014).

Parents often struggle with receiving an early diagnosis, and then deciding which treatment option is most suitable for their child and life circumstances (Ennis-Cole et al., 2013). For instance, Karst and Hecke (2012) have suggested that even though treatment for ASD is beneficial, the cost and search for treatment adds emotional and financial stress to the marital relationship. Tilton (2010) and Sicile-Kira (2008) have also explained how couples dispute over the cost and type of treatment as well as the duration of treatment sessions for their child.

Autism Spectrum Disorder and Cultural Issues

Besides the cost and type of treatment, another variable that plays a part in ASD treatment selection is the parents' cultural background which influences the parents'

perceptions of ASD and treatment options (Bluth et al., 2013; Boyd & Correa, 2005; Ennis-Cole et al., 2013; Jarquin, et al., 2011; Karst & Hecke, 2012; Meadan et al., 2010). Consequently, researchers have recommended an increase in multicultural ASD awareness in order to implement more culturally responsive ASD interventions for non-dominant ASD populations, such as African Americans (Carr & Lord, 2012; Jarquin, et al., 2011; Trembath, Balandin, & Rossi, 2005). One reason more culturally responsive treatment is recommended is because much of the research and treatment methods have been highly influenced by studies conducted with majority upper class Caucasian participants (Ben-Sasson et al., 2013; Brobst et al., 2009; Carr & Lord, 2012; El-Ghoroury, & Krackow, 2012; Mandell & Novak, 2005; McHatton & Correa, 2005; Samadi & McConkey, 2011).

Changes in the *Diagnostic and Statistical Manual of Mental Disorders*

Similar symptoms such as those mentioned above by Tilton (2010) are listed in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. In comparison to the *Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR)*, some diagnostic criteria in the *DSM-5* are different. One of the most obvious changes in the *DSM-5* is the shift from the four different labels related to separate diagnoses of ASD to the single diagnostic label of ASD. Unlike the *DSM-5*, the following diagnostic categories were previously included under the heading of pervasive developmental disorders (PDDs) in the *DSM IV-TR*: (a) autistic disorder, (b) Asperger's disorder, (c) childhood disintegrative disorder, (d) Rett's syndrome, and (e) pervasive developmental disorder-not otherwise specified (PDD-NOS) (American Psychiatric Association, 2000; Exkorn, 2005; Turkington & Anan, 2007). Experts have claimed that

these separate labels cause confusion and inconsistency with diagnoses (American Psychiatric Association, 2013; Autism Research Institute, 2015). Thus, only the one umbrella term of ASD is now utilized in the *DSM-5* with specified severity levels dependent on how much support is required (American Psychiatric Association, 2013; Autism Research Institute, 2015).

Other revisions in the *DSM-5* include the reorganization of the communication and social components into one combined domain and an increased number of symptom requirements to meet the ASD criteria regarding to fixated interests and repetitive behaviors (American Psychiatric Association, 2013; Autism Research Institute, 2015). Also, a popular change in the *DSM-5* is the elimination of the language development delay requirement (American Psychiatric Association, 2013; Autism Research Institute, 2015). In addition, the *DSM-5* better promotes earlier diagnosis of ASD as opposed to the *DSM-IV-TR* criteria, which mostly recognizes the ASD identification in children over the age of five (American Psychiatric Association, 2013; Autism Research Institute, 2015).

Ethnic Differences in Autism Spectrum Disorder Diagnoses

As mentioned above, a cultural factor such as ethnicity may affect parents' and professionals' perceived observations, associated meanings, and beliefs of the symptoms as being positive or problematic (Chaidez et al., 2012; Mandell & Novak, 2005; Samadi & McConkey, 2011). Parents' and professionals' perceived observations of the absence or presence of problematic behaviors and/or ASD symptoms are significant, because ASD diagnosis is largely based on observations of behavior rather than medical tests (American Psychiatric Association, 2013; Ball, 2008; NINDS, 2009; Robledo et al.,

2005; Tilton, 2010). Therefore, the presence or absence of an ASD diagnosis may be influenced by ethnic differences (Chaidez et al., 2012; Mandell & Novak, 2005; Samadi & McConkey, 2011).

Positive or negative parental feedback regarding ASD-related symptoms are included in ASD assessment instruments (NINDS, 2009; Sell et al., 2012). Also, professionals consider parental information when they made ASD diagnoses (NINDS, 2009; Sell et al., 2012). Therefore, cultural variances of parents' symptom interpretations, constructed meanings, and related implications about ASD may influence the diagnoses, misdiagnoses, or lack of ASD diagnoses (Carr & Lord, 2012; Ponterotto, Casas, Suzuki, & Alexander, 2010). More research is needed in order to explore the influences of culture, specifically, ethnicity, as they relate to ASD diagnoses (Carr & Lord, 2012).

Notable Studies of Ethnic Differences in Autism Spectrum Disorder Diagnoses

Several notable studies pertaining to the diagnosis and ethnic comparisons of ASD families are present. For example, Carr and Lord (2012) conducted a longitudinal study of the perceptions of African American and Caucasian mothers of children with ASD. Their data indicated the existence of cultural variations regarding the link between maternal education, ethnicity, and negative impact cognitions. The most relevant implication in this study was the impact of socioeconomic status, which is an area missing from the majority of ASD related research. Two limitations to this study were small sample sizes and limited geographic region. Thirty African American and 80 Caucasian participants were recruited from a state-funded program in North Carolina. Therefore, the findings may not be generalized to other populations.

Dyches, Wilder, Sudweeks, Obiakor, and Algozzine (2004) noted differences in ASD prevalence rates were discovered among different races being served under the Individuals with Disabilities Education Act (IDEA). In addition, Dyches et al. (2004) discussed a multicultural family adaptation model. In this multicultural family adaptation model, Dyches et al. (2004) described culturally relevant components, such as communication, social skills, and behavior repertoires. One limitation to this analysis was the absence of non-dominant population based data. Thus, this article raised several culturally related questions, but did not provide practical answers for more culturally responsive ASD practices.

More recently, Jarquin et al. (2011) identified racial differences in the prevalence of people being diagnosed with ASD in Atlanta, Georgia. Jarquin et al.'s (2011) study consists of 1,273 Caucasian and African American participants. Analyses indicated that ASD prevalence increased over time for both Caucasian and African American populations. However, Caucasians were 39% to 50% more likely to receive ASD eligibility than African Americans. Each of the studies by Carr and Lord (2012), Dyches et al. (2004), and Jarquin et al. (2011) illustrated cultural issues, such as ethnicity and socioeconomic status concerning common ASD practices.

Summary of Autism Spectrum Disorder

In summary, ASD is a spectrum of neurological disabilities that impairs communication, social interaction, physical functions, mental abilities, and emotional development (American Psychiatric Association, 2013; Bluth et al., 2013; Coplan, 2010). When compared to other disabilities, ASD is rapidly rising (Hartley et al., 2014; Vacca, 2013). Although ASD is present among various racial, ethnic, and socioeconomic

populations (CDC, 2013a), most research studies and ASD interventions were mostly limited to research findings conducted with upper-class Caucasian male participants (Ben-Sasson, et al., 2013; Brobst, et al., 2009; Carr & Lord, 2012; Mandell & Novak, 2005; McHatton & Correa, 2005; Samadi & McConkey, 2011). Consequently, parents and professionals lacked culturally responsive ASD treatment and diagnostic options (Carr & Lord, 2012; Jarquin et al., 2011; Trembath et al., 2005).

Impact of Autism Spectrum Disorder on Married Parents

When researchers design ASD interventions, they have often only focused on the individual who is diagnosed with ASD (Karst & Hecke, 2012). However, ASD is a condition that affects the entire family, not just the person who is diagnosed with ASD (Ben-Sasson et al., 2013; Karst & Hecke, 2012; Meirsschaut et al., 2010). Researchers have reported the impact of having children with ASD is extremely severe on families when compared to families who have children with no disorders and families who have children with other disorders (Bluth et al., 2013; Eisenhower et al., 2005; Griffith et al., 2010; Hayes & Watson, 2013; Karst & Hecke, 2012). For example, parents of children with ASD reported higher stress levels than parents of children with no disabilities and more than parents of children with other disabilities (Bluth et al., 2013; Eisenhower et al., 2005; Griffith et al., 2010; Hastings et al., 2005; Olsson & Hwang, 2002; Pisula, 2007).

Parental Stress

Parenthood entails unique challenges for every household; however, parenting difficulties for parents of children with ASD are more enhanced as parents face daily challenges that parents of typical children do not endure (Gau et al., 2012; Harper et al., 2013; Miranda et al., 2015). Several researchers have stated in comparison to parents of

children without ASD and parents of children with other disabilities, parents of children with ASD experienced higher stress levels (Bluth et al., 2013; Eisenhower et al., 2005; Griffith et al., 2010; Harper et al., 2013). Parental stress variables that are ASD specific may be divided into two main categories: *child-related* stress and *parent-related* stress (Bluth et al., 2013; Harper et al., 2013; Hastings, et al., 2005; Rivard et al., 2014).

Child-related Stress

The first category of parental stress, *child-related* stress factors, include the child characteristics, such as the ASD level of severity, age and developmental stages, behavior problems, and adaptive behaviors (Baker-Ericzén et al., 2005; Harper et al., 2013; Hastings et al., 2005; Johnson & Simpson, 2013; Osborne & Reed, 2010; Tilton, 2010). The aforementioned *child-related* characteristics not only elevated parental stress, but were also found to be predictors of parental divorce (Hartley et al., 2010). In like manner, relationships existed between child disability characteristics and family functioning levels (Herring et al., 2006; Sikora et al., 2013). Likewise, the more severe the child disability variables, the higher were the parental stress levels and the lower were the marital quality levels (Baker, Blacher, & Olsson, 2005; Pozo et al., 2014; Santamaria, Cuzzocrea, Gugliandolo, & Larcan, 2012).

Severity level of autism spectrum disorder. The ASD severity level refers to the degree of ASD symptoms, developmental delays, and problematic behaviors (American Psychiatric Association; 2013; Benson, 2006; Tilton, 2010). The *DSM-5* includes diagnostic specifications of ASD severity levels ranging from levels one to three based on social communication delays and restricted behaviors as well as repetitive behaviors with level three necessitating the most support and level one requiring the least

support (American Psychiatric Association; 2013). Other researchers have used terms such as severe or high, moderate or average, and mild to depict the ASD severity levels (Osborne & Reed, 2010; Tilton, 2010). An example of a level three or severe ASD level may explain a child who has difficulty adjusting to changes in his or her routines, screams or has tantrums due to an inability to express wants and needs, and initiates few to no social interchanges (American Psychiatric Association, 2013; Benson 2006, Hastings et al., 2005, Osborne & Reed, 2010; Tilton, 2010). As long as ASD is a spectrum disorder, the signs and symptoms associated with ASD may vary for different individuals (American Psychiatric Association; 2013; Tilton, 2010).

Age and developmental stages. Parents of children with ASD endure *child-related* worries that are based on their child's age or developmental stage (Estes et al., 2013; Rivard et al., 2014; Tilton, 2010). For instance, Tilton (2010) explained that five stages of parental worries were dependent on the child's age: (a) infant, (b) toddler, (c) young school age, (d) older school age, and (e) adult (p. 89). One example of an age or stage based *child-related* stress variable may happen during the infant stage when parents notice the baby does not babble or is not comforted by hugs. This *child-related* stress variable may create other parental problems. For instance, marital disputes may arise during the infant stage, because fathers usually take a longer time to accept that the child has developmental delays (Tilton, 2010). One explanation for this type of *child-related* conflict may be the variation of parents' perceptions of different problematic behaviors (Bluth et al., 2013). *Child-related* stress levels elevate when parents view specific child behaviors as an issue (Bluth et al., 2013). Moreover, *child-related* stress

may cause marital conflicts when one parent thinks a problem exist with the baby while the other parent disagrees (Tilton, 2010).

Besides the conflicting perceptions of the child's condition during the infant and toddler stages, *child-related* stress is also elevated as parents try to get a diagnosis (Ennis-Cole et al., 2013; Estes et al., 2013). Children are usually diagnosed with ASD between ages three and six (CDC, 2012; El-Ghoroury & Krackow, 2012; Estes et al., 2013). Parents' emotions and energy levels are affected during the toddler and young school age stages as they go to several professionals for evaluations (Ennis-Cole et al., 2013; Estes et al., 2013; Moh & Magiati, 2012). The diagnostic process is also stressful due to a lack of clear answers (ambiguity) about ASD (Hartley et al., 2010; Karst & Hecke, 2012; Meadan et al., 2010; Nealy et al., 2012; O'Brien, 2007).

Also, throughout the toddler and young school age, parents' mixed emotions elevate *child-related* stress levels and affect parents' marital relationships (Hock et al., 2012; Olivier & Ah Hing, 2009; Tilton, 2010). As a result of parents' emotional journeys during their quest for a diagnosis, parents initially feel a sense of release once they finally received an ASD diagnosis for their child (Tilton, 2010; Vacca, 2013). However, parents also experience alternating emotions, such as fear, anger, sadness, and guilt with the ASD diagnosis (Ennis-Cole et al., 2013; Hock et al., 2012; Olivier & Ah Hing, 2009; Tilton, 2010). For example, the guilt sets in when parents may believe they are failures after their child is diagnosed with ASD (Hock, et al. 2012; Santamaria et al., 2012). Not all parents react in the same manner, and there tends to be gender differences (Bluth et al., 2013; Flippin & Crais, 2011; Foody, et al, 2014; Hastings et al.; Herring et al., 2006; Hock et al., 2012). Nevertheless, these parental worries and range of emotions are linked

to depression and marital dissatisfaction (Ennis-Cole et al., 2013; Olivier & Ah Hing, 2009).

In the course of the young school age, a child with ASD may experience fluctuating abilities in different developmental categories such as communication, social skills, and cognitive abilities (Rivard et al., 2014). Consequently, couples tend to disagree about the child's capabilities, and this may result in more ambiguity, increased stress levels, and marital dissatisfaction (Bluth et al., 2013; Tilton, 2010). To make matters worse, parents of children with ASD continue to deal with ambiguous loss as more dreams are lost and comparisons are made between their child and another child without ASD (Tilton, 2010). For instance, a father may feel sorrow when he attends a little league game and watches boys without ASD run and catch the ball while his son with ASD is not able to play the sport.

As the child reaches an older school age, he or she may make more progress in various developmental abilities, but parents may remain frustrated when the child suffers delays in other skills (Rivard et al., 2014). Thus, during this older school age stage, the *child-related* uncertainty and stress continue for parents of a child with ASD (Rivard et al., 2014; Tilton, 2010). An example would be when a child improves in his or her communication skills and the tantrums diminish but the child may still be unable to bath independently. In this illustration, the parents' *child-related* stress continues to be elevated due to the variations in the child's abilities that require couples to constantly readjust their parental expectations (Falk et al., 2014; Karst & Hecke, 2012; Rivard et al., 2014).

Parents continue to worry about their child's ASD symptoms as the child approaches adulthood, because many adults with ASD are unable to live and function independently (Bluth et al., 2013; Carr & Lord; 2012; Tilton, 2010). Parents often feel helpless and hopeless about the options available to their child when he or she becomes an adult (Tilton, 2010). Ultimately, the parents' anxiety and hopelessness lead to depression and anger which influences how the couples relate to one another (Bluth et al., 2013; Hastings et al., 2005). Thus, *child-related* stress for parents of a child with ASD begin when the child is an infant, and the effects of ASD on parents' stress levels and the marital relationship are lifelong (Bluth et al., 2013; Hartley et al., 2010; Harper et al., 2013; Tilton, 2010).

Behavior problems. Challenging behavior problems, such as sleep problems, screaming, aggressiveness, self-injurious tendencies, and throwing objects are more typical for children with ASD than for children without ASD or for children with other disorders (American Psychiatric Association, 2013; Eisenhower et al., 2005; Hoffman et al., 2008; Manning et al., 2011; Tilton, 2010; Walsh et al., 2013). Herring et al. (2006) have ascertained that children's ASD related emotional and behavioral problems increased parents' stress levels. Behavior management was more demanding for parents of children with ASD, because parents were confused about the best way to deal with behavior issues (Walsh et al., 2013).

One explanation for parents' confusion regarding ASD behavior management may be due to the variations in the children's skills and the children's uneven responses that are common for children with ASD (Baker et al., 2005; Walsh et al., 2013). For instance, when children with ASD misbehave, it is difficult for parents to determine how

much of the children's misbehaviors are due to their disorders and how much of their behaviors are attention seeking (O'Brien, 2007; Tilton, 2010). The uncertainty over the children's abilities ultimately may lead to frustration, and couples may argue about the best method of dealing with problem behaviors (Abbott, 2013; Benson, 2011). In this case, the level of *child-related* stress is not only related to the children's maladaptive behaviors, but also to the inconsistent disciplinary methods used by the parents (Baker et al. 2005; Bluth et al., 2013; O'Brien, 2007).

Adaptive behaviors. Children's adaptive behaviors, which may be measured by the Vineland Adaptive Behavior Scale, include socialization, communication, daily living skills and motor skills (Hastings et al, 2005; Osborne & Reed, 2010). Rivard et al. (2014) claimed parents' stress levels related to their children's adaptive behaviors. Also, in a study conducted by Bishop, Richler, Cain and Lord (2007), 80 Caucasian mothers and 30 African American mothers reported perceptions of higher negative impact when their children's reported adaptive behavior skills were low when compared with children whose adaptive behavior skills were rated higher.

Parent-related Stress

As stated earlier, ASD related parental stress may be grouped by *child-related* stress and *parent-related* stress (Bluth et al., 2013; Harper et al., 2013; Hastings, et al., 2005; Rivard et al., 2014). Similar to *child-related* stress factors, *parent-related*-stress factors were linked to high parental stress levels and low marital quality (Benson & Kersh, 2011; Brobst et al., 2009; Harper et al., 2013). According to researchers, some of the most relevant *parent-related* stress factors consisted of the following: (a) ambiguous loss, (b) time demands, (c) financial demands, (d) social stressors, (e) lifestyle changes;

(f) medical and special services, (g) role division; (h) pile-up stress and stress proliferation, and (i) increased marital stress and conflicts (Baker-Ericzén et al., 2005; Hartley et al., 2010; O'Brien, 2007; Tilton, 2010).

Ambiguous loss. The ambiguous loss theory explains the grieving process as it pertains to parents of children with ASD in multiple ways. Boss (2010) suggested that ambiguous loss occurs when a perceived family member is either physically absent or psychologically absent with no clear cut answer to explain the occurrence. A child with ASD may seem like he or she is psychologically absent due to a lack of interaction with family members and an inability to connect at the same level with everyone else.

Another form of ambiguous loss happens when parents grieve for the child they expected to have pre-diagnosis. After accepting the ASD diagnosis, parents normally go through a grieving process similar to what one would experience after a loved one dies (Sicile-Kira, 2008; Tilton, 2010). The parents mourn the child that they dreamed of having or the child that they once had before regression occurred (O'Brien, 2007; Tilton, 2010). Hence, this type of grieving process is also referred to as an ambiguous loss (Boss, 2010; O'Brien, 2007). After the diagnosis, parents of children with ASD experience high levels of stress as they struggle with the fact that their child has a lifelong disability (Karst & Hecke, 2012; O'Brien, 2007; Rivard et al., 2014; Tilton, 2010).

Ambiguity of ASD also occurs due to the lack of information pertaining to causes, warning signs, management, and outcome (Hartley et al., 2010; Karst & Hecke, 2012; O'Brien, 2007). Ambiguity related to ASD is increased, because experts remain unclear about the causes of ASD (CDC, 2013a; Karst & Hecke, 2012; NINDS, 2009; Tilton, 2010). Moreover, there is no known cure for ASD (CDC, 2013a; NINDS, 2009; Tilton,

2010). Boss (2010) claimed that ambiguous loss is the most stressful experience that families experience. Hartley et al. (2010) and O'Brien (2007) also linked ambiguity to parental distress.

Time demands. When compared with parents of children without ASD, parents of children with ASD endured more time pressure in caregiving due their children's' physical, emotional, cognitive, and social impairments (American Psychiatric Association, 2013; Bluth et al., 2013; Coplan, 2010; Karst & Hecke, 2012; Tilton, 2010; Sawyer et al., 2010; Smith et al., 2010). The solution to ASD related difficulties may become part of a bigger problem when the ASD interventions create time and expense pressures that may increase family disruptions (Hoefman, et al., 2014; Karst & Hecke, 2012; Pickard, & Ingersoll, 2016; Saunders, et al., 2015). For instance, children with ASD often require weekly sessions of speech therapy, occupational therapy, physical therapy, applied behavioral analysis (ABA) therapy, counseling, and social skills trainings (Karst & Hecke, 2012; Pickard & Ingersoll, 2016; Tilton, 2010). Due to the time demands related to transporting their children to and from therapy or medical appointments as well as parental participation in ASD interventions, parents may feel pressured to alter or decrease their work hours and, in some cases, quit their jobs (Abbott; 2013; Hock et al., 2012; Hoefman, et al., 2014; Kuhlthau et al., 2014; Meirsschaut et al., 2010; Pickard & Ingersoll, 2016; Saunders, et al., 2015; Sawyer et al., 2010; Stein, Foran, & Cermak, 2011). **Financial demands.** The financial demands contribute to parental stress due to treatment cost and changes in employment. For example, the search for special services and therapy is not only time consuming but also expensive (Johnson, 2012; McConnell, Savage, & Breitkreuz, 2014). Parents seek ASD therapy and treatment

to cope with their children's behavior issues and their development variations.

Unfortunately, the majority of insurance organizations exclude some ASD treatment options (Association of Maternal & Child Health Programs, 2012; Pickard & Ingersoll, 2016; Olivier & Ah Hing, 2009; Parish, Thomas, Williams, & Crossman, 2015).

Therefore, the lack of insurance coverage and high co-payments may result in increased financial burdens (Olivier & Ah Hing, 2009; Parish et al., 2015). Another issue that leads to increased financial burdens occurs when some working parents quit their jobs or decrease their work hours in order to meet the demands of caring for their children with ASD (Abbott, 2013; Hock et al., 2012; Hoefman, et al., 2014; Kuhlthau et al., 2014; Meirsschaut et al., 2010; Pickard & Ingersoll, 2016; Saunders, et al., 2015; Sawyer et al., 2010). In this scenario, couples may have to adjust to living off of one source of income rather than two. The cost of treatment and the changes in income greatly contribute to high stress levels in parents of children with ASD (Bluth et al., 2013; Hock et al., 2012).

Social stressors. Not only does *parent-related* stress consist of financial burdens, they also involve social stressors (McConnell et al., 2014). When children have a disability such as ASD that causes behavior issues and daily challenges, all interactions, including social engagements among family members, are changed (Hastings et al., 2005; Nealy et al., 2012; Smith et al., 2010). For example, the parents may choose to avoid certain family activities, such as going to a school program, due to their children's unpredictable behavior. Unpleasant situations that happen in schools, stores, and during family gatherings usually leave parents feeling isolated and stressed out (Karst & Hecke, 2012; Sicile-Kira, 2010).

Bluth et al. (2013) and O'Brien (2007) also explained how parenting children with ASD impacts parents' social support system and results in elevated stress levels. For instance, the children's unpredictable ASD behaviors make it challenging for parents to plan events or to cope with their children's actions (Bluth et al., 2013; O'Brien, 2007; Piper-Terry, 2012; Tilton, 2010). Consequently, parents of children with ASD feel a sense of isolation from the community and their extended family (Piper-Terry, 2012; Sicile-Kira, 2008; Tilton, 2010). In addition, it may be difficult for immediate family members to foster a sense of connections with one another due to their children's extreme ASD related behaviors (Bluth et al., 2013; Karst & Hecke, 2012; Piper-Terry, 2012).

Lifestyle changes. In order to cope with daily challenges, behavior problems, financial issues, and social stressors, parents of children with ASD make certain lifestyle changes that also affect their stress levels and their marriages (Abbott, 2013; Bluth et al., 2013; Hartley et al., 2014; O'Brien, 2007; Santamaria et al., 2012). Marital quality weakens when couples make extreme lifestyle changes such as sacrificing too much of their time, money, and social life to care for their children (Abbott, 2013; Nealy, et al., 2012; Shore & Rastelli, 2006; Sicile-Kira, 2010). For instance, prior to having a child with ASD, some parents may spend more time with family and friends (Altieri & Kluse, 2009; Nealy, et al., 2012; Sawyer et al., 2010). The effects of spending less time with family and friends result in a reduction in the couple's support system (Abbott, 2013; Bluth et al., 2013; Hartley et al., 2014; O'Brien, 2007; Sawyer et al., 2010; Tilton, 2010).

Another lifestyle change that contributes to *parent-related* stress is a reduction in personal spending due to the expense of therapy and treatment (Nealy, et al., 2012; Stein, et al., 2011). Parents find it necessary to adjust financial resources in order to afford

therapy and treatment for their child (Bluth et al., 2013; Ennis-Cole et al., 2013; Hock et al., 2012; Karst & Hecke, 2012; Nealy, et al., 2012; Stein et al., 2011). The financial adjustment ultimately contributes to a lifestyle change and marital adjustment, because it is more difficult to participate in leisure activities and to purchase miscellaneous items when caring for a child with ASD (O'Brien, 2007; Sawyer, et al., 2010; Smith et al., 2010; Stein et al., 2011).

Medical and special services. The quest for and participation in medical and special services may elevate *parent-related* stress levels because of time demands, financial burdens, and perceived negative culturally related experiences (Ennis-Cole et al., 2013; Hall & Graff, 2012; Harper et al., 2013; Karst & Hecke, 2012; Mackintosh, Goin-Kochel, & Myers, 2012; McHatton & Correa 2005; Stein et al., 2011; Tehee, Honan, & Hevey, 2009; Tilton, 2010). After the shock of the ASD diagnosis, parents' anxiety levels rise as they realize the overwhelming medical, educational, and other special services required in caring for children with ASD (Meadan et al., 2010; Tilton, 2010). For instance, in a qualitative study, Hock et al. (2012) have reported parents become stressed when deciding treatment options and methods of payment for ASD services. One reason the search for medical and special services are stressful for parents is due to the lack of insurance coverage for ASD service and limited access to required ASD treatment (Mackintosh, et al., 2012; Parish et al., 2015; Pickard & Ingersoll, 2015). Also, researchers have reported the time and effort required of parents to advocate and access needed medical and educational services correlate with increased anxiety (Johnson & Simpson, 2013; Nealy, et al., 2012). Parents often become consumed with researching knowledge about the multiple options for ASD related services, including

medical, social, and educational interventions (Karst & Hecke, 2012; Tilton, 2010).

Parent-related stress levels increase as parents become exhausted with the process of becoming educated about the various types of ASD treatments and available services for their children (Karst & Hecke, 2012; Tilton, 2010). The parents' stress levels are impacted, because the required medical and special services, including educational services, may require extra time, energy, and expenses (Johnson & Simpson, 2013; Meadan et al., 2010; Nealy, et al., 2012).

Not only is *parent-related* stress influenced by the lack of money and access for available medical and special services for ASD treatment, but also by perceived negative culturally related experiences with medical professionals (Ennis-Cole et al., 2013; Hall & Graff, 2012; Harper et al., 2013; Karst & Hecke, 2012; Mackintosh et al., 2012; McHatton & Correa 2005; Stein et al., 2011; Tehee et al., 2009; Tilton, 2010). For instance, in a study by Montes and Halterman (2011), African American parents of children with ASD report how negative perceptions of family-centered care affect their participation in ASD interventions. Moreover, Magana, Parish, and Son (2015) have conducted a similar study years later but still support racial and ethnic variations in the quality of ASD care have not improved over time. For instance, African American and Latino parents of children with ASD report their child's care providers lack cultural sensitivity when treating their children (Magana et al., 2015). Ennis-Cole et al. (2013) have claimed that some parents avoid ASD services or prematurely terminate ASD treatment due to perceived group history suffering, unfair treatment, or culturally insensitivity actions on the part of the professionals. Although the cause and effect patterns were not predicted, Carr and Lord (2012) have supported the claim made by

Ennis-Cole et al. (2013) by stating African American children with ASD receive less participation in ASD treatment than do Caucasian children.

Role division. An additional stressful change that occurs when parenting a child with ASD is called role division. Based on the structural family theory, the family system maintains itself through the formation of specific roles and tasks to be carried out by certain family members (Goldenberg & Goldenberg, 2008). In order to maintain balance, functional families usually have role divisions (Goldenberg & Goldenberg, 2008). Yet, the roles are usually unequally divided among mothers and fathers of children with ASD (Foody et al., 2014; Meadan et al., 2010). Consequently, Entricht, Hughes, & Tovey (2007) have conveyed when one spouse perceives the roles are unfair, marital conflict arises. Parental role divisions and disputes become even more dramatic when taking care of a child with ASD (Hartley, et al., 2014). One role division that occurs in families where a child has ASD is when one person, usually the mother, becomes the ASD expert, while the other person, usually the father, withdraws (Hastings et al., 2005; Sicile-Kira, 2010). Thus, stress and marital conflict usually accompany role division (Bluth et al., 2013; Entricht et al., 2007; Hartley et al., 2014; Sicile-Kira, 2010).

Pile-up stress and stress proliferation. Each of the *child-related* and *parent-related* stress factors previously listed contribute to parents' high stress levels and affect couple adaptability (Bluth et al., 2013; Hartley et al., 2014; Tilton, 2010). However, pile-up stress and stress proliferation add to these elevated stress rates (Benson, 2006; Benson & Karlof, 2009; Manning et al., 2011; McCubbin & Patterson, 1983). Although similar in theory, stress pile-up and stress proliferation have one major distinction. Stress pile-up, or sometimes referred to as pile-up stress, refers to the accumulation of different

factors--social, occupational, and personal, that may not necessarily relate to ASD but create tension, anxiety, or worry on an individual or family that may exaggerate the effects of the strain created by ASD (Manning et al., 2011; McCubbin & Patterson, 1983). An example of pile-up stress may be a parent losing a job.

