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Family Relationship Hope in Parents of Children with Autism Spectrum Disorder

A dissertation submitted in partial requirements for the degree of Doctor of Philosophy in Education with a concentration in Counselor Education and Supervision at Virginia Commonwealth University

By

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Abstract

FAMILY RELATIONSHIP HOPE IN PARENTS OF CHILDREN WITH AUTISM
SPECTRUM DISORDER

By Lindsay A. Kozachuk, Ph.D.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
Philosophy in Education at Virginia Commonwealth University.

Virginia Commonwealth University, 2020

Major Directors: Naomi J. Wheeler, Ph.D. Assistant Professor, & Abigail H. Conley, Ph.D.,
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Parents of children with Autism Spectrum Disorder (ASD) experience unique parenting demands. Although these parents often report high levels of mental health challenges, such as depression (e.g., Scherer et al., 2019), they also report resilience factors such as family support and hope (e.g., Ekas et al., 2016). The present study investigated a novel construct, family relationship hope, in parents of children with ASD by examining the psychometric properties of the Family Relationship Hope Scale (FRHS), variables associated with family relationship hope and its link with depression. Factor analyses examined the factor structure and model fit of the FRHS. The post-crisis phase of the Double ABCX model (McCubbin & Patterson, 1983) provided a framework to conceptualize possible predictors of family relationship hope, through three steps in a hierarchical linear regression. Finally, a logistic regression analysis examined the likelihood of participants having clinically significant depression (Kroenke et al., 2001).

Findings indicated a single factor structure, good model fit and internal reliability for the FRHS. Increased family support and having an adolescent child with ASD predicted higher family relationship hope, and relationship status and age of diagnosis served as important predictors in the model. Finally, family relationship hope significantly predicted the presence of

clinically significant depression in parents of children with ASD. Results of the present study offer implications for counselor educators, mental health counselors, policy, and research that may help enhance the lives of families that include a child with ASD.

Chapter One

INTRODUCTION

According to the Centers for Disease Control and Prevention (CDC, 2019),

approximately 1 in every 54 children in the United States has a diagnosis of Autism Spectrum

Disorder (ASD; Maenner et al., 2020). ASD is a lifelong, neurodevelopmental disorder

characterized by deficits in communication, language, reciprocal social interaction, and increased

restrictive and repetitive behaviors/interests (American Psychiatric Association, 2014). Parents

of children with ASD hold additional responsibilities beyond that of traditional parenting roles,

such as taking their child to specialized doctors and therapies, working with the school system to

develop individualized educational and behavioral plans, and managing behaviors in the day-to-

day (e.g., stimming, aggression, difficulty with change; Daire et al., 2011; Giovagnoli et al.,

2015). Consequently, parents of children with ASD are more likely to experience physical and

mental health challenges (e.g., Fairthorn et al., 2015). Parents of children with ASD experience

notably high rates of depression (Scherer et al., 2019), especially in relation to their possible

social isolation, increased challenging child behaviors, and limited resources (Zaidman-Zait et

al., 2018). However, resiliency factors such as hope and family support may serve as protective

factors against depression in parents of children with ASD (Ekas, et al., 2016). Therefore, despite

the challenges associated with ASD, some families successfully adapt.

Hope in families that include a child with ASD is associated with increased subjective

well-being and positive affect (Lloyd & Hastings, 2009; Shenaar-Golan, 2017) and decreased

depression and loneliness (Ekas et al., 2016). Additionally, the association between hope and

depression may be explained by factors within the family relationships (Ekas et al., 2016).

Therefore, in the current investigation, I examined family relationship hope, defined as a parent's

confidence and optimism for the future of their family, as a form of resilience in parents of children with ASD. Little research exists regarding couple relationship hope (e.g., Erickson, 2015; Hawkins, et al., 2017), and no research examines family relationship hope. The purpose of the present study is to increase understanding of family relationship hope and to examine the role of family relationship hope in predicting the presence of symptoms of depression in parents of children with ASD.

Theoretical Approach

The Double ABCX model serves as the theoretical perspective of the present study. The Double ABCX model is a popular family stress model that provides a framework for conceptualizing family stress and adjustment before and after a family crisis (McCubbin & Patterson, 1983). The model contains three components: pre-crisis, crisis, and post-crisis. Pre-crisis refers to the crisis-related stressors, family resources, and perception of the stressors and resources in relation to the prelude to the crisis event. Crisis refers to a family role-altering event. Post-crisis refers to how the family responds and adapts to the crisis over time, specifically the additional pileup stressors they encounter related to the crisis, the new and existing family resources, how the family copes, and the family's perception of the pileup stressors and resources. The current investigation examines the relationship between post-crisis variables (i.e., pileup stressors, resources, time and adaptation) and family relationship hope as the parent's perception of the pileup stressors and resources related to a child's diagnosis of ASD.