When ASD related stress variables and pile-up factors are combined and experienced daily, they reveal the effects of what is referred to as stress proliferation (Benson, 2009). Stress proliferation is the propensity of stressors to cause other stressors in various areas of life (Benson, 2009). The challenge of living with a child with ASD is evident early, lasts a lifetime, and is related to other issues consisting of personal, occupational, marital, social, and financial stress (Benson, 2009; Manning et al., 2011; Sicile-Kira, 2010; Tilton, 2010). Thus, these factors combine and influence various domains of the parents' lives simultaneously. Stress proliferation increase the typical challenges that parents of children with ASD experience. The levels of parental stress relate to the degree of a specific problem and to the total number of issues faced (Benson, 2009; Hayes & Watson, 2013; Manning et al., 2011). Thus, multiple variables must be considered when describing parental stress.

Increased marital stress and conflicts. The previously described daily challenges experienced by parents of children with ASD include differences over discipline, coping with constant behavior problems, enduring tantrums and meltdowns that may last for hours, sleep deprivation, and variability in the child's level of functioning (Baker et al., 2005; Bluth et al., 2013; Harper et al., 2013; Hoffman et al., 2008; Nealy et al., 2012). These obstacles may increase stress and marital conflict (Baker et al., 2005; Benson & Kersh, 2011; Bluth et al., 2013; Harper et al., 2013; Nealy

et al., 2012). When married parents of children with ASD constantly deal with such extreme difficulties and behavioral issues, it creates a main source of parental stress as well as the need for socioemotional adjustment and couple adaptation (Benson, 2006; Harper et al., 2013; Ramisch et al., 2013).

Notable Studies of Autism Spectrum Disorder Impact on Married Parents

One study conducted by Ben-Sasson et al. (2013) revealed higher levels of family function impairment and parenting stress for parents of toddlers with ASD when the toddlers had higher early sensory over-responsivity levels. Implications of Ben-Sasson et al.'s 2013 study supported the benefits of early intervention for both parents and children with ASD. This study had a good sample size of 174. However, a major limitation was that 88% of the participants were Caucasian and only 6% were African American.

Unlike Ben-Sasson et al. (2013), Sikora et al. (2013) did not disclose the race of the participants in their study. In comparison to Ben-Sasson et al. (2013), Sikora et al. (2013) also cited relationships among behavior problems of children with ASD and family functioning levels. After performing an ANCOVA, MANCOVAs, *t*-tests, and regression analyses with 136 parents of children with ASD, Sikora et al. (2013) reported significant group differences in parents' negative attitudes about parenting, social relationships, sibling impact, and impact to marriage when comparing their children's' externalizing behaviors. One main limitation of this examination is all families were participants in ASD intervention clinics. Thus, the findings may not be generalized to the general public.

Summary of Autism Spectrum Disorder Impact on Married Parents

Parents of children with ASD often experience increased stress levels when dealing with parental stress which consists of both *child-related* and *parent-related* stressors (Bluth et al., 2013; Harper et al., 2013; Hastings, et al., 2005; Rivard et al., 2014). These ASD parental stress variables are also culturally influenced and may strain the marital relationship (Bluth et al., 2013; Brobst et al., 2009; Ennis-Cole, 2013; Hartley et al., 2010; James, 2014; Johnson, 2012; Johnson & Simpson, 2013; Karst & Hecke, 2012). Therefore, various types of culturally based adaptation are essential for parents of children with ASD (Bluth et al., 2013; Hall & Graff, 2013; Hastings et al., 2005; McConnell et al., 2014; O'Brien, 2007).

Divorce Probability for Parents of Children with Autism Spectrum Disorder

As mentioned earlier, rearing children with ASD not only affects parenting stress but it also influences marital adjustment according to a study by Hartley et al. (2014). Due to the stress proliferation process impacts a couple's psychological well-being and adjustment (Benson, 2009), parents of children with ASD may be unable to adjust to the major challenges they are confronted with, and their marital relationships suffers (Bluth et al., 2013; Brobst et al., 2009; Hartley et al., 2010). Several other researchers have also claimed when parents of children ASD experience elevated stress and major family structure adjustments, they may encounter a decrease in their marital quality (Benson, 2009; Benson & Karsh, 2011; Bluth et al., 2013; Brobst et al., 2009; Harper et al., 2013; Nealy et al., 2012; Sicile-Kira, 2010; Tilton, 2010).

Although marital satisfaction or marital happiness may be used interchangeably with the term marital quality, James (2015a, 2015b) have distinguished the different types

of marital relationship measurements. According to James (2015a, 2015b), measurements of marital satisfaction or marital happiness are limited, because they only evaluate one dimension of the couple's interactions. For instance, marital satisfaction or marital happiness Likert scales usually ask couples how happy or satisfied they are with their marriages (James (2015a, 2015b; Lavner & Bradbury, 2010). On the other hand, James (2015a, 2015b) have used the term marital quality instead of marital satisfaction or marital happiness, because marital quality incorporates more relationship aspects than does marital satisfaction or marital happiness. For example, James (2015a, 2015b) have explained marital quality refers to the status of a married couple's relationship based on multiple dimensions of measurements, such as levels of marital satisfaction or happiness, marital communication levels, and marital conflict levels.

Several investigators have explained how marital quality may be influenced by ASD related factors (Benson, 2009; Benson & Karsh, 2011; Bluth et al., 2013; Brobst et al., 2009; Harper et al., 2013; Nealy et al., 2012; Sicile-Kira, 2010; Tilton, 2010). For example, communication problems and a lack of intimacy are examples of strains caused by ASD stress factors which reflect components of low marital quality as reported by James (2015a, 2015b). Along the same lines, researchers such as McConnell et al. (2014) and Nealy, et al. (2012) have discussed how elevated ASD parental stress levels often result in low marital quality, separation, or divorce. These strains contribute to the divorce rate of parents of children with ASD according to Bluth et al. (2013), Hartley et al. (2010), and Tilton (2010).

Although researchers have agreed that increased parental stress is reported for parents of children with ASD, investigators cite inconsistent rates for divorce and marital

quality (Benson & Kersh, 2011; Freedman, et al., 2012; Hock et al., 2012). For instance, several researchers have challenged a previously reported divorce rate of 80% (Medical News Today, 2007) for parents of children with ASD based on conflicting results in duplicated studies (Abbott, 2013; Freedman, et al., 2012; Hock et al., 2012; Kennedy Krieger Institute, 2010; Meadan et al., 2010). Despite debates pertaining to specific divorce rates for parents of children with ASD in the United States, the consensus is the separation and divorce rates among parents of children with ASD are higher than the 40% to 50% range of the United States general population divorce rates (Afifi et al., 2013; Baucom et al., 2011; Bluth et al., 2013; Bottom, 2013; Brown, & Porter, 2013; Hartley et al. 2010; Karst & Hecke, 2012; Sbarra, & Beck, 2013; Sicile-Kira, 2010). Thus, it is critical to review the prevalence and contributing factors to parental stress, marital quality, and divorce among parents of children with ASD.

Notable Studies of Divorce Probability for Parents of Children with Autism Spectrum Disorder

One noteworthy examination of divorce probability for parents of children with ASD was conducted by Hartley et al. (2014). In Hartley et al.'s 2014 study, uneven labor division increases parental stress and decreases marital adjustment when parents are not in agreement with their role arrangements. In addition, the higher the number of ASD symptoms present in the adolescent, the more time is required for child care. Two main limitations existed in Hartley et al.'s (2014) investigation. First, the sampling process for the comparison group differed from the sampling procedures used in the selection of the parents of children with ASD group. Second, the sample mainly consist of educated

Caucasian parents. Thus, these findings may not adequately be generalized to non-dominant populations.

In opposition to Hartley et al. (2014), Freedman et al. (2012) have analyzed relationship status among parents of children with ASD and have contended parents of children with ASD are not at increased risk of divorce or separation. Freeman, et al.'s (2012) findings are based on data from the 2007 NSCH (Blumberg et al., 2012). Telephone interviews were conducted with 913 parents of children who reported a current ASD diagnosis to ascertain the family structure. Based on the four-stage logistic regression models performed by Freedman et al. (2012), no relationship exists for parenting a child with ASD and being at an increased risk of divorce or separation.

However, one main limitation to Freedman et al.'s (2012) study is the inability of the researcher to determine divorce-specific information. For example, the outcome variable in the 2007 NSCH (Blumberg et al., 2012) data only referenced the rate that both biological or adoptive parents are married rather than single, separated, or divorced (Freedman et al., 2012). Therefore, the researcher could not ascertain whether or not the participating parent was ever divorced from the child's biological parent or from a step parent since the child was born. The relevance of the child's ASD diagnosis or the relationship status at the time of the child's birth could not be analyzed in Freeman et al.'s (2012) study. This leaves room for more analyses on the topic of divorce and separation probability for parents of children with ASD.

Summary of Divorce Probability for Parents of Children with Autism Spectrum Disorder

Although mixed findings of divorce probability have been reported by researchers, the overall impact of having children with ASD on married parents may become so devastating that it may ultimately contribute to marital separation or divorce (Bluth et al., 2013; Hartley et al., 2010; Hock et al., 2012; Karst & Hecke, 2012; Meadan et al., 2010; Rivard et al., 2014). One explanation for this claim is that parents of children with ASD often endure higher stress levels in comparison to children without ASD and children with other disabilities (Falk et al., 2014; Griffith et al., 2010; Miranda et al., 2015; Santamaria et al., 2012). For instance, several authors have argued ASD related marital conflict occurs when parents of children with ASD dispute over behavior management, ASD treatment options, and role division (Bluth et al., 2013; Harper et al., 2013; Meadan et al., 2010; Nealy et al., 2012; Tilton, 2010).

Likewise, numerous researchers have stated married parents' must adapt to lifestyle changes due to increased financial burdens and time demands required to care for children with ASD (Abbott, 2013; Bluth et al., 2013; Hartley et al., 2014; O'Brien, 2007; Santamaria et al., 2012; Tilton, 2010). In effect, multiple *child-related* and *parent-related* stress factors elevate parental stress levels and increase marital tension (Baker et al., 2005; Benson & Kersh, 2011; Bluth et al., 2013; Harper et al., 2013; Nealy et al., 2012; Walsh et al., 2013). Due to pile-up stress and stress proliferation, some couples may be unable to adapt to these demands and ultimately experience a decrease in marital quality which often leads to separation or divorce (Bluth et al., 2013; Brobst et al., 2009; Hartley et al., 2010; Walsh et al., 2013). Therefore, married parents of children with

ASD are more at risk of divorce in comparison to the general United States population (Afifi et al., 2013; Baucom et al., 2011; Bluth et al., 2013; Bottom, 2013; Brown, & Porter, 2013; Hartley et al. 2010; Karst & Hecke, 2012; Sbarra, & Beck, 2013; Sicile-Kira, 2010).

Theoretical Conceptualizations

More recent stress models stem from former stress models like Hill's family stress model that explains family behavior in reaction to a family crisis (Hill, 1949; McCubbin & Patterson, 1983). For instance, a diagnosis of ASD is perceived as a family crisis and thus creates a change in the family structure based on the parents of children with ASD stress model (Bluth et al., 2013; Darling et al., 2012). Bluth et al. (2013) have illustrated how a child's ASD affects the relationships within the family system and results in a negative outcome in relation to a couples' relationship quality. The occurrence of ASD causes a family systems change that may lead to marital maladjustment and thereby may result in separation or divorce (Bluth et al., 2013; Hartley et al., 2010).

Autism Spectrum Disorder Stress Models

Unlike earlier family stress models, stress models such as the double ABCX model, stress proliferation, and the parents of children with ASD stress model address more ASD specific variables (Benson, 2009; Bluth et al., 2013; McCubbin & Patterson, 1983). For example, according to the double ABCX model, a stressor is described as a life circumstance or shift that impacts the family which causes an imbalance in the family social system (McCubbin & Patterson, 1983). In applying the double ABCX model, a diagnosis of ASD would be the main stressor. McCubbin and Patterson (1983) have claimed the influence of a stressor and a crisis result in family outcomes that reflects

various interrelated factors. Stressors caused by personal, family, or society define the path of family adjustment and adaptation.

On the other hand, Benson (2006) and Bluth et al. (2013) have criticized both Hill's (1958) ABC-X model of family stress and McCubbin and Patterson's (1983) double ABCX model, because neither model encapsulates the constant daily stressors that parents of children with ASD encounter. For instance, each of the stress factors previously listed contribute to parents' high stress levels and affect adaptability. However, when these factors are combined and experienced daily, they reveal the effects of what is referred to as stress proliferation (Benson, 2009).

Stress proliferation is the propensity of stressors to cause other stressors in other areas of life (Benson, 2009). The challenge of living with a child with ASD is evident early, last a lifetime, and is related to other issues consisting of personal, occupational, marital, social, and financial stress (Benson, 2006; Ennis-Cole et al., 2013; Stein et al., 2011; Tilton, 2010). Thus, these stress factors combine and influence various domains of the parents' lives simultaneously. According to Benson (2009), stress proliferation increases the typical challenges that parents of children with ASD experience. Moreover, Bluth et al. (2013) have described how the levels of parental and marital stress relate to the degree of a specific problem and to the total number of issues being faced.

Similar to the stress proliferation concept, the parents of children with ASD stress model captures the intervening variables, such as work, income, siblings, family structure, and other family situations. These intervening variables are taken into account when a conceptualization of the experienced stress factors of families affected by ASD is developed. Moreover, the parents of children with ASD stress model addresses the

specific stressors mainly associated with parenting a child with ASD. These ASD related stressors, as explained by Bluth et al. (2013) include child characteristics, family stressors, a lack of individual, couple, and family resources as well as a lack of support systems. More important, the parents of children with ASD stress model reflect the necessity for professionals to gain more insight pertaining to how marital relationships are influenced by the previously identified ASD stress related factors (Bluth et al., 2013).

Multicultural Theory

Another way that professionals may increase their insights related to parents of children with ASD is by basing their treatment on the multicultural theory. The multicultural theory is a treatment approach that requires practitioners to consider clients' multiple cultural contexts during ASD intervention planning (Schwarzbaum & Thomas, 2008). By being more culturally aware of clients' beliefs, values, and religions, professionals may decrease ASD treatment barriers (Kalb et al., 2012; Karst & Hecke, 2012; Ravindran & Myers, 2012). Unlike previous theories, such as behavioral, humanistic, or psychodynamic theories that were based on perspectives of Caucasian middle-class males, the multicultural theory was developed for culturally diverse clients (Lataillade, 2006; Schwarzbaum & Thomas, 2008). Thus, the multicultural approach for ASD interventions may be more effective when working with non-dominant populations, such as African American families, because the multicultural approach is culturally sensitive (Schwarzbaum & Thomas, 2008).

Another reason why the multicultural theory is applicable to ASD treatment with African American families is because this approach addresses ethnic differences in families of children with ASD (Boyd & Correa, 2005; Broder-Fingert et al., 2013; Carr,

& Lord, 2013; Darling et al., 2012; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Kirsch, 2014; Mandell & Novak, 2005; Montes, & Halterman, 2011 Mandell & Novak, 2005). In support of the multicultural view, several researchers have reported ethnicity is linked to differences in ASD diagnoses, treatment accessibility and treatment participation (Ennis-Cole et al., 2013; Gourdine et al., 2011; Meadan et al., 2010; Sell et al., 2012). For instance, Kalb et al. (2012) compared predictor variables for ASD treatment appointment absences and cancelations for Caucasian and African American clients. Kalb et al. (2012) have stated the African American race was a better predictor of appointment cancelations and absenteeism when compared to Caucasian clients. In addition, Kalb et al. (2012) suggested the clinic may benefit from more culturally competent providers.

Despite the previously discussed findings in ethnic variations pertaining to ASD interventions, the majority of ASD related studies consist of few to no African American participants (Carr & Lord, 2012; Kirsch, 2014; Montes & Halterman, 2011). The absence of African American ASD studies may produce a lack of knowledge pertaining to unique problems related to African Americans that affect their stress levels and their marital quality. Examples of issues prevalent in the African American community are explained by Kirsch (2014). For instance, African American mothers are more likely to be the main care givers of their children, whether they have disabilities or not based on Kirsch's (2014) findings in a qualitative study. Also, discrimination experiences endured by African Americans affect marital quality based on LaTaillade (2006).

The examples described above strengthens the importance of multicultural competence when providing ASD family interventions (Bluth et al., 2013; Burkett et al.,

2015; Darling et al., 2012; Ennis-Cole et al., 2011). In comparison to traditional ASD treatment methods, the multicultural method is more effective when working with African American participants, because the traditional ASD interventions do not address African Americans' issues in the same manner that the multicultural theory does (Carr & Lord, 2012; Goldner & Drentea, 2009; Kirsch, 2014; Mandell & Novak, 2005; LaTaillade, 2006; Montes & Halterman, 2011). For instance, African Americans' participation in ASD treatment may be blocked by their negative situations related to privilege, power, and oppression (LaTaillade, 2006; Montes & Haltermn, 2011; Schwarzbaum & Thomas, 2008). In effect, the multicultural therapy method may be useful in increasing providers' awareness of negative cultural experiences and in improving ASD treatments for African Americans (Broder-Fingert et al., 2013; Carr, & Lord, 2013; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Montes, & Halterman, 2011; Schwarzbaum & Thomas, 2008).

Summary

In closing, based on statistics from the CDC (2014a, 2014b), ASD is on the rise and its impact may be devastating not only for the children with ASD, but also for married parents (Goldner & Drentea, 2009; Karst & Hecke, 2012; Meirsschaut et al., 2010; Walsh et al., 2013). Children with ASD may look like typical children; however, their behaviors are characterized by different levels of unusual behavior patterns, language delays, social withdrawal, atypical emotional reactions, sensory integration problems, and deficiencies in social interactions (American Psychiatric Association; 2013; Tilton, 2010). The aforementioned ASD behaviors are referred to as *child-related* characteristics and they contribute to elevated parental stress levels (Baker-Ericzén et al.,

2005; Johnson & Simpson, 2013; Osborne & Reed, 2010; Tilton, 2010). Besides behavior problems, other *child-related* stress factors may consist of the ASD severity level, age and developmental stages, and adaptive behaviors (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; Osborne & Reed, 2010; Tilton, 2010). The Appendix summarizes data-based ASD articles published between 2002 and 2015 that pertain to *child-related* stress.

Parental stress is not only affected by the *child-related* variables mentioned above, but *parent-related* issues also contribute to increased parental stress levels (Bluth et al., 2013; Harper et al., 2013; Hastings, et al., 2005; Rivard, et al., 2014). The Appendix also condense findings associated with *parent-related* stress for parents of children with ASD. These *parent-related* stress sources associated with caring for a child with ASD may include: (a) ambiguous loss, (b) time demands, (c) financial demands, (d) social stressors, (e) life- style changes; (f) medical and special services, (g) role division; (h) pile-up stress and stress proliferation, and (i) increased marital stress and conflicts (Baker-Ericzén et al., 2005; Hartley et al., 2010; O'Brien, 2007; Tilton, 2010). The combination of the *child-related* and *parent-related* stressors impact parent's lives in various ways.

The accumulation of various parental stressors contributes to stress proliferation which may cause each stressor to spread to other areas of the parents' lives and affect their personal, occupational, marital, and social relationships (Benson, 2009). The combination of these stress factors create distance between the parents (Abbott, 2013; Benson, 2009; Benson & Kersh, 2011; Sicile-Kira, 2010;). The family stress model illustrates how the diagnosis of ASD creates a change in the family structure (Bluth et al.,

2013, Darling et al., 2012). This change may lead to marital maladjustment thereby resulting in separation or divorce (Brobst et al., 2009; Hartley et al., 2010; Tilton, 2010).

Although researchers have identified common ASD related stress variables, much of the ASD research is limited in sample sizes, geographic locations and participant selections (Abbott, 2013; Benson, 2009; Benson & Kersh, 2011; Carr & Lord, 2012; Cuccaro et al., 2007; Johnson, 2012; Sicile-Kira, 2010; Samadi & McConkey, 2011). For instance, the majority of the ASD related studies have been conducted with educated and upper class Caucasian participants (Ben-Sasson et al., 2013; Brobst et al., 2009; Carr & Lord, 2012; Cuccaro et al., 2007; Mandell & Novak, 2005; McHatton & Correa, 2005; Samadi & McConkey, 2011). In addition, few studies have been conducted with African American participants (Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Montes & Halterman, 2011). Consequently, United States research findings may not be generalized to populations beyond the dominant culture in the United States. Also, ASD interventions lack in cultural responsiveness (El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Montes, & Halterman, 2011; Peters-Scheffer et al., 2011; Samadi & McConkey, 2011).

Due to inconsistent findings and various gaps in literature, more analyses are warranted to add to the existing literature pertaining to the impact that having children with ASD has on married parents. Notably, mixed results concerning the prevalence of ASD, parental stress levels, and divorce rates among parents of children with ASD exist in the research (Abbott, 2013; Benson & Kersh, 2011; Bluth et al., 2013; Dotina, 2010; Freedman et al., 2012; Hock et al., 2012; Johnson, 2012; Manning et al., 2011; Sawyer et al., 2010). In addition, cause and effect relationships regarding parental stress variables,

marital quality, and ethnic related issues remain unsubstantiated in the review of literature (Bluth et al., 2013; Carr & Lord, 2012; Cuccaro et al., 2007; Gourdine et al., 2011; Hock, et al., 2012; Karst & Heck, 2012; Montes & Haterman, 2011; Sawyer et al., 2010). Therefore, an examination is required to determine relationships and predictors regarding marital quality and stress levels of African American parents with and without ASD. In addition, ethnic considerations may be applied in investigating relationships and predictive natures of stress levels and marital quality responses between African American parents and Caucasian parents of children with and without ASD.

Research Questions

Based on the literature reviewed and the gap in the research, the following research questions guided this research.

1. What is the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates?
2. What is the relationship between African American parents of children with and without ASD and parents' marital quality?
3. What is the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality?
4. Which parental stress variables (*parent-related, child-related*) best predicts whether a married African American parent will have a child with ASD or without ASD?
5. What is the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels?

CHAPTER III

METHODOLOGY

The purpose of this causal-comparative study was to examine: (a) the relationships among ethnicity (African American and Caucasian), parents of children with and without ASD, and divorce rates; (b) the relationship between African American parents of children with and without ASD and marital quality; (c) the relationships among African American parents of children with ASD, levels of ASD severity, and marital quality; (d) the predictive nature of parental stress variables (*parent-related*, *child-related*) on having a child with or without ASD; and (e) the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels. In this chapter, the methodology that was used to answer the following research questions is described:

1. What is the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates?
2. What is the relationship between African American parents of children with and without ASD and parents' marital quality?
3. What is the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality?
4. Which parental stress variables (*parent-related*, *child-related*) best predicts whether a married African American parent will have a child with ASD or without ASD?
5. What is the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels?

The chapter is organized into four sections: (a) research design, (b) participants, (c) instrumentation, (d) data collection, (e) data analysis, and (f) summary.

Research Design

A causal-comparative research design (Brewer & Kuhn, 2010; Gay et al., 2006; Lunenburg & Irby, 2008; Salkind, 2010) was employed by utilizing survey data from the *2011-2012 National Survey of Children's Health (NSCH)* (CAHMI, 2012c). The causal-comparative research design was the most appropriate design for this study for several reasons. For each analyses, archival data pertaining to married African American parents was examined. The ex post facto (Brewer & Kuhn, 2010; Gay et al., 2006; Lunenburg & Irby, 2008; Salkind, 2010) investigation did not involve any manipulation of the independent variables.

Most of the analyses in this study consisted of two comparison groups, such as married African American parents of children with and without ASD. Furthermore, the two comparison groups were compared by using one dependent variable such as stress or marital quality levels. The selection of the causal-comparative research design best served the purpose in this study to determine group relationships and predictability. Therefore, causal-comparative research design was used instead of correlational design, which would have only determined whether or not relationships existed (Brewer & Kuhn, 2010; Gay et al., 2006; Lunenburg & Irby, 2008; Salkind, 2010).

Participants

Data from the *2011-2012 National Survey of Children's Health (NSCH)* (CAHMI, 2012c) that consisted of feedback from 95,677 parents and guardians of

children and teenagers nationwide was obtained. See Figure 1 for the participants' flow chart. Survey data results were inclusive of all 50 states in the nation, the District of Columbia (DC), and the 10 Health Resources and Services Administration regions (CDC, 2013b). Between February 28, 2011 and June 25, 2012, randomly sampled phone numbers were called by interviewers using the cross-sectional phone survey design to locate households comprised of children ages 17 and below (CAHMI, 2012b; CDC, 2013b). If no children lived in the household, the interviewer ended the call (CAHMI, 2012b).

After determining the households were comprised of at least one child, the interviewer asked to speak with the adult in the household who knew the most about the children's health and health care (CAHMI, 2012b). If the specified adult was unavailable, the interviewers made numerous call back attempts before omitting participants (CAHMI, 2012a). Once the interviewer reached the requested parent or guardian, the interviewer asked the ages of all children (CAHMI, 2012b; CDC, 2013b). Then, one child was randomly selected to be the subject of the interview (CAHMI, 2012b; CDC, 2013b). Finally, various sections of the questionnaires were asked depending on the age of selected child (CAHMI, 2012b; CDC, 2013b).

At the conclusion of the NSCH (CAHMI, 2012c) survey process, 847,881 households in the United States and DC were screened for interview eligibility (CDC, 2013b). Out of the 847,881 households that were called, 187,422 reported having at least

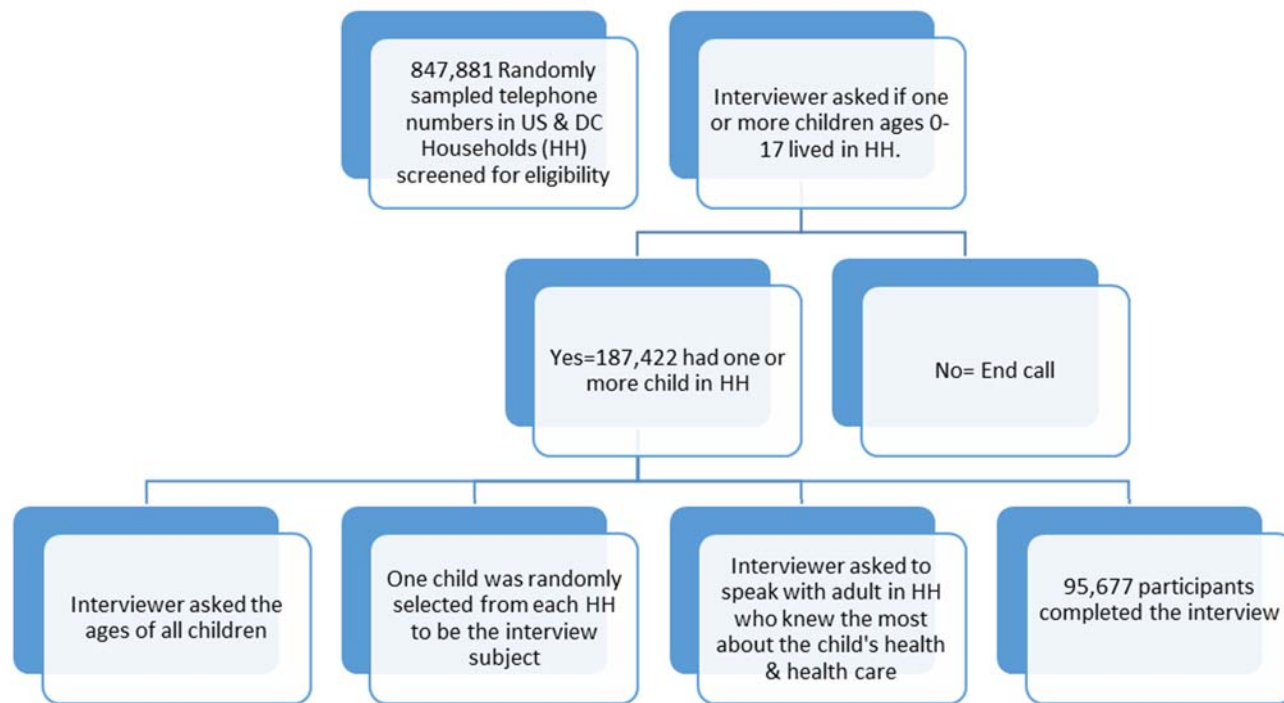


Figure 1. Flow of Participants. Adapted from “2011/12 National Survey of Children’s Health (2011/12 NSCH) Sampling and Survey Administration” by Child and Adolescent Health Measurement Initiative (2012). Available at www.childhealthdata.org.

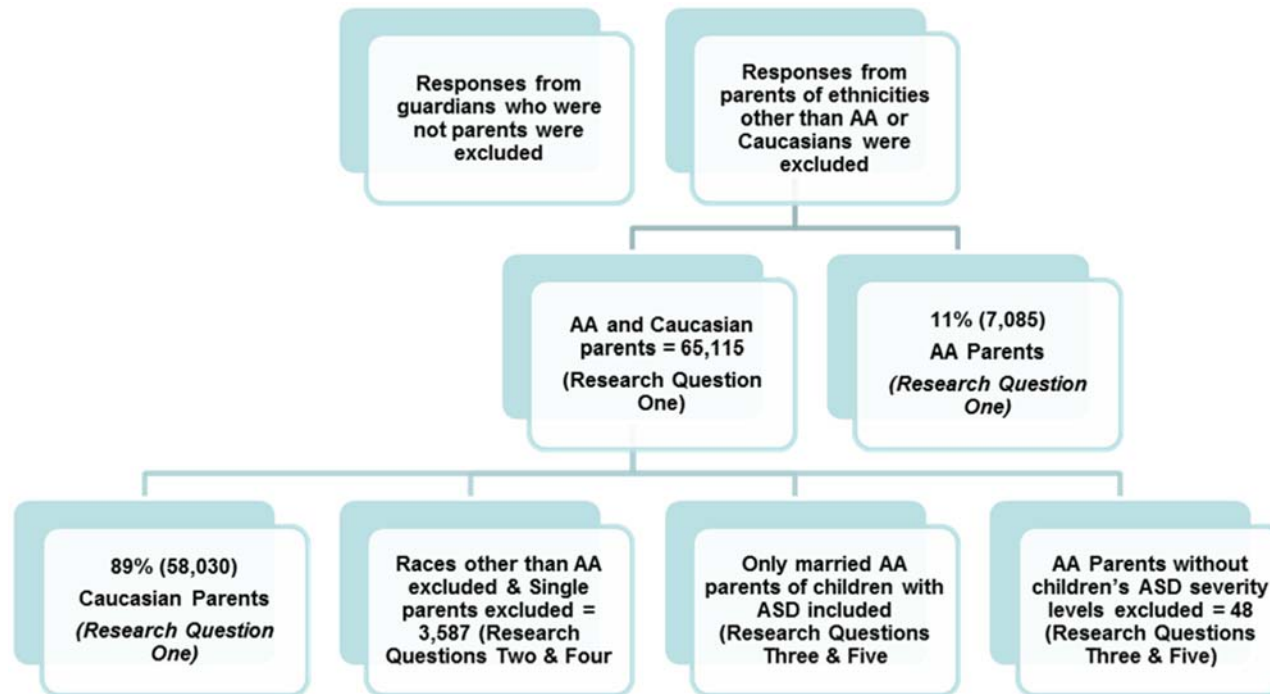


Figure 2. Flow of Participants in current study. Target population obtained after inclusion and exclusion process. AA = African Americans, ASD = Autism Spectrum Disorder.

one child in the household (CDC, 2013b). The average length for a full interview was approximately 35 minutes (CDC, 2013b). The interview was only determined complete if all *child-related* and age-appropriate sections were completed by the parent or guardian (CDC, 2013b). Therefore, out of the original sample of 187,422 eligible households in the United States and DC, only 95,677 interviews were completed; see Figure 1 (CAHMI, 2012b; CDC, 2013b).

For the purpose of this study, the 95,677 NSCH (CAHMI, 2012a, 2013) participants were narrowed to a more the target population 65,115 African American and Caucasian parents for the first research question. Then, research questions two and four involved 3,587 married African American parents. Finally, a restricted sample of 48 married African American parents of children with ASD was constructed based on children's levels of ASD severity (Figure 2). The NSCH (CAHMI, 2012a, 2013) archival data include demographic descriptions such as ethnicity, marital status, and educational level. See Table 1.

All information related to guardians who were not parents as well as any single parents were excluded from this investigation due to the topic being evaluated. In addition, only data for married African American parents were included in the sample for four out of five of the research questions. With the exception of Caucasian parents being studied along with African American parents in the first research question, parents of ethnicities other than African Americans were excluded in this analysis.

See Figures 1 and 2.

Table 1

Characteristics of Overall Population of Parents and/or Their Children

Characteristic	Levels	Frequency	%
Child's Age <i>N</i> = 79,086	2-5 years	18311	23.2%
	6-11 years	28636	36.2%
	12-17 years	32139	40.6%
Child's Ethnicity <i>N</i> = 88,423	Caucasian	65,010	75.2%
	AA	7,932	9.2%
	Other	13,515	15.6%
ASD Prevalence <i>N</i> = 79,023	ASD	1,853	2.3%
	No ASD	77,170	97.6%
Children's Levels of ASD Severity <i>N</i> = 1476	Moderate/Severe	653	44.2%
	Mild	823	55.8%
Family Income <i>N</i> = 88, 423	0-199% FPL	28287	32%
	200-299% FPL	14174	16%
	300-399% FPL	12716	14.4%
	400 FPL or greater	33246	37.6%
Mother's Educational Level <i>N</i> = 84,603	< High School	6,249	7.4%
	= High School	15,080	17.8%
	> High School	63,274	74.5%

(continued)

Characteristic	Levels	Frequency	%
Father's Educational Level <i>N</i> = 73,358	< High School	5,616	7.6%
	= High School	15,862	21.5%
	> High School	51,880	70.3%
Family Structure <i>N</i> = 87,760	Two-parent- BA	65,443	74%
	Two-parent- SF	6406	7.3%
	Single mother	13287	15.1%
	Other FT	2624	3%
Participants' Gender <i>N</i> = 88,423	Mothers	65,342	73.9%
	Fathers	23,081	26.1%
	Public	22,964	26.2%
Healthcare <i>N</i> = 87,584	Private	61,007	69.7%
	None	3,613	4.1%

Note. ASD =Autism Spectrum Disorder, AA = African American, FPL = Federal Poverty Level, BA = Biological/Adoptive Parents, SF = Step Family, OT = Other Family Type

As previously stated, out of the 65, 115 participants in the first examination, about 89% were Caucasian and approximately 11% were African American; see Figure 2.

These percentages for research question one, which equated to large samples of 58,030 Caucasian parents and 7,085 African American parents, strengthened the validity of the survey findings. The remainder of the study pertained to 3,587 married African American parents and 48 African America parents who disclosed their ASD levels of severity. Not only was this sample size larger than the samples included in the literature review, but it exceeded the recommended number of participants for a causal-

comparative research design (Lunenburg & Irby, 2008). Although the number of African American participants were much lower than the number of Caucasian participants, no similar study in the field of ASD included any number close to 3,000 African American participants. In addition, the survey results were weighted to represent the overall population of non-institutionalized children in the United States (CAHMI, 2012a, 2012b, 2012d, 2013).

The weighting process contributed to problems caused by the absence of data from non-responders. The single sampling case weighting process involved several components. The weights considered the probability of the random telephone number choosing (CAHMI, 2013). Adjustments were made for telephone numbers that fell under the following categories: (a) non-resolution line, (b) non-residential lines, (c) unanswered lines, and homes with no land line numbers (CAHMI, 2013; CDC, 2013). Also, weighted adjustments were matched with a demographic representation of each state's population for non-institutionalized children under the age of 18 (CAHMI, 2013).

Not only did the survey weighting process compensate for lack of data pertaining to African American parents of children with ASD, but the NSCH (CAHMI, 2012a, 2013) groupings allowed access to a larger number of African American interviewees than found in previous studies. Thus, despite the lower number of African American respondents in comparison to Caucasian parents, steps were taken to provide more insight for the African American group. For instance, analyses using only the data for married African American parents were conducted in four of the five research questions.

Besides ethnicity, other sample characteristics of the NSCH (CAHMI, 2012a, 2013) data included gender and educational status. More than 73% percent of the sample

were mothers as opposed to fathers. In addition, more than 70% percent of both African American and Caucasian parents obtained education beyond high school. Equally important, 52% of the parents who responded to NSCH (CAHMI, 2012a, 2013 survey items were rated above the poverty level. See Table 1 for overall demographic information pertaining to all of the parents who participated in the NSCH (CAHMI, 2012a, 2013) survey.

Sampling Design

According to the CDC (CDC, 2013), a cross-sectional phone survey of households in the United States that consisted of at least one child ages 17 and under was implemented to retrieve the necessary data. List-assisted random-digit-dial (RDD) sample of telephone numbers were dialed to locate households with children ages 17 and under. In addition, an independent RDD sample of cell-phone numbers was included. Stratification by state and sample type, which was distinguished by landline or cell-phone, shaped the complex survey design. See Figure 1.

Once the phone was answered, the interviewer requested to speak to the parent or guardian who knew the most about the child's or children's health and health care. Several call back attempts were conducted if the parent or guardian was unavailable. If the parent or guardian cared for more than one child, the interviewer randomly chose one child to be the subject of the interview questions. An incentive plan was offered in order to encourage participants to complete the survey. The incentive ranged from \$1 to \$15 depending on the age, address match, and cell sample cases. The number of participants who received an incentive was 18, 728 (CDC, 2013).

Instrumentation

In an effort to obtain a large number of married parents of children with ASD, archival data were downloaded from the Data Resource Center for Child and Adolescent Health (DRC) (CAHMI, 2012c) website. The data consisted of the *2011-2012 National Survey of Children's Health (NSCH)* (CAHMI, 2012a, 2012b, 2012c) responses from 95,677 parents and guardians of children and teenagers across the nation. See Figure 1. Sponsorship of the national survey was offered by the Maternal and Child Health Bureau of the Health Resources and Services Administration (CDC, 2013). The main goal of the 2011-2012 NSCH (CAHMI, 2012a, 2012b, 2012c, 2012d) survey was to investigate the physical and emotional well-being of children ages 17 and below. Considering that ASD identification and ASD related topics pertaining to parents of children with ASD were included in the NSCH (CAHMI, 2012a, 2013) survey items, statistical examinations were conducted.

The selection of data from the *2011-2012 National Survey of Children's Health (NSCH)* (CAHMI, 2012a, 2012b, 2012c) was appropriate, because the NSCH data (CAHMI, 2012a, 2012b, 2012c) provided a sufficient number of survey items to categorize into ASD subgroups for analyses. For instance, key indicators from the survey data consisted of: (a) demographics, (b) the well-being of children, (c) medical care, (d) family interactions, (e) parental health, (f) school and after-school experiences, and (g) community and neighborhood descriptions (CAHMI, 2013). Thus, analysis of the different stress variables, such as: (a) financial difficulty, and (b) parental stress factors, which consisted of both *parent-related* and *child-related* parental stress was feasible.

In addition to furnishing multiple physical and emotional health variables, the NSCH (CAHMI, 2012a, 2012c, 2012d) data also supplied a large number of responders from diversified backgrounds. By contrast, previous ASD studies relied on a small number of participants who were primarily recruited from a specific ASD medical, community, or university program. The NSCH (CAHMI, 2012a, 2012b, 2012d) survey participants were randomly selected nationwide (CDC, 2013). Therefore, by using the results from the NSCH (CAHMI, 2012c) survey items which consisted of participants from various backgrounds and regions, the generalizability level was increased (Gay et al., 2006; Lunenburg & Irby, 2008; Maxwell, 2005).

Survey Questions

The NSCH (CAHMI, 2012a) survey was divided into twelve main sections. Section one contained three survey questions related to initial demographics about the identified child for each household. Section two was comprised of 13 to 18 questions regarding the selected child's health and functional status. Section three included four items pertaining to health insurance coverage. Fourteen questions related to health access and utilization were in section four. Section five consisted of ten medical home questions.

Next, section six contained 15 questions related to parents' concerns about children ages five and under. A subgroup of section six referred to the children's flourishing or thriving items. The flourishing or thriving questions were related to the children's emotional and mental health. Subsequently, section seven included 20 items pertaining to parents' concerns about children ages 6 through 17 years of age. Similar to section six, section seven comprised flourishing or thriving questions designed to rate the

emotional and mental health of children ages 6 through 17 years old. Then, the topic of family functioning was addressed with eight questions in section eight. The next topic was parental health with 22 questions in section nine. Section 10 had seven questions about the neighborhood and community characteristics. Thirteen additional demographics items made up section eleven. The final section addressed health insurance with 17 questions.

Survey Item Selections and Subgroups

Based on the topic of this study, many of the NSCH (CAHMI, 2012a) survey items in this investigation were excluded. For instance, data pertaining to disorders such as diabetes and Cerebral Palsy were excluded, because these issues were unrelated to this study. The inclusion process was informed by the review of the literature related to marital quality and stress factors for parents of children with ASD. Specific survey items were selected and grouped to determine relationships and predictions in marital quality and stress levels for African American parents of children with and without ASD, because these variables were directly related to this study. For example, Amato and Hohmann-Marriott (2007) reported that low marital quality led to divorce.

Consequently, the marital satisfaction question in section nine was reviewed during the survey question selection process, and it was noted that the original marital satisfaction question did not include sufficient information to clarify the parent reported marital satisfaction level. For instance, question number seven in section nine included a Likert scale item to reflect a range of relationship status responses, such as:

(a) completely happy, (b) very happy, (c) fairly happy, or (d) not too happy. However, according to Canel (2013) and Snyder (2014), more than one question should be used to

measure marital satisfaction. Also, James (2015a, 2015b) suggested that marital quality is a better term in comparison to the term marital satisfaction regarding to examining the status of a married couple's relationship.

Therefore, one goal of the statistical analyses was to include several measurements of marital quality in addition to the marital satisfaction question. For example, the examination of marital quality was based on several survey questions instead of the one Likert scale survey question number seven previously listed. In addition, Buswell, Zabriskie, and Hawkins (2012) and Glorieux, Minnen, and Tienoven (2011) have claimed married partners reported higher marital quality when they engaged in joint leisure activities, such as eating dinner together on a regular basis. As a result, the survey item in the family functioning section that asked how many days in the past week did the family members eat a meal together was incorporated as the second marital quality evaluation.

Third, a number of researchers measured marital quality by the extent that couples reported receiving spousal support, such as being able to turn to one another for advice, emotional support, or comfort (Amato & Hohmann-Marriott, 2007; Brobst et al., 2009; Nealy et al., 2012; Ramisch, Onaga, & Oh, 2014; Ramisch et al., 2013). Accordingly, the inclusion of the survey question from the NSCH (CAHMI, 2012a, 2012c,) interview that asked if the parents had someone that they can turn to for day-to-day emotional help with raising their children with ASD, including their spouse was permitted. Only the answers of "no" were relevant, because an answer of no indicated that the responders felt they did not have anyone to turn to and the question mentioned "including your spouse".

Subsequently, when participants answered no to the support question, the implication was they were not able to turn to their spouse for support. Conversely, if the participants answered “yes” to this question, the researcher could not determine whether or not the parents depended on their spouse or someone else. Consequently, the responses that consisted of “yes” replies were not examined in the marital quality category.

A fourth measurement of marital quality was the presence or absence of domestic violence. Researchers documented a link between partner conflict and/or domestic violence and low marital satisfaction (Arias, Lyons, & Street, 1997; Burge et al., 2016; Lawson, & Rivera, 2008; Levendosky & Graham-Bermann, 2001). For instance, in a 2016 study, Burge et al. claimed that the family systems theory supported the action-reaction couple dynamic involving the occurrence of partner’s violence and low marital intimacy. In addition, Burge et al. (2016) stated that the results from the telephone surveys completed by 200 wives were indicative of the impact of daily violence and decreased marital harmony.

After conducting the survey item selection process described above, the following four NSCH (CAHMI, 2012a) survey items were identified as marital quality measurements: (a) marital happiness, (b) parents eating meals together, (c) emotional support, and (d) domestic violence. Each of the four marital quality survey items were dichotomized during this examination. Next, the process for identifying parental stress variables are discussed below.

After the marital quality survey items were selected, the parental stress variables included in the NSCH (CAHMI, 2012a) survey were regrouped and relabeled to fulfill

the goal of this investigation. By using the DRC database, existing survey information pertaining to the stress levels of married African American parents of children with and without ASD was located (CAHMI, 2012b, 2012d). Although a subcategory of parental stress already existed in the DRC database (CAHMI, 2012b, 2012d), several other survey items that specifically related to parental stress as described in this literature review findings were combined. Next, a new parental stress variable consisting of two categories: (a) *parent-related* stress and (b) *child-related* stress was created.

The parental stress indicator described in the *2011-2012 NSCH: Child Health Indicator and Subgroups SPSS Codebook, Version 1.0 National Survey of Children's Health* (CAHMI, 2013) consists of the following multiple response survey questions

- In general, how well do you feel you are coping with the day to day demands of parenthood?;
- During the past month, how often have you felt {CHILD'S NAME} 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?; and
- Is there someone that you can turn to for day-to-day emotional help with parenthood?

Although the NSCH (CAHMI, 2012a) subgroup of parental stress reflected some of the identified parental stress variables described in this study under the domain of *parent-related* stress, the NSCH (CAHMI, 2012) parental stress indicator lacked other parental stress variables that existed from parenting a child with ASD. For example,

other parental variables may include: (a) financial strain, (b) inability to access needed or adequate services, and (c) child care problems (Hartley et al., 2010; Tilton, 2010).

Additional *child-related* characteristics, such as: (a) the child's abilities, (b) communication delays, (c) increased educational services, and (d) behavior problems also contribute to parental stress and are described in this study as *child-related* stress (Harper et al., 2013; Johnson & Simpson, 2013; Tilton, 2010).

Therefore, for the purpose of this study, the two categories of parental stress factors were: (a) *parent-related* stress and (b) *child-related* stress. Several identified NSCH (CAHMI, 2012a, 2012c) survey items were grouped in the following subgroups and relabeled for the *parent-related* stress variable: (a) health care access and quality, (b) financial stress, (c) job loss or change due to child care problems, (d) social stressors, (e) parental coping and perceived challenges with child, and (f) adverse family experiences. The subgroups of *parent-related* stress were supported by the literature review. For instance, the adverse family experiences section from the NSCH (CAHMI, 2012a, 2012c) questionnaire contained questions such as "Did the child ever live with a parent or guardian who served time in jail or prison after the child was born? Adverse family experiences were relevant to this study due to the stress pile-up and stress proliferation theory (Benson, 2006; Bluth et al., 2013). Multiple life experience stress variables like a death in the family or incarceration of a family member may contribute to co-existing ASD related stressors (Benson, 2006; Bluth et al., 2013).

The parental stress variable in this study was also comprised of *child-related* stress which consists of the following four subgroups related to the child's characteristics: (a) ASD severity level; (b) increased needs/demands; (c) emotional,

developmental, behavior, social problems; and (d) sleep patterns. Hoffman et al. (2008) claimed children's sleep difficulties should be considered with other ASD related symptoms, because children's sleep problems are predictors of parental stress. The *child-related* stress factors listed above are specific to the child's traits.

One example of the *child-related* stress variable used in this study was the flourishing child indicator. The flourishing child indicator was a cluster of questions in the NSCH (CAHMI, 2012a, 2012c) questionnaire that was combined to measure the child's emotional and mental health. Two versions of the flourishing child indicator was included in the DRC database (CAHMI, 2012b, 2012d) employed for this investigation. One version of the flourishing child indicator consisted of Likert scale questions such as "child stays calm and in control when faced with a challenge". The responses were: (a) never, rarely, sometimes; (b) usually; (c) always, or (d) always. The second version of the flourishing child indicator in the DRC database (CAHMI, 2012b, 2012d) combined several survey items and the usually/always responses were rated as follows: (a) child met zero to one flourishing items, (b) child met two flourishing items, or (c) child met all three flourishing items. For the purpose of this study, the second version of the flourishing child usually/always responses were recoded and dichotomized for three combined questions: (a) child met zero to one flourishing item or (b) child met two or all three flourishing items.

Another example of a *child-related* stressor measured in the current study is the ASD severity level which refers to the degree of: (a) ASD symptoms, (b) developmental delays, and (c) problematic behaviors (Benson, 2006; Tilton, 2010). The NSCH (CAHMI, 2012a, 2012c) interview question related to the ASD severity level read

“Would you describe his or her autism or autism spectrum condition as mild, moderate, or severe?” An additional version of the ASD severity level question included in the NSCH (CAHMI, 2012a, 2012c) survey included dichotomized responses of (a) moderate/severe or (b) mild. Due to the fact that the NSCH (CAHMI, 2012a, 2012c) multiple response survey question related to the child’s level of ASD severity is appropriate for the definition of ASD severity level, additional variables to determine the child’s ASD severity level are unnecessary.

Both categories of parental stress: (a) *parent-related* stress and (b) *child-related* stress were included in the current analyses to measure parental stress scores. In addition, each parental stress (*parent-related*, *child-related*) survey question was dichotomized for analyses. All of the parental stress (*parent-related*, *child-related*) survey items were selected from the DRC database which comprised the NSCH survey items (CAHMI, 2012a, 2012b, 2012c, 2012d).

Reliability and Validity

The reliability and validity of the NSCH (CAHMI, 2012a) survey were assessed through the use of pilot tests from the State and Local Area Integrated Telephone Survey, which was also referred to as SLAITS (CAHMI, 2012b, 2012d; CDC, 2009; Ezzati-Rice, Cynamon, Blumberg, & Madans, n.d.). To establish validity, SLAITS pilot study findings were compared to results obtained from the National Immunization Survey (NIS), which was conducted by the Centers for Disease Control and Prevention (CDC, 2009; Ezzati-Rice et al., n.d.). Validity was further strengthened through the use of standardized questions previously used during sampling from the National Immunization Survey (CDC, 2009).

The NSCH (CAHMI, 2012b, 2012d) was performed using a computer-assisted telephone interview (CATI) system (Blumberg, Foster, & Frasier, 2012). Reliability was assessed using a pretesting procedure to verify the functioning of the CATI system in December, 2006 (Blumberg et al., 2012). The CATI instrument was field tested over a three-day period with a Survey Sampling International (SSI) list consisting of 640 nationwide households (Blumberg et al., 2012). After obtaining pilot test results, revisions were conducted prior to the finalization of the questionnaire (Blumberg et al., 2012).

Data Collection

The NSCH 2011/2012 (CAHMI, 2012b, 2012) data was obtained via the SLAITS program (CDC, 2009; Ezzati-Rice et al., n.d.). The SLAITS was developed by the National Center for Health Statistics to provide a fast and cost effective method for sampling and data collection at the state and local levels (CDC, 2009; Ezzati-Rice et al., n.d.). By utilizing the CATI system for computer assisted telephone surveys, the SLAITS program provided reliable and valid results for large populations across the nation (CAHMI, 2012b, 2012d; CDC, 2009; CDC, 2013; Ezzati-Rice et al., n.d.).

Between February 28, 2011 through June 25, 2012, data were gathered for the NSCH (CAHMI, 2012b, 2012d) survey via the SLAITS program (CDC, 2009). Parents or guardians who possessed information pertaining to the health and health care of the sampled child living in the same house were interviewed using the CATI system (CDC, 2013). The average interview length was 33 to 34 minutes. Some interviews were shorter if the participants were already interviewed through the NIS, because some of the NIS survey questions were duplicated with the NSCH survey (CAHMI, 2012a, 2012c).

Data were collected from a total of 95,677 interviews that were performed for the 2011/2012 NSCH survey (CAHMI, 2012a, 2012c).

Permission was obtained from the DRC to utilize the NSCH (CAHMI, 2012b, 2012d) data for research. See Appendix D. After reviewing the data, it was determined that the data was appropriate for analyzing ASD related topics. Next, Institutional Review Board (IRB) exemption approval from Sam Houston State University was requested. Subsequently, IRB exemption status was approved (Appendix B and Appendix C). Then, the study on ASD relationships and predictions of marital quality and stress levels for African American parents of children with and without ASD was conducted.

Data Analysis

The following research questions will be answered by the data analysis:

1. What is the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates?
2. What is the relationship between African American parents of children with and without ASD and parents' marital quality?
3. What is the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality?
4. Which parental stress variables (*parent-related*, *child-related*) best predicts whether a married African American parent will have a child with ASD or without ASD?
5. What is the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels?

A causal-comparative research design was implemented during this study. The Statistical Package for Social Science (SPSS), Version 22, was employed for analyses. With the exception of research question four, Pearson chi-square and Fisher's exact tests were performed to determine group relationships. Chi-square analyses and Fisher's exact tests were appropriate to examine research questions one, two, three, and five, because frequency data will be present for parents in two categories: (a) parents of children with ASD and (b) parents of children without ASD or: (a) severe/moderate ASD and (b) mild ASD.

Likewise, the chi-square analysis was suitable for research questions two and three which involve categories of marital quality and stress levels respectively. For instance, marital satisfaction, which is one component of marital quality measured in this study, contained the following domains of marital satisfaction: (a) completely happy, (b) very happy, (c) fairly happy, and (d) not too happy. For the purpose of this examination, this marital satisfaction survey item was dichotomized into: (a) completely happy/very happy and (b) fairly happy/not too happy. Subsequently, this marital satisfaction question was combined with other marital relationship survey items that will be used to construct a total measurement of high versus low marital quality.

Summary

This chapter depicted the methodology and design of this study. This causal-comparative research was used to examine: (a) the relationships among ethnicity (African American and Caucasian), parents of children with and without ASD, and divorce rates; (b) the relationship between African American parents of children with and without ASD and marital quality; (c) the relationships among African American parents of children

with ASD, levels of ASD severity, and marital quality, (d) the predictive nature of parental stress variables (*parent-related, child-related*) on having a child with or without ASD, and (e) the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels. Data from the NSCH 2011/2012 survey (CAHMI, 2012c) was obtained and reviewed. The variable indicators were regrouped and relabeled into dichotomized subgroups in order to match the related variables to this study. In addressing the previously mentioned research questions, statistical analyses included: (a) Pearson chi-squares, (b) Fisher's exact test, and (b) logistic regressions.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to investigate: (a) the relationships among ethnicity (African American and Caucasian), parents of children with and without ASD, and divorce rates; (b) the relationship between African American parents of children with and without ASD and marital quality; (c) the relationships among African American parents of children with ASD, levels of ASD severity, and marital quality; (d) the predictive nature of parental stress variables (*parent-related, child-related*) on having a child with or without ASD; and (e) the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels.

Description of the Sample

The sample for this study was collected from archival data from the *2011-2012 National Survey of Children's Health (NSCH)* (Child and Adolescent Health Measurement Initiative [CAHMI], 2012b, 2012c, 2012d). Demographic data pertaining to the overall NSCH (CAHMI, 2012b, 2012d) participants based on feedback from parents are described in Table 1 according to: (a) child's characteristics, (b) parent's characteristics, and (c) family's characteristics. The characteristics shown in Table 1 include descriptions of ethnicity, ASD prevalence, family income, parents' educational levels, and family structure. For instance, the majority (81%) of the participants in the study were married with an education beyond high school (74.5% Mothers & 70.3% Fathers). Correspondingly, more than half of the participants in the study were above the poverty level (68%). Readers may see Table 1 for demographic information pertaining to the general population of parents in the NSCH (CAHMI, 2012b, 2012d) study.

In contrast to the general NSCH (CAHMI, 2012b, 2012d) parent population demographics as presented in Table 1, the African American parents differed according to: (a) educational levels, (b) family structure, (c) respondent's gender, (d) children's severity levels, and (e) family income. The demographic data for African American parents are presented in Table 2. With respect to the discrepancies in the educational levels of African American (AA) parents in comparison to the general population (GP) of surveyors, more African American (AA) mothers (AA-23.2% vs. GP-17.8%) only had a high school diploma and fewer African American (AA) mothers (AA-68% vs. GP-74.5%) had educational levels beyond high school. In like manner, the African American (AA) fathers followed the same pattern with the high school diploma (AA-27.1% vs. GP-21.5%) and also had smaller percentages of education beyond high school (AA-64.9% vs. GP-70.3%) in comparison to the fathers in the general population (GP) of survey responders.

Moreover, the family structure output was considerably different for African American parents when compared to the general population in the study. Markedly, the percentage of African American mothers who reported being single with no fathers present was almost three times more than the percentage of the general population (AA-41.8% vs. GP-15.1%). Correspondingly, fewer AA parents were in two-parent homes (AA-54.5% vs. GP-81.9%) existed when compared to the participants' general population.

In fulfilling the goals of this study in research question one, the 95,677 NSCH (CAHMI, 2012b, 2012d) participants were narrowed to a more appropriate sample of 65,115 to include only African American and Caucasian parents. Then, research

questions two and four involved 3,587 married African American parents. Finally, a restricted sample of 48 married African American parents of children with ASD was formed based on children's levels of ASD severity. See Figures 1 and 2. The NSCH (CAHMI, 2012a, 2013) archival data include demographic descriptions such as ethnicity, marital status, and educational level. See Tables 1 and 2.

Table 2

Characteristics of African American Parents and/or Their Children

Characteristic	Levels	Frequency	%
Child's Age <i>N</i> = 7,156	2-5 years	1,689	21.3%
	6-11 years	2,667	36.2%
	12-17 years	2,800	40.6%
ASD Prevalence <i>N</i> = 7,148	ASD	157	2%
	No ASD	6,991	88.1%
Children's Levels of ASD Severity <i>N</i> = 114	Moderate/Severe	56	49.1%
	Mild	58	50.9%
Family Income <i>N</i> = 7,932	0-199% FPL	4,066	51%
	200-299% FPL	1,177	14.8%
	300-399% FPL	840	10.6%
	400 FPL or greater	1,849	23.3%

(continued)

Characteristic	Levels	Frequency	%
Mother's Educational Level <i>N</i> = 7,628	< High School	647	8.4%
	= High School	1,774	23.2%
	> High School	5,207	68%
Father's Educational Level <i>N</i> = 4,541	< High School	326	7.1%
	= High School	1,242	27.1%
	> High School	2,973	64.9%
Family Structure <i>N</i> = 7,875	Two-parent- BA	3,550	45.1%
	Two-parent- SF	745	9.5%
	Single mother	3,289	41.8%
	Other FT	291	3.7%
Participants' Gender <i>N</i> = 7,932	Mothers	6,354	80.1%
	Fathers	1,578	19.9%
Healthcare <i>N</i> = 7,845	Public	3,873	49.4%
	Private	3,662	46.7%
	None	310	4.0%

Note. ASD =Autism Spectrum Disorder, AA = African American, FPL = Federal Poverty Level, BA = Biological/Adoptive Parents, SF = Step Family, OT = Other Family Type

Research Question One

What is the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates?

To determine the relationship among ethnicity (African American and Caucasian), having a child with and without autism spectrum disorder (ASD), and parents' divorce

rates, a Pearson chi-square was utilized. A chi-square statistic was used to analyze this question since all three variables were collected with nominal data for 65,115 participants (58,030 Caucasian, 7,085 African Americans). Listwise procedures were used for analyzing missing data. The assumption of expected frequencies for each category indicated that there were at least five counts in each cell, thus the analysis continued (Robles-Piña & Rosenblad, 2015).

A chi-square statistical analyses indicated that there was a $\chi^2 (1) = 67.34, p < .001$ indicating that when considering Caucasian parents with children with and without ASD and African American parents with children with and without ASD on divorce rates there was a statistical significance. The overall divorce rate was 17.9% for this sample of parents with children with and without ASD. The divorce rate in this investigation is considerably lower than the United States general population divorce rates which range from 40% to 50% (Afifi, Davis, Denes, & Merrill, 2013; Baucom, Epstein, Kirby, & Falconier, 2011; Bottom, 2013; Brown, & Porter, 2013; Sbarra, & Beck, 2013).

Further, there was a statistically significant association in divorce rates between Caucasian parents with children ASD (26.3%) and without ASD (17.4%) ($\chi^2 (1) = 74.31, p < .001$). However, there was not a statistically significant relationship between African American parents with children with ASD (21.6%) and without ASD (20.5%) ($\chi^2 (2) = .111, p = .761$). The effect size determined by Cramer's V was .03, a small effect size (Cohen, 1988). See Table 3 for the descriptive statistics concerning parental group regarding their divorce rates.

Table 3

Divorce Rates of Caucasian and African American Parents of Children with ASD and without ASD, N = 65,115 (58,030 Caucasian, 7,085 African Americans)

Variable	% Divorce	% No Divorce
Caucasian and AA Parents with Children with ASD	17.9%	82.1%
Caucasian Parents with Children with ASD	26.3%	73.70%
Caucasian Parents without Children with ASD	17.4%	82.60%
AA Parents with Children with ASD	21.6%	78.40%
AA Parents with Children without ASD	20%	79.50%

Note. ASD = Autism Spectrum Disorder

Summary of Research Question One

Due to the categorical nature of the data, a Pearson chi-square was used to determine the relationship among ethnicity (African American and Caucasian), having a child with and without autism spectrum disorder (ASD), and parents' divorce rates. The overall divorce rate was 17.9% for this sample of 65,115 (58,030 Caucasians; 7,085 African Americans) parents with children with and without ASD. This divorce rate was comparatively lower than the current national average divorce rate in the United States, which ranges from 40% to 50% (Afifi, Davis, Denes, & Merrill, 2013; Baucom, Epstein,

Kirby, & Falconier, 2011; Bottom, 2013; Brown, & Porter, 2013; Sbarra, & Beck, 2013). According to the chi-square results in the current investigation, there was a statistically significant relationship in divorce rates between Caucasian parents of children with and without ASD. However, there was not a statistically significant relationship between African American parents of children with and without ASD.

Research Question Two

What is the relationship between African American parents of children with and without ASD and parents' marital quality?

To determine the relationship between African American parents of children with and without ASD and parents' marital quality, a Pearson chi-square was utilized with an overall sample size of 3,587. This statistical analysis was selected because frequency data were present for parents in two categories for the independent variable: those parents who had children with ASD and those parents who had children without ASD. The dependent variable, marital quality was constructed using the following questions: (a) marital happiness, (b) parents eating meals together, (c) emotional support, and (d) domestic violence. Data screening warranted some coding changes on SPSS.

The data for the marital happiness question was initially collected using a four-item Likert response style (1 = completely happy, 2 = very happy, 3 = fairly happy, or 4 = not too happy). Subsequently, the marital happiness question was dichotomized for use with a chi-square (0 = high marital happiness, and 1 = low marital happiness). The data for the parents eating meals together was originally collapsed from an open-ended survey item asking parents how many days in the past week, they ate a meal together (0 = no days, 1 = 1 - 3 days, 2 = 4 - 6 days, 3 = everyday). The eating meals question was

dichotomized for use with a chi-square. The remaining marital quality measurements (emotional support, domestic violence) were already dichotomized in the original data.

Marital Happiness

First, an analysis was performed to investigate the relationship of marital happiness between African American parents of children with and without ASD. For the marital happiness domain in research question two, the choices were dichotomized to indicate the parents' report of either low marital happiness or high marital happiness. The sample size was 3,498 for four cells. This sample size was well over the minimum requirement of five per cell. Each assumption for administering a chi-square was met and analysis continued.

The overall parent reports of low marital happiness percentage for African American parents was 19.4% for low marital happiness and 80.6% for high marital happiness. Regarding African American parents of children with ASD, 20.7% parents reported low marital happiness and 79.3% reported high marital happiness scores. In the analysis of African American parents of children without ASD 19.4% of parents reported low marital happiness and 80.6% of the parents reported high marital happiness (Table 4). The result was not statistically significant, $\chi^2(1) = .16, p = .69$, indicating that the marital happiness category was not statistically different between the African American parents of children with ASD versus parents of children without ASD. See Table 4.

Parents Eating Together

Second, an analysis was conducted on the question of whether or not 3,547 African American parents of children with and without ASD were eating meals together, which is another indicator of marital quality. Overall, 32.7% of married African American parents

reported they do not regularly eat together, and 67.3% of them said they regularly eat together (Table 4). The results showed that fewer parents of children with ASD ate meals together when compared to parents of children without ASD (27.7% vs. 32.9%). No significant relationship was found $\chi^2(1) = 1.60, p = .21$. A statistically significant relationship did not exist between having a child with ASD and regularly eating a meal together on this portion of the marital quality measurement.

Table 4

Descriptive Statistics for Marital Quality for Each Parental Group

Marital Quality Survey Items	ASD & No ASD (OP)	ASD & No ASD (OP)	ASD	ASD	No ASD	No ASD
Marital Happiness (MH) <i>N</i> = 3,498	% Low (MH) = 19.4%	% High (MH) = 80.6%	% Low (MH) = 20.7%	% High (MH) = 79.3%	% Low (MH) = 19.4%	% High (MH) = 80.6%
Eat Meals Together (ET) <i>N</i> = 3,547	% Don't (ET) = 32.7%	% (ET) = 67.3%	% Don't (ET) = 32.9%	% (ET) = 67.1%	% Don't (ET) = 32.9%	% (ET) = 67.1%
Emotional Support (ES) <i>N</i> = 3,548	% No (ES) = 7.6%	% (ES) = 92.4%	% No (ES) = 7.3%	% (ES) = 92.7%	% No (ES) = 7.6%	% (ES) = 92.4%
Domestic Violence (DV) <i>N</i> = 3,509	% (DV) = 4.2%	% No (DV) = 95.8%	% (DV) = 3.7%	% No (DV) = 96.3%	% (DV) = 4.2%	% No (DV) = 95.8%

Note. ASD = Autism Spectrum Disorder, OP = Overall Participants, (MH) = Marital Happiness, (ET) = Eat Meals Together, (ES) = Emotional Support, (DV) = Domestic Violence

Emotional Support

Another measurement of marital quality used in this investigation consisted of data pertaining to emotional support. Considering that the frequency data for parents' responses were categorical (i.e. parent of child with ASD versus parent of child without ASD), the Pearson chi-square was conducted to determine whether or not a relationship existed between 3,548 African American parents having a child with and without ASD and parents having emotional support in their marriage. Altogether, 7.6% of the married African American parents of children with and without ASD reported they had no emotional support, and 92.4% reported they had emotional support. About equal percentages of parents of children with ASD and parents of children without ASD claimed they had no emotional support (7.3% vs. 7.6%) or that they had emotional support (92.7% vs. 92.4%). See Table 4. A significant relationship was not found $\chi^2(1) = .01, p = .91$. After analyzing a sample size of 3,548 parents who either had a child with or without ASD and did or did not have emotional support, the findings did not yield a statistically significant relationship.

Domestic Violence

The last binary domain utilized in this examination as a measurement of marital quality was domestic violence. An investigation was conducted to determine whether or not a relationship existed between parents of children with and without ASD and the parental report of yes or no to the occurrence of domestic violence. The sample for the domestic violence category included 3,509 married African American parents who categorically reported they had or did not have a child with ASD. Each assumption was met for a chi-square analysis, and the analysis continued.

In general, the participants were more likely to report lower incidents of domestic violence (domestic violence = 4.2%, no domestic violence = 95.8%). Similar percentages of domestic violence (3.7% vs. 4.2%) versus no domestic violence (96.3% vs. 95.8%) were reported by parents of children with and without ASD (Table 4). There were no statistically significant group differences in parents of children with and without ASD and the presence or absence of domestic violence $\chi^2(1) = .09, p = .76$.

Summary of Research Question Two

To sum up, a Pearson's chi-square was calculated to determine the relationship between African American parents of children with and without ASD and parents' marital quality. The independent variable was categorical: those parents who had children with ASD and those parents who had children without ASD. The dependent variable, marital quality, was constructed using the following questions: (a) marital happiness, (b) parents eating meals together, (c) emotional support, and (d) domestic violence. Data screening necessitated some coding revisions on SPSS. Results indicated no significant relationships existed in all four of the marital quality measurements. See Table 4 for the descriptive statistics on the marital quality measurements for African American parents of children with and without ASD.

Research Question Three

What is the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality?

To determine the relationship between African American parents of children with ASD, children's levels of ASD severity (moderate/severe vs. mild), and parents' marital quality (low marital quality vs. high marital quality), Pearson's chi-square and Fisher's

exact tests were utilized. These statistical analyses were selected because frequency data were categorical. For instance, the independent variable which was children's levels of ASD severity were classified as either moderate/severe or mild. The dependent variable, marital quality, was constructed using the following questions: (a) marital happiness, (b) parents eating meals together, (c) emotional support, and (d) domestic violence. Each marital quality response was dichotomized. Data screening required some coding modifications on SPSS.

The data for the marital happiness question was initially collected using a four-item Likert response style (1 = completely happy, 2 = very happy, 3 = fairly happy, or 4 = not too happy). After data screening was performed, the marital happiness question was dichotomized for computing the analysis (0 = high marital happiness, and 1 = low marital happiness). The data for the parents eating meals together was originally formed from an open-ended survey item asking parents how many days in the past week they ate a meal together (0 = no days, 1 = 1 - 3 days, 2 = 4 – 6 days, 3 = everyday). For the purpose of this study, the eating meals question was dichotomized for analysis. The remaining two marital quality measurements (emotional support, domestic violence) were already dichotomized in the original data.

Marital Happiness

First, a Pearson's chi-square was attempted to examine the relationship of marital happiness between African American parents of children with ASD and children's levels of ASD severity. For the marital happiness domain in research question three, the choices were dichotomized to indicate the parents report of either low marital happiness or high marital happiness. The sample size was 47. Considering that 50% of the cells had

expected frequencies less than five. The assumptions for chi-square analysis were not met (Field, 2009), so analysis continued with a Fisher's exact test (Field, 2009).

A Fisher's exact test was calculated to examine the relationship among African American parents of children with ASD, children's levels of ASD severity and parents' marital happiness scores. No significant relationship was determined ($p > .05$). See Table 5. The findings showed that 19.1% of all participants placed in the low marital happiness category, and 80.9% of them reported a high marital happiness rating regarding their marital lives. The majority of the parents (38.3%) who classified their children with a moderate/severe level of ASD placed in the high marital happiness group and only a few of them (8.5%) reported low marital happiness scores. A similar pattern was discovered with parents who considered their children to have a mild level of ASD with the majority of the parents (42.6%) reported high marital happiness scores and fewer of the parents (10.6%) claimed low marital happiness scores.

Table 5

Statistical Tests for Marital Quality Variables by Children's ASD Levels of Severity

Marital Quality	Statistic Test	χ^2
Marital Happiness	$p = 1.00$	Fisher
Eat Meals Together	$p = .09$	$\chi^2(1) = 2.86$
Emotional Support	$p = .08$	Fisher
Domestic Violence	$p = .09$	Fisher

Note. ASD levels of severity = Moderate/Severe or Mild, N = 48

Parents Eating Together

Second, an analysis of data associated with married African American parents eating a meal together was conducted as a measurement of marital quality. The goal of the test was to assess binary responses between a sample size of 48 married African American parents who indicated that they either regularly eat meals together or they do not regularly eat meals together. All of the assumptions were met for the chi-square analysis. The analysis continued.

When the groups were combined, 35.4% of the married African American parents in the study said they did not regularly eat together, while 64.6% of the combined groups of parents said they did regularly eat together. For the parents of children falling under the ASD moderate/severity rating of ASD levels, 10.4% of the participants identified as did not regularly eat together and 35.4% of the parents reported they did regularly eat together. Married African American parents who rated their child with a mild level of ASD revealed a 25% rate of reporting they did not regularly eat together, and 29.2% of the parents said they did. In relation to children's severity levels of ASD, no significant relationship was found $\chi^2(1) = 2.86, p > .05$. A statistically significant relationship did not exist between children's level of ASD severity and whether or not parents regularly ate meals together.

Emotional Support

The third analysis for research question three included an examination to determine the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' reported emotional support scores. Due to the fact that the frequency data contained frequency counts less than five,

assumptions for chi-square analysis were not met. A Fisher's test was calculated to address the relationship significance for children's levels of ASD severity and the participants' reported emotional support results, because the data was categorical (i.e. moderate/severe vs. mild) and 50% of the expected frequency data was less than five (Field, 2009).

An examination of the data revealed that as a whole, married African American parents of children with ASD were more likely to report having emotional support and less likely to report not having emotional support (87.5% vs. 12.5%). When comparing the two groups of reported children's levels of ASD (moderate/severe vs. mild), the two groups differed by 8.3% in their reported scores of not having emotional support (10.4% vs. 2.1%) with a higher percentage of the more severe ASD group indicating no emotional support.

By comparison, only 35.4% of the participants that described their children as having moderate/severe ASD reported having emotional support, while 52.1% of participants who had children with mild ASD severity levels claimed having emotional support. Although the married African American parents of children with moderate/severe ASD consistently scored lower on the emotional support scores than did the parents of children with mild ASD, a significant relationship was not found ($p > .05$) (Table 5). After analyzing a sample size of 48 married African American parents of children with ASD who rated their children's ASD severity levels as moderate/severe or mild, the findings did not yield a statistically significant relationship regarding emotional support scores.

Domestic Violence

The last measurement of marital quality that was assessed in this study was domestic violence. Analysis was conducted to determine the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality. The sample for the domestic violence category included 48 married African American parents who categorically reported whether or not they hit, kicked, slapped, punched, or beat each other up (domestic violence, no domestic violence). An examination of the data frequency showed 50% of the expected frequency data was less than five, and the assumptions for a chi-square analysis was not met. Alternatively, Fisher's exact test was conducted. In general, domestic violence was present in 6.3% of the participants, and no domestic violence was present in 93.8% of the participants.

Of the participants who rated their children's' ASD as moderate/severe, 6.3% reported domestic violence as opposed to 0% of parents of children in the mild ASD group reporting domestic violence. Regarding the category of no domestic violence, 39.6% of the parents of children with moderate/severe ASD claimed no domestic violence while 54.2% of the parents of children with mild ASD claimed no domestic violence.

The results indicated no significant group differences among parents of children with moderate/severe ASD versus mild ASD and the presence or absence of domestic violence ($p > .05$). See Table 5. Fisher's exact test was computed to ascertain the relationship among married African American parents of children with ASD, children's

levels of ASD severity, and parents' marital quality. The results revealed no significant relationship.

Summary of Research Question Three

In summary, four dichotomized marital quality measurements consisting of: (a) marital happiness, (b) parents eating meals together, (c) emotional support, and (d) domestic violence were investigated to determine the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality. While not statistically significant, the percentages from Pearson's chi-square and Fisher's exact tests indicated that parents of children rated with moderate/severe ASD experienced lower scores of marital happiness, less emotional support, and more domestic violence in comparison to parents of children with mild ASD severity. Regarding eating meals together, the parents of children with moderate/severe ASD severity scored higher for regularly eating together than did parents of children with mild ASD. As indicated in Table 5, no significant group differences existed between children's levels of ASD severity and parents' marital quality.

Research Question Four

Which parental stress variables (*parent-related, child-related*) best predicts whether a married African American parent will have a child with ASD or without ASD?

This question was analyzed using logistic regression because of the binary nature of the dependent variable, which was group membership for: (a) parent of a child with ASD or (b) parent of a child without ASD. The predictor variable was parental stress levels, which was measured in two main categories: (a) *parent-related stress* and

(b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). The sample size for the *parent-related* analyses was 3,587, and the sample size for the *child-related* analyses was 693. Both parental stress measures (*parent-related stress*, *child-related stress*) were sub-grouped into four main domains.

Based on survey questions from NSCH (CAHMI, 2012c), four main predictor variables regarding *parent-related stress* were examined: (a) health care access and quality stress, (b) financial stress, (c) stress related to parental coping and perceived challenges with their child, and (d) stress pertaining to adverse family experiences. Likewise, the *child-related stress* predictors for children ages six years and older consisted of four main categories: (a) increased needs/demands, (b) flourishing indicators, (c) child's problems, and (d) sleep problems. The analyses were conducted in the following four phases: (a) phase one to test the items making up *parent-related stress*, (b) phase two to investigate the best *parent-related* predictors that impact group membership in the parent with a child with ASD, (c) phase three pertained to an analysis of *child-related stress* predictors for group placement for a parent of a child with ASD, and (d) phase four which involved an examination of specific survey items that comprised the best *child-related* predictor groups.

More specifically, in phase one of the analysis, four main categories of *parent-related stress* were assessed for predictability: (a) stress related to parental coping and perceived challenges with their child, (b) health care access and quality stress, (c) financial stress, and (d) stress pertaining to adverse family experiences. In phase two, the best *parent-related* predictors were further tested for the identification of specific

survey items that made up each main category of *parent-related stress*. Next, phase three of the analysis involved an examination of *child-related stress* predictors sub-grouped into four main categories: (a) increased needs/demands, (b) child's problems, (c) flourishing indicators, and (d) sleep problems. Phase four involved analysis of the specific survey items that made up the best *child-related* predictor groups. Findings from binary logistic regression analyses pertaining to both *parent-related* and *child-related stress* predictors are detailed below.

Parent-Related Stress Findings

The analysis for research question four related to the predictability of parental stress factors on whether or not a married African American parent will have a child with ASD. Binary logistic regression analyses were utilized to investigate four main categories of *parent-related stress*: (a) stress related to parental coping and perceived challenges with their child, (b) health care access and quality stress, (c) financial stress, and (d) stress pertaining to adverse family experiences. The binary logistic regression was selected, because the outcome variable is a categorical variable with two levels: (a) ASD and (b) not ASD (Field, 2009).

Phase one. In phase one, each of the four main categories of *parent-related stress* listed above were investigated as predictors for group membership for a parent of a child with ASD. First, the prediction model for *parent-related stress*, which is one category of parent stress, was screened for goodness-of-fit and an overall fit by analyzing: (a) classification accuracy, (b) omnibus tests of coefficients, (c) Log likelihood and Nagelkerke R square, and (d) Hosmer and Lemeshow test on the intercept only model (Robles-Piña & Rosenblad, 2015). The overall assessment indicated a

classification accuracy rate of 98% for *parent-related stress* regarding predicting group membership for ASD or not ASD. The Omnibus Tests revealed a good fit, because the results were statistically significant $\chi^2(2) = 38.27, p < .001$.

However, a good fit was not indicated with the -2 Log likelihood nor with the Nagelkerke R square, because the values were too high (Robles-Piña & Rosenblad, 2015). More precisely, the -2 Log likelihood = 608.745 and Nagelkerke pseudo $R^2 = .065$. The final index used for goodness-of-fit for the overall model was the Hosmer and Lemeshow test. The Hosmer and Lemeshow test indicated a goodness-of-fit for the model, because the results were $.118 p > .05$. The classification table for the model correctly classified 98% of the cases, which was equal to the original classification mentioned above. In short, the classification accuracy rate, and chi-square tests using omnibus tests and Hosmer and Lemeshow tests indicated the model is a good fit for the data. Yet, caution is warranted based on findings from the -2 Log likelihood and Nagelkerke R square values (Wuensch, 2014).

After determining the global model fit, the individual *parent-related stress* predictor variables were assessed: (a) stress related to parental coping and perceived challenges with their child, (b) health care access and quality stress, (c) financial stress, and (d) stress pertaining to adverse family experiences. Stress scores associated with: (a) parental coping and perceived challenges and (b) health care access and quality and were more predictive of parents of children with ASD versus groups of parents of children without ASD in comparison to: (a) financial stress and (b) stress related to adverse family experiences (Table 6).

Table 6

Logistic Regression for Parent-Related Stress Predictors on Group Membership in Parent of a Child with ASD

Predictors	<i>B</i>	<i>Wald</i>	df	<i>p</i>	<i>Odds Ratio</i>
Coping & Perceived Challenges Stress	2.66	23.463	1	.0001	14.310
Health Care Access & Quality Stress	1.92	11.838	1	.0001	6.832
Constant	4.58	547.695	1	.0001	

Note. ASD = Autism Spectrum Disorder, *N* = 3,587

* $p < .01$.

More specifically, logistic analysis indicated parental coping and perceived challenges stress scores had 14.31 odds of placement in the ASD parental group (14.31, $p < .001$). Also, parents who reported higher health care and access stress scores had 6.83 the odds of reporting that they had children with ASD. Health care and access stress levels significantly predicted group membership in the ASD group (6.83, $p < 0.001$) than did parents of children without ASD. See Table 6.

In essence, when entered simultaneously, the: (a) parental coping and perceived challenges stress scores and (b) the parent reported health care and access stress scores were the best predictors for parents who were grouped in the category of parents of children with ASD. The parental coping and perceived challenges category had a probability of 14.31 times, and the health care and access stress domain had a probability of 6.83 times to predict placement in the parents of children with ASD group (Robles-

Piña & Rosenblad, 2015). See Table 6. Therefore, the phase one logistic analysis for *parent-related stress* revealed that out of four categories of *parent-related stress* variables, (a) parental coping and perceived challenges reported stress and (b) health care and access stress scores were the best predictors of group membership for a parent of a child with ASD in comparison to a parent of a child without ASD.

Phase two. In phase two of the analyses, the question of which specific indicators of parental coping and perceived challenges and which indicators of health care and access best predicted group placement as a parent with a child with ASD was addressed. Another binary logistic regression analysis was performed to determine the predictive nature of the specific parent survey items associated with (a) parental coping and perceived challenges stress and (b) health care and access stress. The findings from the analyses conducted for the specific survey questions that comprise the phase two analyses are listed below.

Parental coping and perceived challenges. Analysis was conducted on the *parent-related stress* variable of parental coping and perceived challenges which was determined as a predictor of group membership to a parent of a child with ASD. In order to perform additional tests, the parental coping and perceived challenges stress category was sub-grouped into five stressors: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) reported child angers you, (d) low parental coping level, and (e) lack of emotional support. Subsequently, hierarchical binary logistic regression was performed to decide the predictive nature of the five survey items for parental coping and perceived challenges stress predictors on the likelihood that parents would be classified as a parent of a child with ASD.

The full model containing all five predictors of parental coping and perceived challenges stress (difficult to care for, child bothers you, child angers you, parental coping, emotional support) provided an overall classification accuracy rate with 98% of cases correctly classified. Using chi-square, the model was statistically reliable against a constant-only model, $\chi^2(5) = 48.98, p < .0001$, indicating that the model was able to distinguish between participants who were parents of children with ASD and those who were not parents of children with ASD (Robles-Piña & Rosenblad, 2015). However, the variance accounted for was not impressive, with Nagelkerke $R^2 = .084$. Two of the predictor variables made a unique statistically contribution to the model: (a) perceived difficulty to care for child (5.30, $p < .0001$) and (b) reported child bothers you (3.53, $p < .01$). The odds of having higher levels of perceived difficult care stress and reported child bothers you stress was 5.30 and 3.53 times (respectively) more likely to predict having a child with ASD. See Table 7.

Table 7

Logistic Regression for Parent-Related Stress (Coping and Perceived Challenges Predictors on Group Membership in Parent of a Child with ASD)

Predictors	<i>B</i>	<i>Wald</i>	df	<i>p</i>	<i>Odds Ratio</i>
Perceived Difficult Care Stress	1.67	28.13	1	.0001	5.30
Child Bothers You Stress	1.26	11.908	1	.001	3.53
Constant	4.29	736.44	1	.0001	

Note. ASD = Autism Spectrum Disorder, $N = 3,587$

* $p < .01$.

Health care and access stress. For health care and access stress, the six assessed predictor variables were: (a) health care frustration, (b) insurance inadequacy, (c) unmet health care needs, (d) absence of family-centered care, (e) referral problems, and (f) specialist problems. Forward logistic regression results indicated that the overall model of two predictors: (a) health care frustration and (b) insurance inadequacy were statistically reliable in differentiating between parents of children with ASD and parents of children without ASD [-2 Log Likelihood = 596.76, $\chi^2(3) = 22.91$, $p < .001$]. The model accurately classified 98% of the cases.

Additional analysis of *parent-related stress* yielded *Wald* statistics that indicated that: (a) health care frustration and (b) insurance inadequacy predict parent of child with ASD group membership. Yet, odds ratios for these health care access and quality variables indicated little change in the likelihood of parent of child with ASD group membership (Mertler, & Vannatta, 2013). For instance, the odds ratios for parent of child with ASD group placement for: (a) health care frustration and (b) insurance inadequacy were 2.41 and 2.23 respectively. See Table 8.

To sum up, the analysis for *parent-related stress* in research question four was performed in two phases. Phase one consisted of tests that measured the predictability of: (a) stress related to parental coping and perceived challenges with their child, (b) health care access and quality stress, (c) financial stress, and (d) stress pertaining to adverse family experiences. In phase two, analysis of the best *parent-related* predictors: (a) parental coping and perceived challenges stress and (b) health care and access stress further addressed the question of which specific parental coping and perceive challenges

indicators and which specific health care and access indicators best predicted the probability of a parent with a child with ASD.

Table 8

Logistic Regression for Parent-Related Stress (Healthcare Access and Quality Predictors on Group Membership in Parent of a Child with ASD)

Predictors	<i>B</i>	<i>Wald</i>	df	<i>p</i>	<i>Odds Ratio</i>
Health Care Frustration Stress	.877	4.43	1	.035	2.41
Insurance Inadequacy Stress	.800	9.13	1	.003	2.22
Constant	-4.25	583.22	1	.000	

Note. ASD = Autism Spectrum Disorder, *N* = 3,587

* $p < .05$.

In the analyses of *parent-related stress* predictors, the following were noted. With respect to the parental coping and perceived challenges with child stress domain, the major predictors were: (a) perceived difficulty to care for child and (b) reported child bothers you. Then, in the health care access and quality stress domain, binary logistic regression results indicated that: (a) healthcare frustration and (b) insurance inadequacy predicted parent of child with ASD group membership.

Child-Related Stress Findings

As previously mentioned, parental-stress consist of: (a) *parent-related stress* and (b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). Similar to *parent-related stress*, binary logistic regression tests were

conducted in phases three and four to assess the predictability of *child-related stress* factors on group membership to: (a) parent of a child with ASD versus (b) parent of a child without ASD. The results are described below.

Phase three. In phase three, an attempt to measure *child-related stress* initially consisted of a total of 10 NSCH (CAHMI, 2012c) parent survey questions. Due to the nature of the questions, the analyses were first split into two child age groups: (a) parents of children less than six years old and (b) parents of children ages 6 through 17. For the younger children, the *child-related stress* was going to be measured by: (a) increased needs/demands, (b) flourishing young child indicators, and (c) child's emotional, developmental, behavior, or social problems (referred to as child's problems). Data screening revealed only eleven cases of parents of children with ASD. Due to the low number of cases for married African American parents of children below age six with ASD, regression analysis may be problematic (Field, 2009; Grace-Martin, 2008-2016). Thus, the analysis for *child-related stress* pertaining to children young than six years was excluded from this study.

In order to ascertain the predictability of *child-related stress* that would distinguish between parent of a child with ASD and parent of a child without ASD, a logistic regression analysis was used for children ages 6 through 17. After data screening, the *child-related stress* variable for children six years and older included the measure of sleep problems and excluded the developmental concerns in the child's problem category. Therefore, only six survey items were utilized in the analysis. Subsequently, the six questions were grouped into four main categories: (a) increased needs/demands, (b) child's problems, (c) flourishing indicators, and (d) sleep problems.

An examination of the data for *child-related stress* for children age 6 through 17 indicated a global model fit [-2 Log Likelihood = 310.069, $\chi^2(2) = 214.042$, $p < .001$]. The model accurately classified 97.9% of the cases, and statistically significant findings for two *child-related stress* domains: (a) increased needs/demands (29.690, $p < .001$) and (b) child's problems (10.23, $p < .001$). See Table 9. The results from the binary logistic regression analysis showed that when entered simultaneously, increased needs/demands and child's problems were the best predictors for group membership into the parent of a child with ASD group. The increased needs/demands domain had a probability of 29.69 times and the child's problem category had a probability of 10.27 times to predict placement in the parent of a child with ASD group (Robles-Piña & Rosenblad, 2015).

Phase four.

In phase four of the analyses, binary logistic regression was calculated to test the specific *child-related stress* survey items that comprised: (a) increased needs/demands and (b) child's problems for predictability of group placement as a parent with a child with ASD as opposed to being classified as a parent with a child without ASD. For the purpose of conducting additional analysis, the following survey items that made up increased needs/demands were tested: (a) special therapy and (b) more care/services. Further investigations were also performed on the child's problems as predictors and consisted of: (a) limited abilities and (b) emotional, developmental, or behavioral problem (EDB). As a result, the following *child-related stress* predictor variables were tested with binary logistic regression analysis to determine whether a parent would be placed in the parent of a child with ASD group or not:

(a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. Findings for the specific predictors that define *child-related stress* (increased needs/demands and child's problems) are described below.

Table 9

Logistic Regression for Child-Related Stress Predictors on Group Membership in Parent of a Child with ASD Age ≥ 6 years, N = 693

Predictors	<i>B</i>	<i>Wald</i>	df	<i>p</i>	<i>Odds Ratio</i>
Increased Needs & Demands Stress	3.391	47.154	1	.0001	29.690
Child's Problems Stress	2.329	24.111	1	.0001	10.269
Constant	5.756	313.175	1	.0001	

Note. ASD = Autism Spectrum Disorder.

* $p < .001$.

Forward logistic regression results for: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities indicated that the overall model was statistically reliable in differentiating between parents of children with ASD and parents of children without ASD [-2 Log Likelihood = 307.546, $\chi^2(4) = 217.621$, $p < .0001$]. The model accurately classified 97.9% of the cases. Additional analysis yielded Wald statistics that indicated predictability of group placement as a parent of a child with ASD versus group placement as a parent of a child without ASD. The odds ratios for parent of a child with ASD group placement were as follows: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities were 5.67, 4.48, 4.22, and 2.89, respectively. The odds of a parent with a child with ASD having higher *child-related stress* scores in categories of:

(a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities was two to five times more likely than the odds of a parent with a child without ASD. See Table 10.

Table 10

Logistic Regression for Child-Related Stress (Increased Need/Demands and Child's Problems Predictors on Group Membership in Parent of a Child with ASD)

Predictors	<i>B</i>	<i>Wald</i>	df	<i>p</i>	<i>Odds Ratio</i>
Special Therapy	1.73	19.83	1	.0001	5.67
More Care and Services	1.50	9.82	1	.002	4.48
EDB	1.44	13.80	1	.0001	4.22
Limited Abilities	1.06	7.77	1	.005	2.89
Constant	5.756	298.18	1	.0001	

Note. ASD = Autism Spectrum Disorder, EDB = Emotional, Developmental, or Behavioral

* $p < .001$.

To sum up the phase three and phase four findings, the *child-related stress* domain, which is one of two groups that comprise parental stress (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010) was evaluated using binary logistic regression. Due to the make-up of the NSCH (CAHMI, 2012c) survey items and the number of cases, the analyses were performed in two phases (phases three and four) using parents of children ages 6 through 17 (CAHMI, 2012c). The results indicated the best predictors of *child-related stress* were: (a) increased needs/demands and (b) child's problems. Additional findings revealed the predictive nature of the following specific

survey items that comprised increased needs/demands and child's problems: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. The aforementioned *child-related* stress variables predicted group placement in the parent of a child with ASD group.

Summary of Research Question Four

In question four, logistic regression analyses were performed in four phases to decide the predictability of parental stress factors (*parent-related, child-related*) on whether or not a married African American parent will have a child with ASD. Parental stress levels are defined by two domains: (a) *parent-related stress* and (b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). Results from phases one and two suggested the following *parent-related stress* variables were predictors for having a child with ASD: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. Next, additional tests done in phases three and four implied the predictive natures of the following specific *child-related stress* survey items that comprised increased needs/demands and child's problems: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. The aforementioned parental stress variables (*parent-related, child-related*) predicted group placement in parent of a child with ASD.

Research Question Five

What is the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels?

In addressing research question five, Pearson's chi-square and Fisher's exact analyses were performed to ascertain whether or not a relationship existed among 48 married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels. Parental stress levels are defined by two domains: (a) *parent-related stress* and (b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). For research question five, the chi-square and Fisher's exact tests were selected due to the categorical data being investigated (moderate/severe ASD vs. mild ASD). The critical parental stress variables (*parent-related, child-related*) for the chi-square and Fisher's tests were previously identified in this study from the analyses performed in the four phases of research question four. In research question four, parental stress tests were conducted in four phases to address both categories of parental stress (*parent-related, child-related*). A brief summary of the parental stress identification process is described below.

Identification of Parent-Related Stress Variables

First, in phase one of research question four: (a) parental coping and perceived challenges stress and (b) health care access and quality stress were the two main *parent-related stress* predictors for group membership with a parent of a child with ASD (Table 6). Second, additional analyses were conducted in phase two of research question four to test the predictive natures of the specific indicators of parental coping and

perceived challenges stress as well as health care and access stress. Results from phases one and two of research question four revealed the following critical stress predictors regarding *parent-related stress*: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. These same identified *parent-related* stressors will be included in the analysis for research question five.

Identification of Child-Related Stress Variables

Child-related stress is the second category that defines parental-stress (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). In phase three of research question four, the findings showed that the best predictors of *child-related stress* were: (a) increased needs/demands and (b) child's problems. See Table 9. Next, supplementary discoveries in phase four of research question four explained the predictive natures of the following specific *child-related stress* survey items that comprised increased needs/demands and child's problems: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. The aforementioned *child-related stress* variables predicted group placement in the parent of a child with ASD group will also be applied to the analysis for research question five.

Findings for Parent-Related Stress Analysis

With respect to research question five, chi-square tests and Fisher's exact tests were calculated on the following *parent-related stress* variables to establish the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels: (a) perceived difficulty to care for

child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. Chi-square tests were appropriate for this analysis, because the variables were categorical (moderate/severe ASD, mild ASD). The outcomes for each of the dependent variables (identified *parent-related stress* variables) are described below.

Perceived difficulty caring for child. First, the calculations showed all assumptions were met, and a chi-square was conducted to ascertain the relationship between married African American parents of children's levels of ASD severity and perceived difficulty caring for child stress. Examination of the frequency data revealed that for the most part, 31.3% of married African American parents of children with ASD in the study perceived their child was difficult to care for, and the majority (68.8%) of the parents reported their child was not difficult to give care. Moreover, the parents of children with a moderate/severe level of ASD severity were more prone to communicate their child was difficult to care for (25%) as opposed to only 6.3% of the parents of children with a mild level of ASD claiming difficult care taking for their children (Table 11). In addition, a statically significant relationship existed ($\chi^2(1) = 10.26, p < .001$) for difficult care stress percentages between parents of children with moderate/severe levels of ASD and parents of children with mild levels of ASD severity. The effect size determined by Cramer's *V* was .46, a medium effect size (Cohen, 1988).

Reported child bothers parent. The second *parent-related stress* examination for the reported child bothers parent measurement was calculated, and most of the chi-square assumptions were met. The exception was with one cell having a count less than five. Consequently, a Fisher's exact test was used instead of the chi-square test. In

general, the participants were more likely to report their child does not bother them (79.2%) as compared to the participants reporting their child bothers them (20.8%).

In addition, the parents of children with moderate/severe levels of ASD were nine times more likely to claim their child bothers them in comparison to parents of children with mild levels of ASD (18,8% vs. 2.1%). See Table 11 for frequency output results.

Table 11

Descriptive Statistics for Parent-Related Stress Factors by Children's ASD Levels of Severity (N = 48)

Parent-Related Stress Factors	All Severity Levels (OP)	All Severity Levels (OP)	Moderate/Severe ASD Severity Levels	Moderate/Severe ASD Severity Levels	Mild ASD Severity Levels	Mild ASD Severity Levels
Difficult to Care for Child	Difficult to Care for Child = 31.3%	Not Difficult to Care for Child = 68.8%	Difficult to Care for Child = 25%	Not Difficult to Care for Child = 20.8%	Difficult to Care for Child = 6.3%	Not Difficult to Care for Child = 47.9%
Child Bothers Parent	Child Bothers Parent = 20.8%	Child Does Not Bothers Parent = 79.2%	Child Bothers Parent = 18.8%	Child Does Not Bothers Parent = 27.1%	Child Bothers Parent = 2.1%	Child Does Not Bothers Parent = 52.1%
Health Care Frustration Stress	Health Care Frustration = 14.6%	No Health Care Frustration = 85.4%	Health Care Frustration = 10.4%	No Health Care Frustration = 35.4%	Health Care Frustration = 4.2%	No Health Care Frustration = 50%
Inadequate Insurance Stress	Inadequate Insurance = 52.1%	Adequate Insurance = 47.9%	Inadequate Insurance = 29.2%	Adequate Insurance = 16.7%	Inadequate Insurance = 22.2%	Adequate Insurance = 31.3%

Note. ASD = Autism Spectrum Disorder, OP = Overall Participants

Findings revealed a statistically significant relationship between reported child bothers parent stress between parents of children with children classified with moderate/severe levels of ASD and parents of children labeled with mild levels of ASD ($p < .05$).

A statistically significant relationship was present between reported child bothers parent stress and the levels of ASD severity among parents of children with ASD.

Health care frustration stress. Third, an analysis was performed to investigate the relationship among the participants' children's levels of ASD severity, and health care frustration stress. For the health care frustration survey item, the choices were dichotomized to indicate whether or not the parents were frustrated in their efforts to obtain health care services for their child. One of the assumptions was met for chi-square analysis, because each cell had at least one person (Robles-Piña & Rosenblad, 2015). Yet, the assumption for expected frequencies of at least five was not met in two cells. Thus, a Fisher's exact test was used instead due to the assumptions not being met for chi-square (Field, 2009).

An examination of the data revealed that the general percentage of the participants' declaring health care frustration was 14.6% compared to 85.4% of the overall participants claiming no health care frustration. In comparison to the percentage of participants with children with mild ASD levels of severity who claimed health care frustration (4.2%), participants of children classified with moderate/severe ASD who declared health care frustration was more than twice the percentage of their counter parts (10.4%). Outcome results are listed in Table 11. With respect to the question of whether or not an association with children's levels of ASD severity for health care frustration is present, the finding was not statistically significant, ($p > .05$).

Insurance inadequacy stress. Fourth, data screening revealed the assumptions for chi-square analysis was met. Thus, a chi-square was calculated for the categorical independent variable of children's levels of ASD severity and the binary dependent variable of insurance inadequacy. Examination of the counts and percentages indicated that in general, the participants had a higher rate of inadequate insurance versus adequate insurance (52.1% vs. 47.9%). The opposite was true regarding parents of children with mild levels of ASD, who reported a higher percentage of adequate insurance rather than inadequate insurance (31.3% vs. 22.9%).

Furthermore, the percentage of parents with children described as having moderate/severe levels of ASD who had inadequate insurance was almost twice the percentage of parents of children with moderate/severe levels of ASD who had adequate insurance (29.2% vs. 16.7%). Although more parents of children with moderate/severe ASD levels of severity claimed to have inadequate insurance than did parents of children with mild ASD severity levels, chi-square results revealed no significant relationship ($\chi^2(1) = 2.17, p > .05$) between insurance inadequacy stress and the children's levels of ASD severity. Thus, no statistically significant relationship existed between inadequate insurance stress and children's levels of ASD severity. The study outcomes are reported in Table 11.

Summary of Parent-Related Stress Examination

In analyzing research question five, Pearson's chi-square analyses and Fisher's exact tests were performed to decide whether or not a relationship existed among 48 married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels. Parental stress levels are defined by two domains:

(a) *parent-related stress* and (b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). The chi-square and Fisher's exact analyses were appropriate, because the data was categorical (moderate/severe ASD vs. mild ASD). When chi-square assumptions were not met, Fisher's exact tests were used.

In the first set of analyses for research question five, *parent-related stress* was accessed via four independent variables: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. Out of these four variables examined, only the findings from perceived difficulty to care for child and reported child bothers you were statistically significant regarding children's severity levels of ASD. Based on the investigation of *parent-related stress* variables, a statistically significant relationship was present for *parent-related stress* (difficult to care for, child bothers parent) and children's severity levels of ASD.

Findings for Child-Related Stress Analysis

After the first set of research five analyses on *parent-related stress* were conducted, the second set of analyses involved *child-related stress*. *Child-related stress* is the second category that defines parental-stress (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). The two main categories of *child-related stress* are: (a) increased needs/demands and (b) child's problems, which were previously identified in research question four as predictors of membership in the parent of a child with ASD group versus placement in the parent of a child without ASD group.

Furthermore, four *child-related stress* subgroups were created to determine more specificity pertaining to the two major *child-related stress* categories previously noted (increased needs/demands, child's problems). The following four *child-related stress* subgroups were investigated in research question five: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. Following the *child-related stress* variables identification process, Pearson's chi-square and Fisher's exact analyses proceeded to assess the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels. The outcomes for each of the previously listed four *child-related stress* variables are described below.

Special therapy. The first *child-related* variable that was assessed in research question five was special therapy where parents answered yes or no to whether or not their child needed or received special therapy, such as physical, occupational, or speech therapy. Examination of frequency data revealed that the majority of the 48 married African American parents of children with ASD in this investigation reported their child needed special therapy (77.1%). Further, more parents of children with mild ASD levels (41.7%) said their child needed special therapy when compared to parents of children with moderate/severe ASD levels (35.4%). Frequency data is shown in Table 12. A chi-square statistical analyses indicated that there was a ($\chi^2(1) = .001, p > .05$) showing that when considering children's levels of ASD severity on special therapy stress there was no statistical significance. With respect to the 48 married African American parents of children with ASD in this investigation, there was not a statistically significant relationship between special therapy stress and children's severity levels of ASD.

More care/services. Second, a chi-square test was attempted to investigate the relationship among more care/services stress and children's levels of ASD severity. However, the chi-square assumptions were not met. Two cells in this analysis had expected frequency counts less than five. Therefore, a Fisher's exact test was performed instead of the chi-square test (Field, 2009).

In general, the majority of the participants (87.5%) declared that their child needed or used more care and services than is typical for his or her age group. By contrast, fewer participants (12.5%) in the overall population of married African American parents claimed their child did not use or need more care or services than others his age. When compared to parents of children with mild levels of ASD, more parents of children with moderate/severe ASD reported that their child needs more care and services (41.7% vs. 45.8%, respectively). Conversely, more parents of children with mild levels of ASD (12.5%) said their child did not need more care and services as opposed to 0% of parents of children with moderate/severe levels of ASD. See Table 12 for frequency data pertaining to *child-related stress*. Just as frequency data differences existed between the two groups (moderate/severe ASD vs. mild ASD), findings from the Fisher's exact test also indicated a significant relationship ($p < .05$) between more care and services stress and participants' children's levels of ASD severity.

Emotional, developmental, or behavioral problems (EDB). The third analysis in question five tested the relationship among of 48 married African American parents of children with ASD, children's levels of ASD severity, and parents' EDB problems stress. Chi-square assumptions were met, and analysis continued. As a whole, data analysis

suggested more than twice the percentage of married African American parents of children with ASD reported EDB stress when compared to African American parents who disclosed no EDB stress (70.8% vs. 29.2%).

Table 12

Descriptive Statistics for Child-Related Stress Factors by Children's ASD Levels of Severity (N = 48)

Child-Related Stress Factors	All Severity Levels (OP)	All Severity Levels (OP)	Moderate/ Severe ASD Severity Levels	Moderate/ Severe ASD Severity Levels	Mild ASD Severity Levels	Mild ASD Severity Levels
Special Therapy Stress	Special Therapy Stress = 77.1%	No Special Therapy Stress = 22.9%	Special Therapy Stress = 35.4%	No Special Therapy Stress = 10.4%	Special Therapy Stress = 41.7%	No Special Therapy Stress = 12.5%
More care/services Stress	More care/services Stress = 87.5%	Not More care/services Stress = 12.50%	More care/services Stress = 45.8%	Not More care/services Stress = 0%	More care/services Stress = 41.7%	Not More care/services Stress = 12.5 %
EDB Problems Stress	EDB Problems Stress = 70.8%	No EDB Problems Stress = 29.2%	EDB Problems Stress = 39.6%	No EDB Problems Stress = 6.3%	EDB Problems Stress = 31.3%	No EDB Problems Stress = 22.9%
Limited Abilities Stress	Limited Abilities Stress = 68.1%	No Limited Abilities Stress = 31.9%	Limited Abilities Stress = 42.6%	No Limited Abilities Stress = 4.3%	Limited Abilities Stress = 27.7%	No Limited Abilities Stress = 25.5%

Note. ASD = Autism Spectrum Disorder, OP = Overall Participants, EDB = Emotional, Developmental, or Behavioral

Further, a substantial incongruity presented for parents' reports of no EDB stress where the percentage of parents of children with mild ASD levels of severity (22.9%)

was over three times higher than the percentage of parents of children with moderate/severe ASD levels of severity (6.3%). In like manner, results revealed that more parents of children with moderate/severe ASD levels stated they had EDB stress when compared to parents of children with mild ASD levels (39.6% vs. 31.3%). Readers are directed to Table 12. Additionally, chi-square analysis results implied a significant relationship ($\chi^2(1) = 4.74, p < .05$) between the parents of children with different levels of ASD severity and the EDB stress scores. The effect size determined by Cramer's V was .31 (Cohen, 1988). Accordingly, a moderate association occurred between this sample of married African American parents of children with ASD, children's levels of ASD severity, and parents' EDB scores.

Limited abilities. The last analysis in research question five determined whether or not an association existed among 48 married African American parents of children with different levels of ASD severity and the limited abilities stress scores. All assumptions for chi-square analysis were met, and the analysis carried on. In general, frequency results showed more incidents of limited abilities scores presented in the parents' responses (68.1%) in comparison 31.9% of the parents claiming no limited abilities stress. Further data analysis signified a large discrepancy regarding parents' reports of no limited abilities stress where the percentage of parents of children with mild ASD levels of severity (27.7%) was over six times higher than the percentage of parents of children with moderate/severe ASD levels of severity (4.3%). The results indicated that the majority of parents of children with mild ASD levels of severity did not have limited abilities stress. Moreover, parents of children with moderate/severe ASD had a higher percentage of parents who reported more limited abilities stress when compared to

parents of children with mild ASD levels of severity (42.6% vs. 25.5%, respectively). Outcome data is represented in Table 12.

Correspondingly, findings from the chi-square analysis suggested a significant relationship ($\chi^2(1) = 9.92, p = .002$) between the parents of children with different levels of ASD severity and the limited abilities stress scores. The effect size determined by Cramer's V was .46 (Cohen, 1988). Based on these findings, a medium association existed between married African American parents of children with ASD, children's levels of ASD severity, and parents' limited abilities stress scores.

Summary of Child-Related Stress Examination

To sum up, Pearson's chi-square and Fisher's exact tests were calculated to determine the relationship among 48 married African American parents of children with ASD, their children's levels of ASD severity, and parents' *child-related stress* levels. The independent variable was categorical: moderate/severe ASD versus mild ASD. The dependent variables (*child-related stress*) were: (a) more care/services, (b) special therapy, (c) limited abilities, and (d) EDB. Outcome data is shown in Table 12.

The analyses yielded mixed results. For instance, special therapy was the only variable in this assessment that signified no statistically significant relationship to children's levels of ASD severity. The chi-square and Fisher's exact analyses indicated that the following *child-related stress* factors were statistically significant regarding children's levels of ASD severity. Also, the effect size was medium (Cohen, 1988) for the following *child-related stress* variables: (a) limited abilities and (b) EDB regarding children's ASD levels of severity.

Summary of Research Question Five

In essence, Pearson's chi-square and Fisher's exact analyses were calculated in research question five to discover whether or not a relationship existed among 48 married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels. Parental stress levels are defined by two domains: (a) *parent-related stress* and (b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). The chi-square and Fisher's exact analyses were appropriate in view of the fact that the data was dichotomized (moderate/severe ASD vs. mild ASD). The major parental stress variables (*parent-related, child-related*) for the analyses in question five were previously labeled in the results section of research question four.

First, specified *parent-related* factors were examined and constructed from the chi-square tests results explained in the research question four analyses. Consequently, the dependent variables (*parent-related stress*) in the first set of analyses for research question five were: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. According to the results of the first analyses in question five, a statistically significant relationship was present for *parent-related stress* and children's severity levels of ASD.

After the first set of research five analyses on *parent-related stress* was conducted, the second set of analyses was performed on the main contributors to *child-related stress*: (a) more care/services, (b) special therapy, (c) limited abilities, and

(d) EDB. Chi-square and Fisher's exact tests were appropriate, because the data was categorical. The findings indicated a statistically significant relationship existed among *child-related stress* (more care/services, limited abilities, EDB, and children's ASD levels of severity).

Summary of Results

In closing, Chapter IV contained results of quantitative analyses conducted to answer the five research questions for this dissertation. The first research question presented results from chi-square analyses based on data related to 65,115 African American and Caucasian parents of children with ASD regarding divorce rates. According to the findings a statistically significant association occurred in divorce rates between Caucasian parents of children with and without ASD. However, there was not a statistically significant relationship between African American parents of children with and without ASD. These results support the concept of population based mixed findings relating to divorce rates that was also present in the literature review.

In research questions two and three, the relationships among African American parents of children with and without ASD, children's severity levels, and parents' marital quality were examined. Results related to this study indicated no significant relationships existed between married African American parents of children with and without ASD and marital quality. Likewise, no significant group differences existed between children's levels of ASD severity and African American parents' marital quality. Thus, the quantitative findings in this dissertation contradicted current literature that parents of children with ASD have lower marital quality when compared to parents of children without ASD.

However, findings from analyses conducted in research questions four and five of this study supported the current literature regarding increased parental stress for parents of children with ASD as well as the claim that ASD severity levels influence parental stress scores. For instance, parental stress variables (*parent-related, child-related*) predicted group placement in the parent of a child with ASD group in research question four. Two main *parent-related* stressors: (a) parental coping and perceived challenges reported stress and (b) health care and access stress scores were the best predictors of group membership for a parent of a child with ASD among 3,587 participants. Additional analyses of (a) parental coping and perceived challenges and (b) health care and access stress indicated that the following survey items best predicted group membership of having a child with ASD: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) healthcare frustration, and (d) insurance inadequacy.

After the *parent-related* predictors were identified, analyses on *child-related* stressors were conducted for 693 participants in research question four. The results revealed that (a) increased needs/demands and (b) child's problems were the best *child-related* predictors for group membership into the parent of a child with ASD group. Subsequently, further examination of specific survey items that characterized increased needs/demands and child's problems were performed. The findings indicated that (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities predicted whether a parent had a child with ASD.

Moreover, analyses were calculated in research question five to discover whether or not relationships existed among 48 married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels. Consequently, a

statistically significant relationship was present for *parent-related stress* and children's severity levels of ASD. Likewise, a statistically significant relationship existed among *child-related stress* (more care/services, limited abilities, EDB, and children's ASD levels of severity). A discussion of the study implications and recommendations for further research will be addressed in the following chapter.

CHAPTER V

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

The purpose of this study was to examine: (a) the relationships among ethnicity (African American and Caucasian), parents of children with and without autism spectrum disorder (ASD), and divorce rates; (b) the relationship between African American parents of children with and without ASD and marital quality; (c) the relationships among African American parents of children with ASD, levels of ASD severity, and marital quality; (d) the predictive nature of parental stress variables (*parent-related, child-related*) on having a child with or without ASD; and (e) the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parents' stress levels. This chapter includes: (a) discussion of the findings, (b) limitations of the study, (c) implications for practice, (d) recommendations for further research, and (e) conclusions.

Discussion of the Findings

Research Question One

What is the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates?

A Pearson chi-square was used to determine the relationship among ethnicity (African American and Caucasian), having a child with and without ASD, and parents' divorce rates. A chi-square was appropriate due to the fact that the data were categorical (with ASD, without ASD).

Findings. The overall divorce rate was 17.9% for the 65,115 (58,030 Caucasians; 7,085 African Americans) sample of parents of children with and without ASD. This

divorce rate is comparatively lower than the current national average divorce rate in the United States, which ranges from 40% to 50% (Afifi, Davis, Denes, & Merrill, 2013; Baucom, Epstein, Kirby, & Falconier, 2011; Bottom, 2013; Brown, & Porter, 2013; Sbarra, & Beck, 2013). The chi-square results indicated that there was a statistically significant relationship between divorce rates and Caucasian parents of children with and without ASD (26.3% vs. 17.4%). Conversely, there was not a statistically significant relationship between African American parents of children with and without ASD (21.6% vs. 20%).

Explanations for this finding are several. First, the discrepancy between the overall divorce rate for the current study (17.9%) and nationwide divorce statistics (40% to 50%) may be attributed to the way the research question was asked. For example, the question was “Did selected child ever live with a parent or guardian who got divorced or separated after child was born?” This issue was also faced by Freedman et al. (2012) who claimed that the construct of the survey question and the obtainable divorce related NSCH data (Blumberg et al., 2012) were limited.

Second, the divorce question listed above measured the likelihood of parents being divorced or separated at that time of the survey and since the birth of the selected child. Whereas, the national divorce rate (40% to 50%) was founded on a national average of divorce, and it was not based on the birth of a particular child (Afifi et al., 2013; Baucom, Epstein, Kirby, & Falconier, 2011; Bottom, 2013; Brown, & Porter, 2013; Sbarra, & Beck, 2013). On this survey, the divorce or separation question was conducted using a random moment time survey study, or cross-sectional study (Creswell,

2008; Tilahun et al., 2016). Thus, different time points were considered and having a child with ASD was not used as a factor in the national average dataset.

A third explanation for the contradicting findings in the current study on divorce rates for parents of children with ASD may be related to the use of different statistical analysis, instruments, and procedures. For example, chi-square tests were performed to examine divorce rates in the current study for research question one. However, both chi-square tests and binary logistic regression analyses were calculated to examine the prevalence and timing of divorce in the study by Hartley et al. (2010). In addition, Hartley et al. (2010) employed a variety of data forms (interviews, questionnaires, diaries) from a longitudinal study. Thus, similar studies on divorce rates may yield conflicting results in the analyses depending on the employed analyses, instruments, and procedures.

Fourth, the ethnic difference in the divorce rates and the chi-square significance levels related to divorce rates may be attributed to the data collection method, instruments, and the variables used for analysis. In support of this view, Rivard et al. (2014) and Ward, Zabriskie, and Berrett (2009) claimed that different types of data and instruments used for analysis may lead to inconsistent results among similar studies. For instance, dichotomized data as to whether or not a parent was divorced or separated since the birth of the child was used in this study via cross-sectional data, and there were statistically significant relationships in divorce rates between Caucasian parents of children with and without ASD (26.3% vs. 17.4%). Yet, there were no statistically significant associations between African American parents of children with and without ASD (21.6% vs. 20%).

In contrast, Hartley et al. (2010) conducted a similar divorce study for parents of children with ASD by using the Kaplan-Meier survival analysis method. The researchers also investigated variables of family characteristics as divorce predictors (Hartley et al., 2010). In Hartley et al.'s (2010) study, the Kaplan-Meier method was instrumental in analyzing time to event data, as opposed to the current study, which only examined data from a random moment in time. Hartley et al. (2010) used a variety of data (interviews, questionnaires, diaries) from a longitudinal study, and determined that the occurrence of divorce was significantly different in the marital survival distributions of parents of children with ASD and parents of children without a disability.

Fifth, the population selection process in this study may have impacted the lack of statistical findings in divorce rate analyses for African American parents of children with ASD. For example, Hartley et al.'s (2010) sample consisted of parents of children with ASD and parents of children without any disabilities. Hartley et al. (2010) measured the risk of divorce and declared that the divorce risk for parents of children with ASD remains high throughout the child's life and unto adulthood. Other researchers have argued that the presence or absence of any child disabilities may contribute to parents' divorce probability (Hatton, Emerson, Graham, Blacher, & Llewellyn, 2010; Risdal, & Singer, 2004; Wei, & Yu, 2012). Unlike the population used in Hartley et al.'s (2010) investigation, the population in the current study consisted of parents of children with ASD and parents of children without ASD. As a result, the current study did not determine whether or not the children had a disability other than ASD, and the analysis on divorce rates did not result in a statistically significant finding for African American parents of children with ASD and without ASD.

In theory, the double ABCX model of adaptation may explain the divorce rate discrepancies between the Caucasian and African America parents in the current study (Manning et al. (2011). For instance, in a similar study by Manning et al. (2011), the double ABCX model of adaptation was applied in a quantitative study of adaptation in racially diverse families of children with ASD. Similar to the current investigation, Manning et al. (2011) explained the possibility of families with children with ASD maintaining a healthy family system despite the stressors experienced when parenting children with ASD.

Based on the double ABCX model, when the life stressor, such as ASD occurs, stress pile may also result (Manning et al., 2011; McCubbin & Patterson, 1983; Patterson & Garwick, 1994). However, the change in the family social system may vary depending on the unique family characteristics, such as coping, resiliency, social, financial, and spiritual resources (Manning et al., 2011; McCubbin & Patterson, 1983; Patterson & Garwick, 1994). Consequently, the inability of the current analysis to yield a statistically significant relationship between having a child with ASD and African American parents' divorce rates may be explained by the existence of the moderating variables of occurring and expanding family resources during a life stressor event, such as having a child with ASD (Manning et al., 2011; McCubbin & Patterson, 1983; Patterson & Garwick, 1994).

Another applicable theory that supports the divorce rate findings in research question one is the multicultural theory, because this approach addresses ethnic differences in families of children with ASD (Boyd & Correa, 2005; Broder-Fingert et al., 2013; Carr, & Lord, 2013; Darling et al., 2012; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Kirsch, 2014; Mandell & Novak, 2005; Montes, & Halterman, 2011

Mandell & Novak, 2005). In the current study, the divorce rate was higher for Caucasian parents of children with ASD (26.3%) when compared to Caucasian parents of children without ASD (17.4%). On the other hand, the divorce rate was almost equal for African American parents of children with ASD (21.6%) when compared to African American parents of children without ASD (20.5%).

This phenomenon may be characterized by differences in cultural beliefs pertaining the divorce decision-making process (Afifi et al., 2013; Manning et al., 2011). For example, Afifi et al. (2013) reported divorce perspectives from cultural and network approaches. More specifically, Afifi et al. (2013) claimed that culture and network influenced divorce decisions in a qualitative study involving 60 Mexican Americans.

One specific aspect of culture emphasized by the findings in Afifi et al.'s 2013 investigation regarding deciding whether or not to divorce was the religion and spiritual beliefs of the parents. Likewise, in a study by Manning et al. (2011), parent reports indicated that African Americans scored higher on the seeking spiritual support subscale than did Caucasians. In brief, the ethnic differences in the current study regarding the divorce rates between Caucasian and African American parents of children with and without ASD may be explained by culture variations, such as religious coping and spiritual support used during the divorce decision-making process.

Research Question Two

What is the relationship between African American parents of children with and without ASD and parents' marital quality?

In research question two, a Pearson's chi-square was calculated to determine the relationship between African American parents of children with and without ASD and

parents' marital quality. The independent variable was categorical: those parents who had children with ASD and those parents who had children without ASD. The dependent variable, marital quality, was constructed using the following domains: (a) marital happiness (James, 2015a, 2015b; Lavner & Bradbury, 2010), (b) parents eating meals together (Buswell et al., 2012; Glorieux et al., 2011), (c) emotional support (Amato & Hohmann-Marriott, 2007; Brobst et al., 2009; Nealy et al., 2012; Ramisch, Onaga, & Oh, 2014; Ramisch et al., 2013), and (d) domestic violence (Arias et al., 1997; Burge et al., 2016; Levendosky & Graham-Bermann, 2001). Data screening necessitated some coding revisions on SPSS.

Findings. As a whole, the majority of African American parents of children with and without ASD (80.6%) in this study indicated a rating of high marital happiness. Similarly, 79.3% of African American parents of children with ASD also reported high marital happiness scores. Therefore, the result was not statistically significant, indicating that the marital happiness category was not statistically different between the African American parents of children with ASD versus parents of children without ASD. In short, the findings suggested no significant relationships existed between all four of the previously listed marital quality measurements and African American parents of children with and without ASD.

The findings in the current study contradict the claims of Hartley et al. (2014) and Brobst et al. (2009) who stated that parents of children with ASD had lower couple satisfaction. On the other hand, the findings from this analysis support the claims of Manning et al. (2011) who found that the relationship adjustment for parents of children with ASD was within a functioning and healthy range. An explanation for the

failure of the study to yield significant results for the marital quality measurement is described below.

Regarding research question two, a relationship did not exist between African American parents of children with and without ASD and parents' marital quality. This may be due to the appropriateness of the survey items used to measure marital quality for the current population (James, 2015a, 2015b; Rivard, 2014). As Rivard (2014) stated, measurement devices used in ASD studies are not uniform, and thus a wide range of outcomes are reported. For instance, some researchers (Afifi et al., 2013; James, 2015a, 2015b; Rivard, 2014) may question whether or not the following domains used to measure marital quality in this study were sufficient for the African American population being studied: (a) marital happiness (James, 2015a, 2015b; Lavner & Bradbury, 2010), (b) parents eating meals together (Buswell et al., 2012; Glorieux et al., 2011), (c) emotional support (Amato & Hohmann-Marriott, 2007; Brobst et al., 2009; Nealy et al., 2012; Ramisch, Onaga, & Oh, 2014; Ramisch et al., 2013), and (d) domestic violence (Arias et al., 1997; Burge et al., 2016; Levendosky & Graham-Bermann, 2001). Potential problems in the two of the commonly used marital quality measurements (marital happiness and eating meals together) were recognized and described below (James, 2015a, 2015b; Ward et al., 2009).

Marital happiness. The data for the marital happiness question was initially collected using a four-item Likert response style (1 = completely happy, 2 = very happy, 3 = fairly happy, or 4 = not too happy). Subsequently, the marital happiness question was dichotomized for use with a chi-square (0 = high marital happiness, and 1 = low marital happiness). Although James (2015a, 2015b) used a similar marital happiness question in

his study on marital quality, he criticized the over reliance on such question to measure the relationship status of couples (i.e., low marital quality versus high marital quality).

In fact, James (2015b) argued that most cross-sectional designs used to measure the impact of life transitions on marital quality provide limited information pertaining to patterns of marital quality. James clarified that cross-sectional studies result in biased results that report a larger number of high-quality marriages in their samples.

Alternatively, James (2015a, 2015b) supports the use of trajectories of marital quality with the use of latent growth curve models for marital quality studies. In short, the current study design and question format may be inadequate in testing the relationship between African American parents of children with and without ASD and parents' marital quality.

Eating meals together. The data for the parents eating meals together was originally collapsed from an open-ended survey item asking parents how many days in the past week, they ate a meal together (0 = no days, 1 = 1- 3 days, 2 = 4 – 6 days, 3 = everyday). The eating meals question was dichotomized for use with a chi-square.

The eating meals together domain was also used by Buswell et al. (2012) in a study that investigated the relationship between father involvement in family leisure and family functioning. In Buswell et al.'s (2012) investigation, an emphasis was placed on the significance of daily family leisure including spending quality time together and eating meals together. In comparison to the current study, Buswell et al. (2012) included a dichotomized survey question of whether or not participants ate dinner together to assess family relationship functioning.

However, Buswell et al. (2012) also included 15 other questions to determine the significance of family leisure involvement in relation to family functioning. In addition, Buswell et al. (2012) included a Likert scale that measured the participants' satisfaction levels of the eating meals together in order to add meaning to the dichotomized question of whether or not the participants ate together. In summary, the current study employed the question of eating meals together as a measurement of marital quality. Although this question may be a useful measurement for marital quality regarding couples spending time together, the question may be lacking in providing a total measurement of quality time being spent together when used in isolation as an assessment of daily family or couple leisure.

Research Question Three

What is the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality?

Four dichotomized marital quality measurements consisting of: (a) marital happiness, (b) parents eating meals together, (c) emotional support, and (d) domestic violence were investigated to determine the relationship among African American parents of children with ASD, children's levels of ASD severity, and parents' marital quality. Considering that the data were categorical, chi-square tests were selected for the analyses. In addition, the Fisher's exact test was used when the chi-square assumptions were not met (Field, 2009).

Findings. The findings from Pearson's chi-square and Fisher's exact tests showed that parents of children rated with moderate/severe ASD experienced lower scores of marital happiness, less emotional support, and more domestic violence in

comparison to parents of children with mild ASD severity. Regarding to eating meals together, the parents of children with moderate/severe ASD severity scored higher for regularly eating together than did parents of children with mild ASD. No significant group differences existed between children's levels of ASD severity and parents' marital quality existed.

The findings in research question three contradict the current literature regarding the effects of children's levels of ASD severity. For example, numerous researchers claimed the more severe the child disability variables, the higher are the parental stress levels and the lower are the marital quality levels (Baker, Blacher, & Olsson, 2005; Pozo et al., 2014; Santamaria, Cuzzocrea, Gugliandolo, & Larcan, 2012). However, in the current study, children's levels of ASD severity were not associated with African American parents' marital quality. Two possible explanations for this contradiction follows.

First, the chi-square findings in children's levels of ASD severity and African American parents' marital quality may be explained by the small sample size of 48 married African American parents whose children were rated with ASD severity levels (moderate/severe vs. mild). Some of the cells in the chi-square analyses were less than five. In light of the fact that misdiagnosis often occurs in the African American population (Carr, & Lord, 2013; Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011), only 48 African American parents responded to the children's severity level question. This number decreased from the 66 married African American parents who reported that a doctor diagnosed their child has ASD. As a result, chi-square

analyses are typically affected by smaller sample sizes and sometimes result in inaccurate findings (Field, 2009).

Another explanation for the small number of responders in the study involving the children's ASD levels of severity may be attributed to ASD diagnostic problems in the African American population. In support of the multicultural theory, some researchers have claimed that culture-based ASD diagnostic problems existed with professionals who have examined non-dominant culture, including African American (Carr, & Lord, 2013; Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Ennis-Cole et al., 2013; Jarquin et al., 2011). One reason for racial differences in diagnoses may be due to the nature of the assessment. El-Ghoroury and Krackow (2012) recommended using a multicultural child assessment model for ASD identification when working with non-dominant populations such as African Americans.

For instance, professionals heavily depend on reported behavior observations when evaluating ASD criteria (American Psychiatric Association, 2013; Ball, 2008; NINDS, 2009; Robledo & Ham-Kucharski, 2005; Tilton, 2010). A number of researchers have claimed ethnicity may impact parents' and professionals' perceived observations and associated meanings of the child's symptoms (Chaidez et al., 2012; El-Ghoroury, & Krackow, 2012; Kirsch, 2014; Mandell & Novak, 2005; Samadi & McConkey, 2011). Consequently, misdiagnosis may often be a result of false interpretations that arise when childhood assessments are not culturally sensitive (El-Ghoroury & Krackow, 2012). With respect to the multicultural view, several researchers have reported ethnicity is linked to differences in ASD diagnoses, treatment accessibility and treatment participation (Ennis-Cole et al., 2013; Gourdine et al., 2011; Meadan et al.,

2010; Sell et al., 2012). As a result, these misperceptions about the ASD diagnosis regarding children's severity levels may have affected the findings in this study.

Research Question Four

Which parental stress variables (*parent-related, child-related*) best predicts whether a married African American parent will have a child with ASD or without ASD?

In question four, binary logistic regression analyses were performed given the categorical nature of the variables (with ASD, without ASD). The examination was conducted in four phases to determine the predictability of parental stress variables (*parent-related, child-related*) on whether a married African American parent would have a child with ASD. In this study, parental stress levels were defined by two domains: (a) *parent-related stress* and (b) *child-related stress* (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). The findings of the analyses are described below.

Findings for phase one. In phase one of the analyses, four main categories of *parent-related stress* were examined for predictability of whether a parent would have a child with ASD: (a) stress related to parental coping and perceived challenges with their child, (b) health care access and quality stress, (c) financial stress, and (d) stress pertaining to adverse family experiences. The results indicated that: (a) parental coping and perceived challenges stress and (b) health care and access stress were the best predictors for parents of children with ASD group membership. More precisely, the parental coping and perceived challenges category had a probability of 14.31 times, and

the health care and access stress domain had a probability of 6.83 times to predict placement in the parents of children with ASD group.

Findings for phase two. In phase two, further analysis of the best *parent-related* predictors: (a) parental coping and perceived challenges and (b) health care and access stress was performed to determine which specific parental coping and perceived challenges indicators and which health care and access indicators best predicted the probability of a parent with a child with ASD. For the purpose of analysis, the parental coping and perceived challenges stress category was sub-grouped into five stressors: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) reported child angers you, (d) low parental coping level, and (e) lack of emotional support. Subsequently, hierarchical binary logistic regression was performed to decide the predictive nature of the five survey items for parental coping and perceived challenges stress predictors on the likelihood that parents would be classified as a parent of a child with ASD.

The results showed that two of the predictor variables made a unique statistically contribution to the model: (a) perceived difficulty to care for child and (b) reported child bothers you. In effect, the odds of having higher levels of perceived difficult care stress was 5.30 times more likely to predict having a child with ASD. In addition, the odds of having higher levels of reported child bothers you stress was 3.53 times more likely to predict having a child with ASD.

With respect to the health care and access stress, the following six predictor variables were examined for whether a parent would have a child with ASD: (a) health care frustration, (b) insurance inadequacy, (c) unmet health care needs,

(d) absence of family-centered care, (e) referral problems, and (f) specialist problems.

Forward logistic regression results indicated that: (a) health care frustration and (b) insurance inadequacy predicted parent of child with ASD. For example, the odds of a parent with a child with ASD having higher levels of: (a) health care frustration stress and (b) insurance inadequacy stress was more than twice the odds of a parent with a child without ASD.

Additional discussion for phases one and two. The parental stress results for the *parent-related stress* domain discussed above were consistent with previous research on *parent-related stress* among parents of children with ASD. In the current study, the main predictors of *parent-related stress* were (a) parental coping and perceived challenges and (b) health care access and quality. More precisely, the survey items that characterized these two main predictors were: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. Comparatively to the current investigation, Bluth et al. (2013) documented that parents' perceptions impacted parental stress levels. For example, Bluth et al. (2013) claimed that mothers and fathers had different perceptions of whether or not their child's behavior was problematic, yet parental stress levels increased when either or both parents believed the child's characteristics were problematic. Therefore, when parents believed their child aggravated them or was difficult to care for, their stress levels were increased.

With respect to the health care access and quality predictors mentioned above, other researchers have suggested that parents of children with ASD often became frustrated while trying to obtain health care services and adequate insurance to meet the needs of their child (Bluth et al., 2013; Ennis-Cole et al., 2013; Hall & Graft, 2012;

Johnson & Simpson, 2013; Karst & Hecke, 2012; Parish et al., 2015; Rivard et al., 2013). For instance, Parish et al. (2015) reported that parents of children with ASD usually has inadequate insurance that does not meet all of the needs of their children and this increases family's financial burdens. Correspondingly, in a study by Ennis-Cole et al. (2013), parents of children with ASD reported unmet ASD service needs such as applied behavior analysis (ABA) and speech therapy due in part to insurance problems. Therefore, the findings in the current study support the current literature related to a) parental coping and perceived challenges and (b) health care access and quality.

In theory, Bluth et al.'s (2013) stress model for parents of children with ASD addressed the topics of (a) parental coping and perceived challenges and (b) health care access and quality. In the current study, these two main predictors of whether a parent had a child with ASD would be listed as "other life stressors" in Bluth's 2013 stress model (p. 198). Then, various types of resources and supports may affect whether or not the parent has a negative or positive parental outcome (Bluth et al., 2013). This study validated the impact of *parent-related stressors* on parents of children with ASD.

Findings for phase three. Next, additional analysis done in phase three implied the predictive nature of the following specific survey items that comprised *child-related stress* such as increased needs/demands and child's problems. The results from the binary logistic regression analysis in phase three indicated that the odds of a parent with a child with ASD having higher levels of increased needs/demands stress was almost 30 times more than the odds of a parent with a child without ASD. Regarding the child's problems domain, the odds of a parent with a child with ASD having higher levels of

child's problems stress was over 10 times more than the odds of a parent with a child without ASD.

Findings for phase four. In phase four, additional analysis was performed on *child-related stress* (increased needs/demand, child's problems) in the domains of: (a) special therapy, (b) more care/services, (c) emotional, developmental, or behavioral problems (EDB), and (d) limited abilities. Results indicated predictability of group placement as a parent of a child with ASD versus group placement as a parent of a child without ASD. The odds of a parent with a child with ASD having higher *child-related stress* scores in categories of: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities was higher than the odds of a parent with a child without ASD.

Additional discussion for phases three and four. The findings in the current study regarding *child-related stress* for (a) increased needs/demands and (b) child's problems were associated with the findings in Benson's 2006 study. For example, the regression analyses findings in Benson's 2006 investigation indicated that child symptom severity and stress proliferation influenced parent depression. Likewise, Manning et al. (2011) argued that specific child traits such as behavior problems that required therapy were associated with negative family outcomes. In summary, a child's ASD impacted parental stress via the presence of *child-related stressors* such as: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. These specific predictors, which may be described as (a) increased needs/demands and (b) child's problems may lead to increased parental stress and depression (Bluth et al., 2013; Benson, 2006; Manning et al., 2011).

From a theoretical perspective, each of the four specific *child-related* predictors in the current investigation may be applicable to Bluth's stress model for parents of children with ASD. For instance, (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities would be considered as child characteristics that puts parents at risk of elevated stress levels (Bluth et al., 2013). In Bluth's 2013 model, the previous four *child-related* predictors that fall in the categories of (a) increased needs/demands and (b) child's problems were also referred to as stress predicting variables for parents of children with ASD. In the final analysis, the results in this study regarding the impact of *child-related* stress supported Bluth et. al's 2013 model for parents of children with ASD.

Summary of findings for phases one through four. In short, logistic regression analyses were performed in four phases to decide the predictability of parental stress factors (*parent-related, child-related*) on whether or not a married African American parent would have a child with ASD. Findings from phases one and two indicated the following *parent-related stress* variables were predictors for having a child with ASD: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. Next, additional tests done in phases three and four implied the predictive nature of the following specific survey items that comprised increased needs/demands and child's problems: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. The aforementioned parental stress variables (*parent-related, child-related*) predicted whether or not the parent had a child with ASD.

Additional discussions for research question four. The findings regarding parental stress levels match the literature on how parents of children with ASD

experience more ASD related stress (Baker-Ericzén, et al., 2005; Harper et al., 2013; Hastings, et al., 2005; Johnson & Simpson, 2013; McCubbin & Patterson, 1983; Osborne & Reed, 2010; Tilton, 2010). For example, in the current study, parental stress variables (*parent-related, child-related*) predicted whether a parent would have a child with ASD, and these findings coincide with a similar studies conducted by researchers such as Griffith, et al. (2010) and Hall and Graff (2012).

First, in Griffith et al.'s (2010) study which consisted of matched groups of 57 mothers, findings indicated children with ASD had more problem behaviors than children with other disabilities. Also, Griffith et al. (2010) claimed that the mothers of children with ASD reported lower positive perceptions of their children and higher stress levels than did the mothers of children with Down Syndrome or mixed disorders. In comparison, Hall and Graff (2012) stated that a relationship existed between elevated internalizing maladaptive behaviors of children with ASD and elevated parent stress levels. In effect, the results in the current study support the claims made by Griffith et al. and Hall and Graff.

The findings regarding parental stress in the current investigation are similar to the findings in the literature review. In research question four, both *parent-related* and *child-related* stressors were predictive of whether a parent had a child with ASD. For example, logistic regression analyses indicated that the odds of having higher levels of perceived difficult care stress was 5.30 times more likely to predict having a child with ASD. In addition, the odds of having higher levels of reported child bothers you stress was 3.53 times more likely to predict having a child with ASD than the odds of a parent with a child with ASD. Having higher levels of: (a) health care frustration stress and

(b) insurance inadequacy stress was more than twice the odds of a parent with a child without ASD. Thus, the findings support the concept that parents of children with ASD experience more stress and the specific stressor may be linked ASD experiences.

From a theoretical perspective, the current study supports the parents of children with ASD stress model that explains how various ASD specific stressors impacted the entire family system (Bluth et al., 2013). For example, Bluth et al, (2013) argued that ASD related stress variables influenced parents as individuals and parents as a couple. Similarly, specific ASD related stress variables in the current study were predictive of group membership for parents of children with ASD.

Also, child characteristics, parental perceptions, couple relationship status, numerous family stressors, and interaction patterns were addressed in the Bluth et al.'s (2013) model. The survey items included in the current analyses may also be categorized in Bluth et al.'s (2013) model, because the parents of children with ASD stress model is comprised of a variety of independent and dependent variables similar to the parental stress variables analyzed in the current study (*parent-related, child-related*). After analyses, the results in the current study suggested both *parent-related* and *child-related* stressors predicted whether a parent had a child with ASD. Therefore, the current findings validate the interacting effects of intervening factors discussed in the parents of children with ASD stress model (Bluth et al., 2013).

Research Question Five

What is the relationship among married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels?

In research question five, Pearson's chi-square and Fisher's exact analyses were calculated to ascertain whether or not a relationship existed among 48 married African American parents of children with ASD, children's levels of ASD severity, and parental stress levels (*parent-related, child-related*). The chi-square and Fisher's exact analyses were selected, because the data was dichotomized (moderate/severe ASD vs. mild ASD). A discussion of the analysis results will follow.

Findings for parent-related stress. The *parent-related* stressors in the first set of analyses for research question five were: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. First, a chi-square was conducted to ascertain the relationship between married African American parents of children's levels of ASD severity and perceived difficulty caring for child stress. Results indicated that the parents of children with a moderate/severe level of ASD severity had a higher percentage of parents who reported their child was difficulty in caring for when compared to parents of children with a mild level of ASD. Furthermore, a statistically significant relationship existed between perceived difficult to care for and children's levels of ASD severity.

The second analysis was performed on the reported child bothers you (parent) category. Due to chi-square assumptions not being met, a Fisher's exact test (Field, 2009) was calculated to determine whether a relationship existed among married African American parents of children with ASD, children's levels of ASD severity, and reported child bothers parent stress. The findings indicated that more parents of children with moderate/severe levels of ASD indicated their child bothered them than the comparison group of parents of children with mild levels of ASD. Given these points, the findings

indicated a statistically significant relationship between reported child bothers parent stress and children's levels of ASD severity.

The third *parent-related* stressor included in the current analysis was health care frustration. An examination of the data revealed that more parents of children with moderate/severe ASD levels of severity declared health care frustration in comparison to the parents with children with mild ASD levels of severity. Albeit, the findings were not statistically significant.

The last domain of *parent-related stress* included in the analysis was insurance inadequacy. Findings indicated that parents whose children were classified as having moderate/severe levels of ASD severity experienced higher stress levels than the parents whose children were classified as having mild levels of ASD severity. In addition, more parents with children who were rated with moderate/severe levels of ASD and claimed they had inadequate insurance than did the parents with children with moderate/severe levels of ASD. Despite the percentage differences related to insurance inadequacy stress, no significant relationship existed between insurance inadequacy stress and the children's levels of ASD severity.

Findings for child-related stress. Another set of Pearson's chi-square and Fisher's exact analyses were conducted on the main contributors to *child-related stress*: (a) special therapy, (b) more care/services, (c) EDB, and (d) limited abilities. According to the results, a statistically significant relationship existed among *child-related stress* (more care/services, limited abilities, EDB, and children's ASD levels of severity).

The first category in the analysis on *child-related stress* for research question five was special therapy. Based on the results, more parents of children with mild ASD levels

reported that their child needed special therapy than the parents of children with moderate/severe ASD levels. The findings in the current study indicated special therapy was not related to children's levels of severity.

The second dependent *child-related stress* factor of more care/services was created from binary parental responses to whether or not their child needed or used more medical care, mental health, or educational services than the typical amount of services used for most children within the same age group. The findings indicated that more parents of children with moderate/severe ASD reported that their child needed more care and services when compared to parents of children with mild ASD levels. Furthermore, a significant relationship occurred between more care and services stress and participants' children's levels of ASD severity.

Third, EDB was analyzed with a chi-square test. Results indicated that more parents of children with moderate/severe ASD levels stated they had EDB stress in contrast to the parents of children with mild ASD levels. In effect, an association existed between parents' EDB scores and children's levels of ASD severity.

Lastly, limited abilities, which is a sub-group of *child-related stress*, was analyzed to determine the relationship between limited abilities stress and children's levels of ASD severity. More parents of children with moderate/severe ASD reported higher scores of limited abilities stress in contrast to the parents of children with mild ASD levels of severity. As a result, parents' limited abilities stress scores were associated with children's levels of ASD severity.

Additional discussions for research question five. Similar to other studies (Hock et al., 2012; Johnson, 2012; Manning et al., 2011; Peters-Scheffer et al., 2012;

Rivard et al., 2014), the analysis in the current study yielded mixed results related to parental stress (*parent-related, child-related*). For instance, findings in the current study indicated a statistically significant relationship was present in two out of the five *parent-related* stress categories (difficult to care for, child bothers parent) and children's severity levels of ASD. Also, the findings in the current study revealed a statistically significant relationship was present in three out of four sub-groups of *child-related* stress (more care/services, limited abilities, EDB).

The current study supports the claims of previous researchers in that parental stress (*parent-related, child related*) is affected by children's levels of ASD (Benson, 2006; Benson & Karlof, 2009; Bluth et al., 2013; Eisenhower et al., 2005; Griffith et al., 2010; Harper et al., 2013; Hoffman et al., 2008; Manning et al., 2011; Moh & Magiati, 2012). For example, Hoffman et al. (2008) investigated children's ASD severity regarding to maternal stress scores. Findings from Pearson correlations and regression analyses indicated children's ASD severity levels were predictors of mothers' reported stress levels.

By comparison, the current study employed Pearson's chi-square and Fisher's exact tests to determine whether or not a relationship existed among children's levels of ASD severity, and parental stress levels (*parent-related, child-related*). The current findings indicated that a statistically significant relationship existed for the following parental stressors (*parent-related, child-related*): (a) perceived difficulty to care for child, (b) child bothers parent, (c) more care/services, (d) limited abilities, and (e) EDB. The parental stress categories (*parent-related, child-related*) in the current study mirrors Hoffman et al.'s (2008) domains used for stress evaluation where Hoffman et al. (2008)

explained the child domain and parent domain constructs for analyzing parental stress which is referred to as parenting stress in Hoffman et al.'s study. In both the current study and Hoffman et al.'s (2008) study, children's ASD severity levels related to parents' stress levels.

As previously noted, not all of the parental stress variables (*parent-related, child-related*) in research question five were statistically significant. One reason some of the parental stress variables were not significantly associated with children's severity levels of ASD may be explained by the double ABCX model of adaptation (Manning et al., 2011). For example, when Manning et al., 2011 examined the influence of severity of ASD symptoms on parental stress outcomes, family functioning variance was presented as a reason for the mixed findings. Manning et al. (2011) explained how the regression results in the 2011 study indicated problem behavior severity as a predictor of family functioning and parental stress. However, severity of ASD symptoms was not predictive of family functioning and parenting distress according to Manning et al., 2011. In the double ABCX model, the importance of family coping and resiliency resources are presented as a buffer against the impact of the identified ASD stressors on the family living with ASD (Manning et al., 2011). In essence, the current findings support the claim presented in Manning et al.'s (2011) study that not all parental stressors negatively impact the functioning and adaptability of parents of children with ASD.

Limitations of the Study

The results of this study should be interpreted in light of the following methodological limitations. First, this research investigated cross-sectional data from archival data from the *2011-2012 National Survey of Children's Health (NSCH)* (Child

and Adolescent Health Measurement Initiative [CAHMI], 2012b, 2012c). Therefore, data was limited, and changes made over time could not be determined.

Another limitation that resulted from using archival data was the inadequacy of some of the survey items used for analysis. For instance, only one survey question asked specifically about marital happiness. The data for the marital happiness question was initially collected using a four-item Likert response style (1 = completely happy, 2 = very happy, 3 = fairly happy, or 4 = not too happy). Subsequently, the marital happiness question was dichotomized for use with a chi-square (0 = high marital happiness, and 1 = low marital happiness).

However, researchers have criticized the over reliance on the aforementioned marital happiness Likert scale items (James, 2015a, 2015b; Ward et al., 2009). One problem with using this Likert scale marital satisfaction question as the single construct to measure marital quality is that it lends itself to socially biased responses (Ward, et al, 2009). Consequently, James (2015a, 2015b) recommended examining relationship status of married couples via the use of multiple dimensions of measurements, such as levels of marital satisfaction or happiness, marital communication levels, and marital conflict levels. The current database used in this study did not contain survey items that specifically measured communication and marital conflict among couples.

Alternatively, similar questions that represented some of the measurements mentioned by James (2015a, 2015b) were attempted in the current study. For instance, in place of couple conflict, the domestic violence question was used to represent conflict. This substitution may be problematic, because the question only captures physical conflicts in the form of hitting, pushing, slapping, etc. Yet, the domestic violence survey

item does not measure non-physical conflicts that may exist in a marriage and affect the quality level of the marriage.

Several additional limitations in the current study are as follows. The study was limited to the use of archival data that was based on telephone surveys. Thus, some meaning may have been lost due to the inability to observe nonverbal cues and body language. Another limitation is gender underrepresentation. For instance, most of the feedback was obtained from mothers. Consequently, results may have been different had more feedback from fathers been obtained. Lastly, the target population for this study included married African American parents of children with ASD. The respondents' parental relationship to the selected child in this study does not differentiate between biological or adoptive parents. Thus, the researcher may not determine differences between biological and adoptive parents' responses, and readers are encouraged to be cautious in the extent to which they generalize from the findings of this examination.

Despite the above limitations, the current study furthers knowledge of ASD issues for married African American parents of children with ASD in several ways. First, this study demonstrated ethnic differences for divorce rates. For instance, the findings in research question one regarding divorce rates supported the current literature regarding the divorce rates for Caucasian parents of children with ASD. In general, researchers have claimed that parents of children with ASD experienced higher divorce rates than parents of children without ASD (Bluth et al., 2013; Hartley et al., 2010; McConnell et al., 2014; Nealy et al., 2012; Tilton, 2010). Correspondingly, the findings in the current investigation indicated that more Caucasian parents of children with ASD were divorced

in comparison to the Caucasian parents of children without ASD. In this example, the current study supported the literature.

On the other hand, the divorce rate for the African American parents contradicted the current literature, because the divorce rate for African American parents of children with ASD was almost equal to the divorce rate for African American parents of children without ASD. Although this may be true, the contradiction to the literature concerning the divorce rates of African American parents of children with ASD was explained in theory by applying concepts related to the double ABCX model (Manning et al., 2011; McCubbin, H., & Patterson, J. 1983; Patterson & Garwick, 1994). Therefore, this study contributed to the knowledge of ethnic differences related to divorce rates of parents of children with ASD.

Second, the parental stress (*parent-related, child-related*) results for parents of children with ASD were consistent with previous research. For instance, the following stressors predicted whether a parent had a child with ASD: (a) perceived difficulty to care for child, (b) reported child bothers you, (c) health care frustration, and (d) insurance inadequacy. Similar findings regarding the impact of *parent-related* and *child-related stress* were reported by numerous other researchers (Bluth et al., 2013; Eisenhower et al., 2005; Harper, Dyches et al., 2013; Hartley et al., 2014; Karst, & Hecke, 2012).

Lastly, the current study extended the knowledge base in research involving African American parents of children with ASD. To date, most ASD related studies have consisted of majority Caucasian participants (Ben-Sasson, Soto, Martínez-Pedraza, & Carter, 2013; Brobst, Clopton, & Hendrick, 2009; Carr & Lord, 2012; Cuccaro et al., 2007; Mandell & Novak, 2005; McHatton & Correa, 2005; Samadi & McConkey, 2011).

By providing findings specifically related to African American parents of children with ASD, this study offers a framework that may be extended to other ASD related studies for African American families with ASD.

In summary, the findings in the current study supported the literature regarding parental stress (*parent-related, child-related*) for parents of children with ASD.

However, the findings in the current research was contradictory with respect to the divorce rates and marital quality for African American parents of children with ASD. Although, readers are cautioned against over generalization due to the methodological limitations of the investigation, the study still provides a foundation to build upon for future studies with African American parents.

Implications

The findings in this study suggests several critical clinical implications in working with married African American parents who have a child with ASD. The various ASD related parental stress factors do not necessarily support that overall family functioning will be negatively affected (Manning et al., 2011; Patterson & Garwick, 1994). For instance, neither parental stress not children's severity levels of ASD affected couples' marital quality in this study. A similar finding was reported by Manning et al. (2011) where participants reported increased levels of stress when compared to parents of children without ASD, but they reported positive family functioning. Therefore, when treating parents of children with ASD, clinicians should avoid assuming that all marriages may suffer due to having a child with ASD.

Another implication from the current study is based on the marital quality analyses with the married African American parents. Contrary to the general consensus

regarding decreased marital quality for parents of children with ASD (Bluth et al., 2013; Brobst et al., 2009; Hartley et al., 2010; James, 2014), the current analysis indicated no statistically significant relationships or predictions in reference to African American's marital quality. The adaptation perspective suggested by the double ABCX model (Manning et al., 2011; Patterson & Garwick, 1994) is supported by the current finding. Based on the double ABCX model, positive adaptation in families with ASD results from balancing the inherent stressors with coping strategies that will allow a family to achieve its optimum level of functioning (Manning et al., 2011; Patterson & Garwick, 1994).

Unlike the marital quality analyses in the current study involving married African American parents, the parental stress (*parent-related, child-related*) findings supported the current literature regarding a relationship between parenting a child with ASD and experiencing more ASD specific stressors. For example, the following significant parental stress (*parent-related, child-related*) predictors for having a child with ASD are ranked in the order of highest predictors to lowest predictors: (a) increased needs and demands, (b) child's problems, (d) coping and perceived challenges, and (e) health care access and quality. In addressing the formerly mentioned ASD related parental stressors, counselors working with African American clients may employ the following culturally responsive services.

One culturally responsive method that counselors may employ when working with married African American parents may be to examine their own personal awareness and to increase their cultural knowledge regarding ASD (Ennis-Cole, 2013; Kalb et al., 2012). Being aware of one's personal biases or negative conceptions regarding ASD may improve the counselors' abilities to help African Americans who parent a child with

ASD. For example, by performing this self-assessment, counselors may recognize the need to increase their knowledge of ASD and ethnic related interventions for African Americans. In addition, counselors may offer more treatment options and tailor fitted ASD resources by increasing their cultural knowledge. By examining their personal awareness of ASD and by learning more about cultural models, counselors may become more competent in assisting African American parents of children with ASD.

For instance, when counselors educate themselves about current ASD practices and resources, they may offer information to parents that will help alleviate stress regarding their child's increased needs and demands (Ennis-Cole, 2013; Hall & Graff, 2012). In addition, counselors should keep referrals for special therapy such as physical therapy, occupational therapy, and speech therapy. Counselors may also become advocates for families impacted by ASD to influence the creations of more appropriate ASD services such as in-home therapy, in-home parent training, respite services; and more general educational services for children (Hall & Graff, 2012; Johnson & Simpson, 2013; Manning et al., 2011). In brief, counselors may help clients who experience increased needs/demands stress and child's problems stress by becoming more knowledgeable about ASD (Hall & Graff, 2012). In effect, counselors may apply ASD knowledge by providing referrals and resources to parents as well as by advocating for more accessible ASD services for families (Ennis-Cole, 2013; Hall & Graff, 2012; Johnson & Simpson, 2013).

In addition, by increasing their personal awareness and cultural knowledge, counselors may be better equipped to aid the parents with reframing their negative perceptions associated with caring for their child (Ennis-Cole et al., 2013; Manning et al.,

2011). Alternatively, if counselors have cultural biases or negative notions concerning ASD, this may affect treatment outcomes (Ennis-Cole, 2013; Mandell & Novak, 2005; Schwarzbaum, & Thomas, 2008). Culturally based perceptions of ASD impact the effectiveness of the ASD treatment (Ennis-Cole, 2013; Mandell & Novak, 2005; Ravindran & Myers, 2012; Schwarzbaum, & Thomas, 2008). This is why it is critical for the counselors to constantly re-evaluate their perceptions regarding ASD in general and their beliefs regarding the African American population.

In considering treatment options for parents who present with negative perceptions regarding parenting their child with ASD, counselors should be aware that the critical issue is not the level of the child's ASD behaviors. Rather, the issue is whether or not the parents believe these ASD behaviors are problematic and if so to what degree (Ennis-Cole, 2013; Falk et al., 2014; Ravindran & Myers, 2012). For instance, Falk et al. (2014) claimed that parents' belief systems were more predictive of parent's mental health than the child-related traits. Therefore, counselors should validate the parents' views about their child's ASD characteristics, and then work on assisting the clients with reframing their negative perceptions (Karst & Hecke, 2012; Manning et al., 2011; Tway, Connolly, & Novak, 2007).

Another counseling goal may be to help clients strengthen their coping skills. A counselor may use active listening skills to identify the clients' current coping techniques and resources (Benson, 2006). Then, counselors may empower clients to use those pre-existing coping techniques and resources as building blocks to help them cope better with stress. As stated earlier, positive adaptation in families with ASD results from balancing the intrinsic stressors with coping strategies that will allow a family to achieve

a positive outcome (Manning et al., 2011; Patterson & Garwick, 1994). Thus, it is the counselor's role to help the families achieve this balance through the use of culturally responsive techniques.

When counselors practice culturally responsive techniques, this may involve acknowledging spiritual and religious coping practices with some clients (Ennis-Cole et al., 2013; Manning et al., 2011). Moreover, some researchers have documented the importance of spiritual coping or religious coping for African-American families (Ennis-Cole et al., 2013; Kirsch, 2014; Manning et al., 2011; Ravindran & Myers, 2012). The culturally competent counselor may be able to assist clients with the effective use of their existing spiritual or religious beliefs as coping techniques even if the counselor does not share the same beliefs (Ennis-Cole, 2013; Manning et al., 2011; Patterson & Garwick, 1994; Ravindran & Myers, 2012; Schwarzbaum, & Thomas, 2008). In closing, counselors may assist African American parents of children with ASD by helping them utilize their current spiritual or religious supports when applicable (Bluth et al., 2013; Manning et al., 2011; Schwarzbaum, & Thomas, 2008)

Under the aforementioned circumstances, therapists should use unbiased, strength-based, and culturally responsive interventions for African American parents of children with ASD (Ennis-Cole, 2013; Manning, 2011; Schwarzbaum, & Thomas, 2008; Ravindran & Myers, 2012). By focusing on the parents' abilities to cope with their challenging circumstances, counselors may assist couples with adaptability. For instance, professionals who work with African American parents with a child with ASD need to help the parents determine their family's unique stressors and strengths and then provide

interventions that are custom made to each circumstance (Bluth et al., 2013; Manning et al., 2011; Patterson & Garwick, 1994).

Recommendations

Professionals lack culturally responsive ASD treatment and diagnostic options (Carr & Lord, 2012; Jarquin et al., 2011; Trembath et al., 2005). Recommendations for future research include exploring support options for African American families affected by ASD related parental stress (*parent-related, child-related*). For instance, the ASD parental stressors (*parent-related, child-related*) identified in the current findings were: (a) increased needs and demands, (b) child's problems, (d) coping and perceived challenges, and (e) health care access and quality. The four formerly listed domains of parental stress (*parent-related, child-related*) may be characterized by more specific stressors such as: (a) special therapy stress, (b) more care/services stress, (c) EDB, (d) limited abilities, (e) difficult to care for child, (f) child bothers you, (g) healthcare frustrations, and (h) insurance inadequacy. The recommendations listed below are validated by the current study

Related recommendations for future ASD parental stress research are not only consistent with the current study but also previous research. For example, Simmerman, Blacher, & Baker (2001) claimed that interventions that consisted of parental social support lessened the impact of *child-related* stress resulting from parenting a child with disabilities. In light of these findings, more analyses are warranted regarding the formerly listed *parent-related* and *child-related* stressors in the current study as well as various factors such as: (a) autism severity; (b) couples' financial status; (c) child's skill variations; (d) parents' work and care-taking roles; and (e) accessibility to needed

services (Baker, Blacher, & Olsson, 2005; Baker-Ericzén, Brookman-Frazee, & Stahmer, 2005; Benson and Karlof, 2009; Sharpley, 1997). Furthermore, future studies should investigate how the above mentioned variables impact stress and marital quality among African American parents of children with ASD. Also, in line with the parents of children with ASD stress model, practitioners should explore options as to how the various ASD related stress factors described in the current study as well as previous research influence the family system as a whole with African American populations (Bluth et al., 2013).

The next recommendation is to include more African American fathers in future research. The majority of the participants in ASD studies, including the current study, mostly consisted of mothers (Bragiel & Kaniok, 2011; Johnson & Simpson, 2013; Vacca, 2013). Further, in the current study, mothers and fathers were analyzed together. Thus, gender differences were unaccountable. Some researchers have recognized gender differences regarding parental stress, marital quality, and perceptions of difficulty in caring for the child with ASD (Bluth et al., 2013; Hastings et al., 2005; Darling et al., 2012; Hastings et al., 2005; Rivard et al., 2014). Thus, this is an area of research that should be explored in more detail.

In summary, more in-depth examinations may prove beneficial in creating effective family-specific interventions. In congruence with the findings from this study, elevated stress levels existed among married African American parents of children with ASD and children's severity levels of ASD influenced parental stress. Thus, research that involves a distinction of participants based on the child's autism severity level, stress

proliferation, interactional effects, as well as cultural factors may result in more accurate and useful findings.

Due to inconsistent findings and a lack of culturally reflective studies, more research is required in order for professionals to gain clarity regarding the interaction of confounding stress variables and culturally related perceptions of ASD effects on the marital relationship and parent-child interactions (Bluth et al., 2013; Goldner & Drentea, 2009; Kirsch, 2014; Manning et al., 2011). Correspondingly, Rivard et al., (2014) recommended professionals use a multi-method collection of data approach that may consist of: (a) observation; (b) interviews from a variety of participants, such as child, teachers, additional caregivers, etc.; and (c) qualitative methods when conducting studies. Also, Rivard et al., (2014) suggested practitioners perform more research documenting the unique issues that families of children with ASD experience in order to offer a better quality of services to families. For instance, researchers may conduct qualitative analyses to gain more insight regarding the impact of confounding daily stressors on the increased needs and demands of a child with ASD. In effect, counseling interventions may be better modified to meet the unique needs of African American families impacted by ASD as a result of more indebt studies.

Conclusions

Regardless of the presence of cultural factors that influence ASD diagnosis and treatment, typical ASD research and treatment methods have been highly influenced by studies done with majority heterogeneous, upper class Caucasian participants (Ben-Sasson, Soto, Martínez-Pedraza, & Carter, 2013; Brobst, Clopton, & Hendrick, 2009; Carr & Lord, 2012; Cuccaro et al., 2007; Mandell & Novak, 2005; McHatton & Correa,

2005; Samadi & McConkey, 2011). The current study addressed the limited research on the impact of having a child with ASD on married African American parents. The findings in this investigation supported, contradicted, and extended the knowledge base pertaining to the divorce rates, marital quality, and parental stress factors when providing services to married African American parents of children with ASD.

This study was informed by the multicultural theory and the parents of children with ASD model (Bluth et al., 2013; Broder-Fingert, Shui, Pulcini, Kurowski, & Perrin, 2013; Carr, & Lord, 2013; Cuccaro et al., 2007; El-Ghoroury, & Krackow, 2012; Jarquin et al., 2011; Montes, & Halterman, 2011). The findings in this study yielded mixed findings regarding divorce rate comparisons, and the impact of having a child with ASD, related stress, and the influence of children's levels of ASD severity. While the literature indicated that ASD related parental stress was associated with low marital quality and higher divorce rates of parents of children with ASD, this study indicated that parental stress (*parent-related, child-related*) was more predictive to parenting a child with ASD. The current investigation supported the literature regarding increased parental stress for parents of children with ASD as well as the claim that ASD severity levels influence parental stress scores. Based on the mixed findings in the current examination, more research pertaining to ASD stress factors and marital quality for married African American parents is warranted.

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APPENDIX A

All of the variables in this study have been selected based on previous research indicating relationships and predictions with the specified dependent variables. For example, the following pages contain a chart of data-based ASD parental stress articles published between 2002 and 2015. It is arranged in alphabetical order according to the author's last name. The following categories explain the relevance of the data:

(a) purpose and methods, (b) participants, (c) statistical analyses, (d) independent variables (IV's), (e) dependent variables (DV's), and (f) related findings.

Table A13

Data-Based ASD Parental Stress Articles Published Between 2002 and 2015

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Baker, B. L., Blacher, J., & Olsson, M. B. (2005)	<p>Purpose: To examine the relation of behavior difficulties to less child-related areas of parent welfare.</p> <p>Method: Quantitative analyses of child developmental level, child behavior problems, parental well-being, and parent optimism assessments</p>	<p>N=214</p> <p>(60.7% C, 15.9% L, 6.1% AA, 2.8% A, 14.5% M)</p>	Relational, ANCOVAS, Hierarchical Regression	<p>Group Status (delayed vs. non-delayed)</p> <p>Child behavior problems</p> <p>Parent optimism personality trait</p>	<p>parent depression</p> <p>parent marital adjustment</p> <p>child behavior problems</p> <p>parent well-being</p>	No significant differences on depression or marital adjustment for parents of delayed and non-delayed preschoolers. However, child behavior problems were highly related to scores on both measures
Baker-Ericzen, M., Brookman-Frazee, L., & Stahmer, A. (2005).	<p>Purpose: To investigate parental stress factors pre and post participation in an inclusive toddler program.</p> <p>Methods: Quasi-experimental pre-post design; Parents' self-administered measures</p>	<p>n=60</p> <p>37 Parents of children with ASD (77% C, 12 L%, 3% A, 9% M)</p> <p>23 Parents of TD children (71% C, 5% L, 10% A, 14% M)</p>	ANCOVA t-tests regression analysis	<p>Group Status: (Parent of child with ASD or TDC)</p> <p>Program Participation or not</p> <p>Child Characteristics</p>	<p>Child-related stress</p> <p>Parent-related stress</p>	Parents of children with ASD reported elevated stress levels in comparison to parents of children without ASD. Program participation lessened child-related stress for moms but not for dads. Child's social skills level was a strong predictor of child-related maternal stress for ASD. This pattern was not identified in fathers.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Ben-Sasson, A., Soto, T. W., Martinez-Pedraza, F., & Carter, A. S. (2013).	<p>Purpose: To measure early sensory over-responsivity in toddlers with ASD as a predictor of family impairment and parenting stress.</p> <p>Method: Longitudinal study consisting of parent-report tools.</p>	<p>n=174 toddlers</p> <p>80% C</p>	<p>Chi-square</p> <p>Latent growth curve model</p> <p>Correlational Analyses</p>	<p>Sensory over-responsivity scores</p>	<p>Family life impairment scores</p> <p>Parenting stress levels</p>	<p>Higher sensory over-responsivity levels in toddlers with ASD were associated with higher initial levels of family life impairment and parenting stress with a lower magnitude of change over time.</p>
Benson, P. (2006).	<p>Purpose: To investigate the relationship between child symptom severity, stress proliferation, and parent depression.</p> <p>Methods: Cross-sectional study using descriptive, bivariate, and multivariate analyses on parent questionnaires.</p>	<p>n=68</p> <p>88% C, 6% AA, 3% L, 3% A</p> <p>60 mothers & 8 fathers</p>	<p>Bivariate Analyses, Correlational Analyses</p> <p>Regression Analyses ,</p>	<p>Child symptom severity</p> <p>Stress proliferation</p>	<p>Parent depression</p>	<p>Child symptom severity and stress proliferation were predictors of parent depression. Stress proliferation moderately mediated the effect of child symptom severity on parent depression</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Benson, P. R., & Karlof, K. L. (2009).	<p>Purpose: To replicate and extend a prior cross-sectional study on stress proliferation, child symptom severity, and parent depression.</p> <p>Method: Longitudinal replication using parent questionnaires in quantitative analyses</p>	<p>n=90</p> <p>83.3% C</p> <p>84 mothers & 6 fathers</p>	Descriptive statistics regression analyses	<p>Child symptom severity</p> <p>Stress proliferation</p>	<p>Depression</p> <p>Stress proliferation</p>	<p>Stress proliferation mediated the effect of child symptom severity on parent depression. Parent anger mediated the effect of symptom severity on stress proliferation as well as the effect of stress proliferation on parent depression. Informal social support was related to decreased parent depression over time.</p>
Bishop, S. L., Richler, J., Cain, A. C., & Lord, C. (2007).	<p>Purpose: To determine the relationships among ethnicity, parent's perceived negative impact, children's ASD characteristics, and parents' perceived social support.</p> <p>Method: Longitudinal study using parent assessments, child assessments, and parent interviews</p>	n=110 mothers	Regression analyses	<p>Family demographics</p> <p>General child variables</p> <p>ASD child variables</p> <p>Social support</p>	Perceived negative impact	<p>In comparison to Caucasian mothers of children with ASD, African American mothers reported lower scores of perceived negative impacts. Increased repetitive behavior levels, decreased adaptive behavior scores, and lower perceived social support predicted higher perceived negative impact.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Brobst, J. B., Clopton, J. R., & Hendrick, S. S. (2009).	<p>Purpose: To compare levels of relationship quality, parental stress, and related variables in couples who have children with ASD and those who have children without ASD.</p> <p>Method: Parent Questionnaires</p>	<p>n=55</p> <p>25 couples of children with ASD and 20 couples of children without ASD</p> <p>98% C</p>	<p>t test ANOVAs</p> <p>Multiple Regression Analyses</p> <p>Correlational Analyses</p>	<p>Group Status: Parents of children with and without ASD</p>	<p>Relationship satisfaction score</p> <p>Child's behavior problems</p> <p>Parenting stress</p>	<p>Parents of children with ASD experienced more child behavior problems, more parental stress, lower relationship satisfaction in comparison to parents of children without ASD.</p>
Carr, T., & Lord, C. (2013).	<p>Purpose: To investigate African American and Caucasian mothers' perceptions of the negative impact of parenting a child with ASD as their children transition to early adolescence.</p> <p>Methods: Longitudinal study, Parent questionnaires, interviews, and child assessments</p>	<p>n= 110 (Time point 1) and n= 85 (Time point 2)</p> <p>30 AA; 80 C, at Time Point 1</p> <p>17 AA; 68 C at Time point 2</p>	<p>Linear mixed model analyses Post hoc exploratory analysis ANOVA</p>	<p>Social support</p> <p>Child characteristics</p> <p>Family/Mother characteristics</p>	<p>mothers' perceived negative impact across time</p>	<p>AA mothers with lower education reported decreased levels of perceived negative impact. Mothers experienced higher negative impact when children transitioned to adolescence. Cultural variations mediated relationship between maternal education, ethnicity, and perceived negative impact. Ethnicity was the only strong predictor of attrition. AA Families were more likely not to participate at the second phase of the study.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Darling, C. A., Senatore, N., & Strachan, J. (2012).	<p>Purpose: To determine group differences between fathers of children with and without disabilities in regards to stress and life satisfaction.</p> <p>Method: Survey design using path-analysis model based on family stress theory</p>	<p>n= 206</p> <p>Group 1: 85 fathers of children with disabilities (92.8 % C, 0% AA, 2.4% L, 2.4% A, 2.4% NA)</p> <p>Group 2: 121 fathers of children without disabilities (98.3% C, 1.7% AA, 0% L, 0% A, 0% NA)</p>	Path-analysis model; <i>t</i> -tests, chi-square tests, bootstrapping	Group Status: Fathers of children with and without ASD	<p>Stress</p> <p>Life satisfaction variables</p>	Fathers of children with disabilities experienced more stress in daily parenting struggles, family life situations and changes, parenting stress and health stress. Fathers with children who did not have disabilities had a greater level of coping and more life satisfaction. Disability was a major predictor to life satisfaction followed by parenting stress and stress from family life events and changes.
Eisenhower, A. S., Baker, B. L., & Blacher, J. (2005).	<p>Purpose: To investigate maternal reports of child behavior problems and maternal well-being for syndrome-specific differences.</p> <p>Method: Parent reports and child assessments</p>	<p>n=215</p> <p>(5 groups: typically developing, undifferentiated developmental delays, Down syndrome, ASD, Cerebral Palsy)</p>	ANCOVAS Hierarchical linear regressions	<p>Group Status:</p> <p>(5 groups: typically developing, undifferentiated developmental delays, Down syndrome, ASD, Cerebral Palsy)</p>	<p>Child's behavior problems</p> <p>Parenting stress</p>	Mothers of children with ASD reported higher parenting stress than the comparison groups. Children with ASD and cerebral palsy reported the greatest levels of behavior problems.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Estes, A., Olson, E., Sullivan, K., Greenson, J., Winter, J., Dawson, G., & Munson, J. (2013).	<p>Purpose: To investigate parent-related stress and psychological distress in mothers of toddlers with ASD with and without developmental delay (DD) and typically developing toddlers associated with the impact of child problem behavior and daily living skills.</p> <p>Method: Parent questionnaires</p>	<p>n= 96 mothers</p> <p>Group 1: ASD =46 (74% C)</p> <p>Group 2: DD = 25 (68% C)</p> <p>Group 3: TD= 25 (84% C)</p>	Orthogonal, ANOVA, planned comparisons linear regression models	<p>Group Status:</p> <p>Group 1: with ASD & DD</p> <p>Group 2: ASD without DD</p> <p>Group 3: TD</p>	<p>Parenting stress</p> <p>Mother's psychological functions</p> <p>Child's problem behavior</p> <p>Child's daily living skills</p>	Parents of toddlers with ASD had increased parenting-related stress compared with parents of toddlers with DD and typical development. Child behavior problems was a significant predictor of parenting-related stress and psychological distress
Falk, N. H., Norris, K. & Quinn, M. G. (2014).	<p>Purpose: To examine the factors predicting stress, anxiety and depression in the parents of children with ASD.</p> <p>Methods: Parent questionnaires, interviews, observations, and standardized assessments.</p>	<p>n= 479 250 Fathers & 229 Mothers</p> <p>(recruited separately; not mother/father dyads)</p>	Path Model; Regression Analyses; Stepwise Regression; Correlation Analysis; Chi-square; SEM (Structural Equation Modeling); Model Fit Statistics	<p>Social support</p> <p>Parental locus of control</p> <p>Child externalizing behaviors</p> <p>Parenting Satisfaction</p> <p>Parental age</p>	<p>Stress</p> <p>Anxiety</p> <p>Depression</p>	Factors determining parental cognitions and socioeconomic support were reported to be more significant predictors of parental mental health problems than child-centric variables.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Foody, C., James, J. E., & Leader, G. (2014).	<p>Purpose: To compare parenting stress, salivary biomarkers, and ambulatory blood pressure between mothers and fathers of children with autism spectrum disorders.</p> <p>Methods: Questionnaires & Saliva collections & lab tests, Cardiovascular Assessments, Diaries</p>	n=19 mothers & fathers (dyads)	<p>Exploratory Study</p> <p>Chi square test One sample <i>t</i>-test ANOVA</p>	<p>Group Status:</p> <p>(Mothers or Fathers)</p>	<p>Parenting responsibility</p> <p>Parenting distress</p> <p>Parenting anxiety</p> <p>Parent depression</p> <p>Physiological stress measures</p>	<p>Mothers-higher parenting responsibility, distress, anxiety & depression than fathers. Fathers-Higher blood pressure & heart rate variability</p> <p>Both-lower morning cortisol levels (showing stress effects)</p>
Griffith, G. M., Hastings, R. P., Nash, S., & Hill, C. (2010).	<p>Purpose: To examine child behavior problems and maternal well-being in children with Down syndrome, mixed etiology intellectual disabilities and autism.</p> <p>Methods: Used group matching and parent questionnaires, interviews and child assessments.</p>	<p>n= 57 mothers</p> <p>19 = Down Syndrome 19= ASD 19= mixed disorders</p>	<p>ANOVAs post-hoc Tukey's tests</p>	<p>Group Status:</p> <p>(ASD, mixed ID, or Down syndrome)</p>	<p>Child behavior problems</p> <p>Social competence</p> <p>Maternal well-being</p>	<p>Children with ASD were reported as having more problem behaviors and decreased levels of social competence than Down syndrome and other intellectual disabilities. Mothers of children with autism scored lower on positive perceptions of their child, and higher on stress than other two groups.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Hall, H. C. & Graff, J. C. (2012).	<p>Purpose: To investigate maladaptive behaviors of children with ASD, family supports, parental stress, and parental coping.</p> <p>Methods: Used preexisting data from a former descriptive, correlational, cross-sectional study.</p>	<p>n= 70</p> <p>(Biological parents: 48 Mothers, 22 Fathers)</p> <p>84.3% C</p>	<p><i>t</i> tests</p> <p>multiple regression analyses</p>	<p>Children's adaptive & maladaptive behaviors</p> <p>Parent Supports</p> <p>Coping Strategies</p> <p>Group Status: (Mothers or Fathers)</p>	<p>Parental stress scores</p> <p>Parents' perceptions of maladaptive behaviors</p>	<p>A relationship existed between elevated internalizing maladaptive behaviors and elevated parent stress levels.</p>
Hartley, S. L., Mihaila, I., Otolara-Fadner, H. S., & Bussanich, P. M. (2014).	<p>Purpose: To investigate the division of labor and its association to parenting stress and marital adjustment in married couples of children and adolescents with ASD.</p> <p>Methods: Parent reports via home visits and on-line diaries</p>	<p>n=73 married couples</p> <p>92.1% C</p>	<p>MANOVA; Bonferroni-corrected paired sample <i>t</i>-test; Hierarchical multiple linear regressions; multilevel modeling; hierarchical linear modeling (HLM)</p>	<p>Group Status: (Mothers or Fathers)</p> <p>Role specialization</p> <p>Parent level of satisfaction with time spouse provided child care</p> <p>Child or adolescent variables</p>	<p>Parenting stress</p> <p>Marital adjustment</p>	<p>Some role specialization; mothers more care giving; fathers more paid jobs. Child age negatively related and severity level of disability positively related to role specialization. Time in paid employment & satisfaction with spouse's time in care giving was related to parenting stress & marital adjustment.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Hastings, R., Kovshoff, H., Ward, N., Espinosa, F., Brown, T., & Remington, B. (2005).	<p>Purpose: To examine the associations between child, partner, parent variables, parental stress, and positive perceptions in mothers and fathers of pre-school children with ASD.</p> <p>Method: Systemic analyses using parent reports, telephone interviews, and home assessments.</p>	n= 89 (48 mothers & 41 fathers)	Hierarchical Regression Analyses <i>t</i> -tests, Pearson's correlations; <i>F</i> test	<p>Group Status: (Mothers or Fathers)</p> <p>Partner mental health</p> <p>Child characteristics</p>	<p>Parents' stress</p> <p>Parents' mental health</p> <p>Parents' positive perceptions scores</p>	Fathers' stress levels & positive perceptions were predicted by maternal depression. Mothers' stress levels were predicted by children's behavior problems (not adaptive behavior or autism symptoms) and by fathers' depression.
Herring, S., Gray, K., Taffé, J., Tonge, B., Sweeney, E., & Einfeld, S. (2006).	<p>Purpose: To investigate behavior and emotional problems in toddlers with ASD and/or developmental delay and associations with parental mental health and family functioning, and parental stress.</p> <p>Methods: Initial and follow-up parent interviews, questionnaires, and standardized child assessments</p>	n= 123	Independent & paired samples <i>t</i> -tests; chi-square. Correlational & Regression analyses; Longitudinal regression	<p>Child emotional and behavior problems</p> <p>Group Status: (Mothers, Fathers)</p>	<p>Parental Stress</p> <p>Parent's mental health problems</p> <p>Perceived family dysfunction</p>	Child emotional & behavioral problems had more impact on maternal stress, parent mental health problems, & perceived family dysfunction than child diagnosis, delay, or gender. Fathers reported lower stress scores than mothers.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Hoefman, R., Payakachat, N., van Exel, J., Kuhlthau, K., Kovacs, E., Pyne, J., & Tilford, J. M. (2014).	<p>Purpose: To examine the impact of caring for children with ASD on parents and to investigate construct validation of the care-related quality of life measurement (CareQol).</p> <p>Methods: Used Clinical data, parent surveys and validity tests for CarerQol.</p>	<p>n=224</p> <p>89% Mothers</p>	Descriptive statistics Discriminative validity tests ANOVA	Care giving impact	Parents' quality of life factors	Parents reported difficulties balancing daily activities with care, and experienced financial hardships and depression. CareQol was a valid measurement for parent outcomes in ASD research.
Hoffman, Sweeney, Lopez-Wagner, Hodge, D., Nam, C., & Botts, B. (2008).	<p>Purpose: To investigate children's sleep problems, ASD severity, and mothers' sleep difficulties in regard to maternal stress scores.</p> <p>Methods: Parent reports</p>	<p>N= 72</p> <p>(15% AA, 7% A, 26% L, 39% C, 12% M)</p>	Pearson correlations Regression Analyses	<p>Autism severity</p> <p>Children's & Mother's sleep problems</p>	<p>Mother's stress level</p> <p>Mother's sleep problems</p>	Children's sleep problems and ASD severity levels were predictors of mothers' reported stress levels.
Johnson, N. L., & Simpson, P. M. (2013).	<p>Purpose: To examine differences in parenting stress and family functioning discrepancy based on marital status and spouse survey participation in mothers of children with ASD.</p> <p>Methods: A comparative, cross sectional study with convenience sampling using parent questionnaires</p>	<p>n=261</p> <p>(90% C, 5.3% L, 1.6% A; .9%AA)</p>	Comparative, Cross Sectional Study Design; Kruskal-Wallis Test; compared group medians; Discrepancy scores	<p>Father's participation in study</p> <p>Marital Status</p>	<p>Mother's perceived parenting stress</p> <p>Family functioning levels</p>	Married mothers (MM) whose male spouse did not take part in the study had decreased perceived stress for responding to child tantrums than the other two grouping of mothers. Married mothers expected more help from family with child care and household chores than they received. The single mothers had higher parenting stress scores.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Manning, M. M., Wainwright, L., & Bennett, J. (2011).	<p>Purpose: To examine the association between family adaptation, severity of ASD and behavior challenges, social support, religious coping, and reframing in a racially diverse group of families with school-age children with ASD.</p> <p>Methods: Used the double ABCX model of adaptation. Parent questionnaires.</p>	<p>n=195</p> <p>16.9% Fathers 83.1% Mothers</p> <p>(51% C, 19% AA, 16% M; 8% L; 4% A, 5% NA)</p>	<p>Hierarchical multiple regression analyses; Bivariate Correlations; Exploratory Race-Related Analyses; Post-hoc analyses</p>	<p>ASD severity</p> <p>Problem behavior severity</p> <p>Life stress</p> <p>Support</p> <p>Reframing</p>	<p>Family functioning</p> <p>Parental distress</p>	<p>Child behavior difficulties and reframing are strongly related with family outcomes. Families reported elevated stress but positive family functioning. Parents who used family & friends for coping reported increased family functioning & lower parental stress. May not be generalized to families with various stressors and/or lower-income.</p>
McConnell, D., Savage, A., & Breitzkreuz, R. (2014).	<p>Purpose: To examine the impact of child-specific, within-family and social-ecological variables on family life congruence.</p> <p>Methods: Parent surveys and interviews.</p>	<p>n=475</p> <p>87.8% Mothers and 12.2% Fathers of children with disabilities</p> <p>(38.3% ASD, 26.3% ID; 12.4% Cerebral Palsy; 22.9% Other disabilities)</p>	<p>Confirmatory factor analysis Regression analyses; structural equation modeling</p>	<p>Child-specific traits</p> <p>Within-family factors</p> <p>Social-ecological factors</p>	<p>Family life congruence scores</p>	<p>Higher scores of child behavior difficulties were related with increased scores of financial problems and decreased scores of both social support and family functioning. Families of children with ASD reported decreased scores of family life congruence than families of children with other disabilities.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Meirsschaut, M., Roeyers, H., & Warreyn, P. (2010).	<p>Purpose: To examine the effects of ASD on mothers' parenting cognitions about their children with and without ASD.</p> <p>Methods: Qualitative and quantitative analyses using clinical diagnoses, observations, interviews and parent questionnaires.</p>	n=17 Mothers	<p>Qualitative analysis (Coding & categorizing) & Quantitative analysis: Chi Square, ANOVA, Pearson's correlational analyses</p>	<p>Mother's cognitions: Parenting competency levels Role restrictions Depression Symptoms ASD stress</p>	<p>Stress levels Group Status: ASD or TD</p>	<p>Qualitative: Five themes were identified from qualitative ("Affects whole life, lack of understanding, inaccessible care giving system, coping strategies, concerns & questions).</p> <p>Quantitative-Lower perception of self-efficacy for parenting ASD than TD. More guilt for TD than ASD child. More stress & depression for ASD than TD. Higher levels of role restriction stress from ASD than TD. ASD was associated with impaired family functioning.</p>
Miranda, A., Tárraga, R., Fernández, M. I., Colomer, C., & Pastor, G. (2015) .	<p>Purpose: To compare the parenting stress endured by parents of children with ASD, ADHD, and TD.</p> <p>Methods: Use the parenting stress index and parent questionnaires.</p>	<p>n= 121 parents (42 ADHD, 23 ASD, 21 ASD + ADHD, 35 TD)</p>	<p>Multivariate covariance analyses univariate analyses of covariance post hoc tests</p>	Group Status: (ADHD, ASD, TD)	Parental stress levels	<p>Parents of the children with disabilities reported higher parenting stress than the parents of TD children, especially regarding child characteristics. Parents of children with ADHD reported the greatest levels of parental stress than the other comparison groups.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Moh, T. A., & Magiati, I. (2012).	<p>Purpose: To investigate the time span of the diagnostic period, the number of professionals consulted, the associations with the professionals and the perceived benefits of the information given in regard to how they influence parental satisfaction and stress during the ASD diagnostic period.</p> <p>Methods: Parent questionnaires, Professional questionnaires, child assessments</p>	<p>n=119</p> <p>102 Parents: (85 Mothers & 17 Fathers) and</p> <p>17 Professionals from ASD organizations</p>	<p>ANOVA</p> <p>Regression analyses</p>	<p>Parent/Professional collaboration</p> <p>Diagnostic process</p> <p>Children's characteristics</p> <p>Helpfulness of information obtained</p> <p>Professionals' perspectives</p>	<p>Parental stress</p> <p>Parental satisfaction</p>	<p>Increased parent stress was related to increase professional consultations and lower perceived collaboration with professionals. Increased parental satisfaction was related to more perceived collaboration with professionals, higher perceived receipt of beneficial information, decreased ASD severity levels and lower levels of stress.</p>
O'Brien, M. (2007).	<p>Purpose: To examine the application of the ambiguous loss theory to the experiences of families of children with ASD. To determine whether identity ambiguity contributes to stress and depressive symptoms of mothers of children with ASD along with an investigation of the role of symptom severity.</p> <p>Methods: Semi structured interviews used for qualitative and quantitative analyses.</p>	<p>n=63</p> <p>81% C</p>	<p>Qualitative, semi structured Interviews-Analytic approach, deductive qualitative analysis. & Quantitative (Hierarchical multiple regression) (<i>t</i>-tests)</p>	<p>Ambiguous loss identity</p> <p>Group Status: (Less severe and more severe ASD traits)</p>	<p>Depression symptoms</p> <p>Perceived stress levels</p>	<p>The reports of higher identity ambiguity levels in mothers were linked to elevated depression scores and perceived stress levels that were unrelated to the child's ASD severity levels.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Olsson, M.B., & Hwang, C.P. (2002).	<p>Purpose: To examine the sense of coherence theory with parents of children with developmental disabilities in regards to parental stress and depression.</p> <p>Method: Cross-sectional study using parent surveys.</p>	<p>(Group 1) n=216 Families: 206 Mothers & 162 Fathers</p> <p>Group 1: Parents of children with ID and without ASD=151 and 65 ASD & ID</p> <p>Group 2: n=213 Parents of children with no disabilities. 202 Mothers & 185 Fathers</p>	ANCOVA	<p>Group Status: Parents of children with ASD Parents of children with ID without ASD Parents of children with no disabilities</p> <p>Sense of coherence levels</p> <p>Gender: (Mothers & Fathers)</p>	<p>Parental stress levels</p> <p>Parental depression levels</p> <p>Sense of coherence levels</p>	In comparison to mothers of children with ID without ASD, mothers of children with ASD experienced lower sense of coherence levels. No significant difference was found among fathers of the three groups.
Osborne, L. A., & Reed, P. (2010).	<p>Purpose: To investigate the association between parenting stress and parenting behaviors in parents of children with ASD.</p> <p>Method: A time-lagged study using parent questionnaires, interviews, child assessments, & follow up visits & assessments</p>	<p>n=138</p> <p>(130 fathers & 8 mothers)</p>	<p>ANCOVA</p> <p>Semi-partial, time-lagged correlations</p> <p>multiple regression analyses</p>	<p>Self-perceived parenting behaviors</p> <p>Child characteristics</p>	Parenting stress levels	Parenting stress was related to self-perceived involvement, communication, and limit setting over a period of time. Elevated levels of parenting stress were initially associated with lower self-perceived parenting behaviors in parents of young children with ASD. Positive self-perceived initial traits for limit setting was related to decreased parenting stress levels.
Pisula, E. (2007).	<p>To determine the stress of mothers of children with ASD in comparison to the stress levels of mothers of children with Down's syndrome.</p> <p>Method: Parent questionnaires</p>	<p>n= 50</p> <p>25 Mothers of ASD & 25 Mothers of Down's syndrome</p>	t tests	<p>Group Status: (ASD or Down's syndrome)</p>	Parenting stress levels	Mothers of children with ASD reported elevated parenting stress levels in comparison to the mothers of children with Down's syndrome.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Pozo, P. A., Sarriá, E., & Brioso, A. (2014).	<p>Purpose: To investigate the family quality of life and psychological well-being of parents of children with ASD.</p> <p>Methods: Models of family quality of life was applied during analyses of parent questionnaires and child assessments.</p>	<p>n= 118 Parents of ASD</p> <p>(59 Mothers & 59 Fathers)</p>	<p>Path analysis</p> <p>Pearson's correlations</p> <p>bivariate correlations</p> <p>chi-squares</p> <p>post hoc model modifications</p>	<p>Group Status: (Mothers or Fathers)</p> <p>Child characteristics</p> <p>Sense of coherence</p>	<p>Family quality of life</p> <p>Parents' well-being</p> <p>Sense of coherence</p>	<p>Parents who experienced high levels of sense of coherence reported being more satisfied with their family quality of life. Likewise, behavior problems were negatively associated with sense of coherence. Results support the argument that parenting a child with ASD is related to elevated parental stress levels. Gender differences were present regarding ASD severity, caregiving, and outside employment.</p>
Rivard, M. C., Terroux, A., Parent-Boursier, & Mercier, C. (2014).	<p>Purpose: To compare and investigate stress levels and predictors for parents of children with ASD.</p> <p>Methods: Multidisciplinary approach used to analyze rehabilitation center's data, parent questionnaires and child assessments</p>	<p>n= 236</p> <p>118 Mothers & 118 Fathers</p>	<p>t tests</p> <p>bivariate analyses</p> <p>hierarchical regression analyses</p>	<p>Group Status: (Mothers or Fathers)</p> <p>Child characteristics</p> <p>Family characteristics</p> <p>Length of service delay</p>	<p>Parental stress levels</p>	<p>Parents of children with ASD reported elevated stress levels. Both mothers and fathers indicated more parent-related stress than child-related stress while waiting for ASD services. In comparison to mothers, fathers reported more stress. More fathers worked full time than mothers. A positive relationship existed between mothers' and fathers' stress levels. Higher parental stress was positively related to child's characteristics that were high functioning.</p>

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Saunders, B. S., Tilford, J. M., Fussell, J. J., Schulz, E. G., Casey, P. H., & Kuo, D. Z. (2015).	<p>Purpose: To investigate the financial and employment difficulty levels for families of children with ASD along with the various degrees of intellectual functioning.</p> <p>Methods: A secondary analysis of the 2009-2010 National Survey of Children with Special Health Care Needs (Telephone survey).</p>	<p>n= 2406</p> <p>ASD= 133</p> <p>ID= 620 ID & ASD</p> <p>12,121 asthma without ASD or ID</p>	Chi-squares Logistic & multivariate logistic regression analyses	Group Status: (ASD, ID, Both)	<p>Financial impact</p> <p>Employment impact</p>	Families consisting of children with both ASD & ID reported the highest levels of financial and employment burdens in comparison to the children with only ASD or asthma. Families of children with ASD and ID experienced comparable rates of financial burdens and had to cease employment or reduce hours in order to care for children.
Sawyer, M. G., Bittman, M., La Greca, A. M., Crettenden, A. D., Harchak, T. F., & Martin, J. (2010).	<p>Purpose: To investigate the association between maternal well-being and child care time along with the time demands for mothers of children with ASD.</p> <p>Methods: Diary, Child Assessments conducted by a multidisciplinary team, home visits for questionnaire completion.</p>	n=216 Mothers	t-test Pearson correlation Multiple regression analyses	<p>Caregiver time</p> <p>Time pressure</p> <p>Interpersonal support</p> <p>Child emotional & behavioral problems</p>	Mental health challenges	Mothers of children with ASD reported an elevated rate of mental health challenges. The level of time pressure showed a positive correlation to the level of mothers' mental health problems. No relationship existed for the amount of time for caregiving. Mothers who indicated receiving more social support reported less mental health challenges.
Schwichtenberg, A., & Poehlmann, J. (2007).	<p>Purpose: To examine maternal depression and the intensity level of ABA in regard to the amount of time per week the child and mother participated in home-based ABA.</p> <p>Method: Parent Questionnaires</p>	n= 41 mothers	t tests multiple regression analyses	ABA intervention intensity	<p>Family stress</p> <p>Maternal well being</p>	Mothers of children with ASD reported less signs of depression when their children participated in more ABA weekly hours. However, mothers who participated more in ABA reported increased personal stress.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Sikora, D., Moran, E., Orlich, F., Hall, T. A., Kovacs, E. A., Delahaye, J., & ... Kuhlthau, K. (2013).	<p>Purpose: To examine the relationships between both externalizing difficulties and internalizing difficulties of children with ASD from the Child Behavior Checklist and six family functioning categories.</p> <p>Methods: Used the Child Behavior Checklist and the Family Impact Questionnaires for analyses.</p>	n=136 (Majority mothers)	ANCOVA, MANCOVAs; t-tests regression analyses	Behavior Problems: (Externalizing & Internalizing)	Family functioning domains	The parents who reported the most externalizing behavior problems with children had significantly elevated levels on the family functioning domains. The four domains mostly affected by externalizing behaviors were negative feelings about parenting, social relationships, impact to siblings, and impact to marriage. No relationship was present for internalizing behaviors.
Smith, L. E., Hong, J., Seltzer, M. M., Greenberg, J. S., Almeida, D. M., & Bishop, S. L. (2010).	<p>Purpose: To examine and compare the daily experiences among mothers of adolescents and adults with and without ASD.</p> <p>Methods: Diary study and interviews. Data was also obtained from longitudinal datasets from the study on Adolescents and Adults with Autism (AAA) and the study from the mothers of individuals with ASD (MIDUS) in the US.</p>	<p>n= 326</p> <p>96 mothers- children with ASD</p> <p>230 mothers - children with no disabilities</p>	ANCOVA Multilevel modeling	<p>Group Status: (Mothers of ASD or not)</p> <p>Daily time use</p> <p>Stressors</p> <p>Positive events & support</p>	<p>Positive & negative affect</p> <p>Fatigue & work intrusions</p> <p>Time use</p> <p>Stressful events</p> <p>Positive events & support</p> <p>Maternal outcomes</p>	Mothers of adolescents/adults with ASD reported more levels of negative affect and decreased levels of positive affect when compared to mothers of adolescents/adults with no disabilities. Mothers of adolescents/adults with ASD reported higher rates of fatigue and more job interruptions than mothers of adolescents/adults without disabilities.

(continued)

Study(Year)	Purpose and Method(s)	Participants	Statistical Analyses	IV's	DV's	Related Findings
Steijn, D., Oerlemans, A., Aken, M., Buitelaar, J., & Rommelse, N. (2014).	<p>Purpose: To investigate the reciprocal associations of ASD, ADHD, depression signs and stress in parents of children with ASD and/or ADHD.</p> <p>Methods: Standardized child assessments, questionnaires, and parent reports. Data for norm groups cited from their studies.</p>	<p>n=174</p> <p>100% C</p> <p>(48 ASD; 72 ADD; 54 ASD & ADHD) (Biological Fathers & Mothers)</p>	<p>Generalized linear models</p> <p>Post hoc analyses</p> <p>Pearson correlations & independent <i>t</i>-tests; repeated measure ANOVAs</p> <p>Structural equation models</p>	<p>Group Status: ASD ADHD norm groups</p> <p>Depressive signs</p>	<p>Parenting stress</p> <p>Depressive symptoms</p>	<p>Parents reported higher stress levels when parenting ASD and/or ADHD in comparison to parenting their siblings. They also reported higher stress levels in comparison to the norm population. Depression signs were higher for parents of ASD than ASD & ADHD.</p>
Tehee, E., Honan, R., & Hevey, D. (2009).	<p>Purpose: To investigate the impact of gender differences of parents and age of child on perceived stress, stress and coping, caregiving involvement, support and information/education obtained in parents of children and adolescents with ASD.</p> <p>Method: Questionnaires.</p>	<p>n=42</p> <p>23 Mothers & 19 Fathers</p>	<p>Kruskal-Wallis analyses</p> <p>Post hoc comparisons</p> <p>Content analyses</p>	<p>Group Status: (Mothers/Fathers)</p> <p>Child's age</p>	<p>General perceived stress</p> <p>Stress and coping associated with caregiving</p> <p>Involvement</p>	<p>Mothers reported higher levels of perceived overall stress, caregiving stress, and involvement in comparison of fathers. Parents of children ages 11-14 reported obtaining better support than other age groups. Parents ages 15-18 reported obtaining less information/education than other age groups.</p>
Walsh, C. E., Mulder, E., & Tudor, M. E. (2013).	<p>Purpose: To investigate pain and behavior challenges as predictors of parent stress in a parents of children with ASD.</p> <p>Methods: Parent questionnaires via mail-in papers and Survey Monkey website.</p>	<p>n=148</p> <p>132 mothers, 14 fathers, 2 other</p> <p>(83% C, 10% L, 6% AA, 4.5% A, 2.3% NA, 2.3% M)</p>	<p>Bivariate Analyses, Multiple Regression Analyses ,</p>	<p>Child pain</p> <p>Problem behavior</p> <p>Parental coping</p> <p>Parent protectiveness pain</p> <p>Parent protectiveness interactions</p>	<p>Parent stress predictor rates</p>	<p>Challenging behavior was a controlling variable between pain & parent stress. Relationships existed between pain & challenging behavior predicting stress. Overprotective parenting style controlled the association between the between pain & parent stress.</p>

Note. Participants: C=Caucasian, L=Latino, AA= African American, A=Asian/Pacific Islander, NA= Native Americans, M=Mixed/Other)
ASD= autism spectrum disorder, ADD= Attention Deficit Disorder ADHD= Attention Deficit Hyperactivity Disorder, TD=Typically Developing

APPENDIX B



Institutional Review Board
 Office of Research and Sponsored Programs
 903 Bowers Blvd, Huntsville, TX 77341-2448
 Phone: 936.294.4875
 Fax: 936.294.3622
irb@shsu.edu
www.shsu.edu/~rgs_www/irb/

DATE: September 28, 2016

TO: Sharese Martin [Faculty Sponsor: Dr. Rebecca Robles-Pina]

FROM: Sam Houston State University (SHSU) IRB

PROJECT TITLE: *Relationships and Predictions of Marital Quality and Stress among African American and Caucasian Parents of Children with Autism Spectrum Disorder [T/D]*

PROTOCOL #: 2016-09-31870

SUBMISSION TYPE: INITIAL REVIEW

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE: September 28, 2016

REVIEW CATEGORY: Category 4—research involving existing, publicly available data usually has little, if any, associated risk, particularly if subject identifiers are removed from the data or specimens.

Thank you for your submission of Initial Review materials for this project. The Sam Houston State University (SHSU) IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

*** What should investigators do when considering changes to an exempt study that could make it nonexempt?**

It is the PI's responsibility to consult with the IRB whenever questions arise about whether planned changes to an exempt study might make that study nonexempt human subjects research. In this case, please make available sufficient information to the IRB so it can make a correct determination.

If you have any questions, please contact the IRB Office at 936-294-4875 or irb@shsu.edu. Please include your project title and protocol number in all correspondence with this committee.

Sincerely,

Donna Desforjes
 IRB Chair, PHSC
 PHSC-IRB

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Sam Houston State University IRB's records

APPENDIX C



Institutional Review Board
Office of Research and Sponsored Programs
 903 Bowers Blvd, Huntsville, TX 77341-2448
 Phone: 936.294.4875
 Fax: 936.294.3622
irb@shsu.edu
www.shsu.edu/~rgs_www/irb/

DATE: November 3, 2016

TO: Sharese Martin [Faculty Sponsor: Dr. Rebecca Robles-Pina]

FROM: Sam Houston State University (SHSU) IRB

PROJECT TITLE: *Relationships and Predictions of Marital Quality and Stress among African American Parents of Children with and without Autism Spectrum Disorder [T/D]*

PROTOCOL #: 2016-09-31870

SUBMISSION TYPE: AMENDMENT

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE: November 3, 2016

REVIEW CATEGORY: Category 4—research involving existing, publicly available data usually has little, if any, associated risk, particularly if subject identifiers are removed from the data or specimens.

Thank you for your submission of Initial Review materials for this project. The Sam Houston State University (SHSU) IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

*** What should investigators do when considering changes to an exempt study that could make it nonexempt?**

It is the PI's responsibility to consult with the IRB whenever questions arise about whether planned changes to an exempt study might make that study nonexempt human subjects research. In this case, please make available sufficient information to the IRB so it can make a correct determination.

If you have any questions, please contact the IRB Office at 936-294-4875 or irb@shsu.edu. Please include your project title and protocol number in all correspondence with this committee.

Sincerely,

Donna Desforjes
 IRB Chair, PHSC
 PHSC-IRB

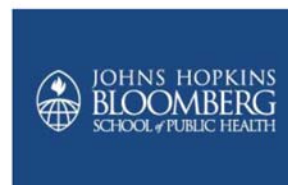
This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Sam Houston State University IRB's records

APPENDIX D

www.childhealthdata.org


Data Use Agreement: Data Resource Center Indicator Data Sets

2011-2012 National Survey of Children's Health
 2009-2010 National Survey of Children with Special Health Care Needs
 2003 & 2007 National Survey of Children's Health Merged
 2007 National Survey of Children's Health
 2005-2006 National Survey of Children with Special Health Care Needs
 2003 National Survey of Children's Health
 2001 National Survey of Children with Special Health Care Needs



Definitions

1. **Licensee:** Sharese Martin
2. **Licensor:** Child and Adolescent Health Measurement Initiative (CAHMI), The Johns Hopkins Bloomberg School of Public Health, Department of Population, Family & Reproductive Health, 615 North Wolfe Street, Baltimore, MD 21205
3. **Data Set:** DRC Indicator Refined Data Set for: 2011-2012 National Survey of Children's Health, 2009-2010 National Survey of Children with Special Health Care Needs, 2003 & 2007 National Survey of Children's Health Merged, 2007 National Survey of Children's Health, 2005-2006 National Survey of Children with Special Health Care Needs, 2003 National Survey of Children's Health and/or 2001 National Survey of Children with Special Health Care Needs.
4. **Ownership:** CAHMI is the owner of Data Set which was developed in the course of research at CAHMI.
5. **Public Benefit:** CAHMI wants this Data Set to be utilized for the public benefit to the fullest extent possible.
6. **Publications:** Recipient agrees to acknowledge the Provider with appropriate citations in any publications or presentations using results from this Data Set. The suggested citation format is:
 Child and Adolescent Health Measurement Initiative (CAHMI). {Year and name of survey} Indicator Data Set. Data Resource Center for Child and Adolescent Health. www.childhealthdata.org
 Please initial here to acknowledge citation request SM
7. **Field of Use (how you intend to use these data):** I am a student and I will be writing a research paper.

Terms

1. **Grant of License:** Subject to the terms and conditions of this licensee, Licensor grants to Licensee a non-exclusive, non-sub licensable, non-transferable license to use the Data Set provided herein and any associated documentation. Licensor is not obligated to provide upgrades to the Data Set or technical support beyond assistance in installing the Data Set.
2. **Ownership of Data Set:** This License gives the Licensee limited use of the Data Set. This License is not a sale of the Data Set and Licensor retains all title to all rights and interests in the Data Set. The Data Set is protected by U.S. Copyright laws, international treaty provisions and applicable laws of the country in which it is being used.
3. **Permitted Use:** Licensee may use the Data Set in the Field of Use for academic and research purposes only.
4. **Non-permitted Uses:** Licensee may not

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(continued)

- a. Use the data in the Data Set for any purpose other than statistical reporting and analysis;
 - b. Make any effort to determine the identity of any reported case in the Data Set;
 - c. Disclose or make use of the identity of any person or establishment discovered inadvertently, and will advise the Director, National Center for Health Statistics (NCHS), of any such discovery;
 - d. Link this Data Set with individually identifiable data from any other Data Sets;
 - e. Use the Data Set at any other location than that specified above;
 - f. Rent, lease, lend, sell, transmit or otherwise distribute or dispose of the Data Set temporarily or permanently without written consent of Licensor;
 - g. Create or permit third parties to create derivative works based on the Data Set;
 - h. Remove, modify, alter or obscure the copyright notices or any other proprietary notices contained in or on the Data Set;
 - i. Sell derivative works based on the Data Set.
5. **Term and Termination:** This License shall commence on the date of delivery of the Data Set to Licensee and shall terminate automatically upon breach of this License by Licensee.
 6. **Confidentiality:** Recipient and Recipient Scientist agree to hold the Data in confidence and not disclose to anyone except to such of its employees, consultants and agents as may be necessary to make the determination required under this agreement, providing said employees, consultants and agents are bound by the terms of this Agreement.
 7. **Publications:** Recipient agrees to acknowledge the Provider with appropriate citations in any publications or presentations using results from this Data Set.
 8. **Warrants:** Licensor warrants that it has the lawful right to grant the license set forth in this Agreement.
 9. **NO REPRESENTATIONS OR WARRANTIES:** Except as expressly provided in section 8, the parties acknowledge and agree that licensor, its trustees, directors, officers, employees, and affiliates make no representations and extend no warranties of any kind, either express or implied, including but not limited to warranties of merchantability, fitness for a particular purpose, non-infringement and the absence of latent or other defects, whether or not discoverable. Nothing in the license agreement shall be construed as a representation made or warranty given by licensor that the practice by licensee of the license granted hereunder shall not infringe the patent rights or copyright rights of any third party. In no event shall licensor, its trustees, directors, officers, employees and affiliates be liable for incidental or consequential damages of any kind, including economic damage or injury to property and lost profits, regardless of whether licensor shall be advised, shall have other reason to know, or in fact shall know of the possibility. Licensee assumes the entire risk associated with licensee's use of the Data Set.
 10. **Complete Agreement:** This License is a complete and exclusive statement of the terms and conditions of the agreement between Licensee and Licensor.

LICENSEE:**Sharese Martin**Digitally signed by Sharese Martin
DN: cn=Sharese Martin, o=Shsu, email=smr021@shsu.edu, c=US
Date: 2014.08.29 12:21:27 -0500**08/29/14**

Signature

Date

Name **Sharese Martin**Title **Student**Email **smr021@shsu.edu**Address **4119 Tasselwood Ln****Houston, Texas 77014**

VITA

Sharese Martin
srubit@swbell.net

Education

Sam Houston State University, Huntsville, TX (2007-2009, 2012-current)
 PhD pending (Dec 2016) --Counselor Education

Prairie View A&M University, Prairie View, TX (2005-2006)
 MA Counseling

Texas Southern University, Houston, TX (1990-1997)
 BS Education

University of Houston-Downtown, Houston, TX (1988-1990)

Certifications

School Counselor Certification, 2006
 ESL Certification, 2002
 Teacher Certification, 1997

Academic Positions

Lone Star College, Houston, TX
 Human Development/Reading/GED/Early Childhood Instructor-
 (1998-1999, 2005, 2006, 2010-2016)
 Counselor Intern (Bridge Partnership) 2006
 Taught courses in human development and reading. Guided students to develop new personal insights, study strategies, and self-management skills by using basic psychological principles.

Aldine School District Houston, TX
 Counselor-MacArthur Ninth Grade/Parker Intermediate School (2007-2011)
 Substitute Counselor-Eisenhower High/MacArthur Ninth Grade (2005-2007)
 Provided responsive services, individual planning, guidance curriculum and system support.
 Substitute (1996-1999, 2005-2006, 2015-2016) Elementary Teacher (1999-2001)
 Used effective classroom management procedures to guide learners to construct knowledge.

Spring School District, Houston, TX
 Counselor Intern—Westfield High (2006)
 Substitute (2005-2006) Elementary Teacher-- Thompson/ Beneke Elementary (2001-2005)
 Used a variety of teaching strategies to guide learners to construct knowledge.

University of Houston-Downtown, Houston, TX
 Counselor/ English Language Institute (ELI) Instructor (2006)
 Advised students. Measured progress. Integrated a variety of techniques that prepared non-native English students for advancement.

Professional Presentations

Literature Review Synthesis/Matrix

Sam Houston State University-The Woodlands Center
 September 7, 2016

Autism Awareness: Parental Issues and Implications to the Counseling Field

Sam Houston State University-The Woodlands Center
 February 27, 2013

International

The College of Education of Sam Houston State University and the Universidad de Iberoamerica, UNIBE, Intercultural Research Conference. Costa Rica, June 19, 2009.

Community Service

Fallbrook Church, Houston, TX
 Preschool Worker (2014-2016, 2004-2005)
 Vacation Bible School Teacher (2004-2010, 2016)
 Taught developmentally appropriate lessons based on church curriculum.

Aldine Independent School District, Houston, TX
 Academic Community Engagement (A.C.E.) Project (Spring 2013)
 Provided counseling and guidance lessons to middle school and high school students.
 Conducted needs assessments. Facilitated four year plans for career development. Offered educational materials, interventions, and referrals to families from various ethnic, racial, and language experiences.

Aldine Independent School District, Houston, TX
 Reach out to drop outs (2007-2010)
 Worked collaboratively with other community volunteers, Aldine ISD school board members, administrators, and teachers to visit the homes of students identified as having dropped out of school.

First Open Door Deliverance Church, Houston, TX
 Women's Group Speaker & Facilitator, 2014
 Sunday School Teacher & Youth Director (2016, 1989-2003)
 Worked with diversified populations and collaborated with community leaders to organize and supervise activities.
 Mission II President (1995-1997)
 Raised funds, managed budget, organized special projects throughout the community.

Professional Memberships

Texas Counseling Association (2009-2010, 2012, 2013-2016)

Texas Foreign Language Association (2008-2010)

Texas Association for Multicultural Counseling & Development (2015-2016)

Honors

Chi Sigma Iota

International Honor Society, 2006