Previous researchers examined post-crisis family stress with the ASD population using the Double ABCX framework. Overall, several studies identified links between post-crisis variables and parental mental health. For instance, researchers identified significant associations between pileup demands, social support, and active-avoidant coping with psychological distress

in parents of children with ASD (Paynter, et al., 2013). Another study found the Double ABCX model useful for conceptualizing and examining family quality of life and parental psychological well-being (Pozo et al., 2014). For both fathers and mothers of children with ASD, the perception construct (coherence) was pivotal, directly and indirectly, in family quality of life and parental well-being. Social support and coping styles were also significant factors in parental outcomes, albeit sometimes inconsistent among each sex. Finally, Yu et al. (2018) developed a hierarchical regression model based on Double ABCX framework that predicted caregiver burden of parents of emerging adults with ASD. Predictors included transition-related demands, personality traits, social support, appraisal styles, and coping strategies. The model was significant and explained 63% of the variance in explaining caregiver burden. Therefore, the Double ABCX model is a useful framework for continued examination of post-crisis variables in prediction of parental mental health.

Statement of the Problem

As ASD prevalence rises (e.g., Baio et al., 2018; Maenner et al., 2020), so does the number of families impacted by the challenges associated with ASD. Parenting, in general, is often demanding and stressful (Nelson, et al., 2014). However, parents of children with ASD experience additional demands and stressors not normally experienced by other parents. For instance, parents of children with ASD must navigate special education services in the school system and advocate for their child to receive necessary education (Rispoli, et al., 2019). Parents report that such conflict with the school system led to feeling frustrated, defeated, stressed, and overall decreased wellbeing. Additionally, medical and therapy needs of some children with ASD result in increased practitioner visits and monetary costs (Candon et al., 2019; Daire, et al., 2011; Lavelle et al., 2014). Raising a child with ASD costs about $17,000 more per year than a

neurotypical child (Lavelle et al., 2014), thus, demands on time and finances associated with ASD can add to parental and family stress.

Consequently, parents of children with ASD also experience greater physical and mental health challenges compared to parents of children without disabilities and parents of children with different disabilities, such as Intellectual Disability and Down Syndrome (e.g., Fairthorn et al., 2015a; Lee et al., 2017; Pastor-Cerezuala et al., 2016). Notably, parents of children with ASD are at a greater risk of experiencing depression (e.g., Scherer et al., 2019). Depression is one of the most common mental health disorders in the world and impacts about 7% of the adult population in the United States (US Department of Health and Human Services, 2018). Parents of children with ASD report rates of depression as high as 21%, which is higher than the general population as well as parents of children with other disabilities (Scherer et al., 2019).

Depression is characterized by feelings of sadness, emptiness, and hopelessness (APA, 2013) and often leads to impairments in areas of daily functioning such as social and work life. Individuals who are depressed are at risk for social isolation (Cacioppo & Cacioppo, 2014) and high rates of missing work days (Kessler et al., 2006). Thus, depression likely exacerbates challenges already experienced by parents of children with ASD. Additionally, depression impacts parenting behaviors, parent-child relationships, and child outcomes (O'Connnor, et al., 2017; Vreeland et al., 2019, Woo et al., 2016). Children whose mothers reported severe and chronic depression were more likely to exhibit externalized and internalized behaviors (O'Connor et al., 2017). Research also identified a link between depression in parents of children with ASD, child behaviors, and family functioning (as measured by the family's communication, role clarity, problem-solving, and affective responses; Jellett, et al., 2015). Therefore, depression

is a critical concern for parents of children with ASD with implications for both the wellbeing of the parent, the child and the family.

Despite the high reported rates of depression among parents of children with ASD, parents experience hopefulness when raising a child with ASD (Martin et al., 2019). Hope, however, is still an under-explored area of resilience in such families. Research on hope in parents of children with ASD identified links between hope and depressive symptoms (Ekas et al., 2016). Parents who reported higher levels of hope reported less depressive symptoms. However, family support mediated the relationship between hope and depressive symptoms, indicating that family plays a critical role in the resiliency effects of hope on depression. Previous research examined hope in parents of children with ASD using instruments based on Snyder's theory of hope (2002; Snyder et al., 1991). Yet, Snyder's hope instruments (Snyder et al., 1991) measure hope within the context of the individual and individual's goals, neglecting the systemic influence of relationships within the family. Erickson (2015) originally introduced relationship hope as a construct that represents an individual's belief and optimism in their romantic relationship's potential and ability to overcome future challenges, regardless of the level of relationship satisfaction. We adapted Erickson's conceptualization of romantic relationship hope to develop a similar construct for use with families. We posited family relationship hope as the level of belief and confidence one has in their family relationships as well as the family's ability to overcome future challenges. No published research examines family relationship hope as a construct, however, clear connections exist in the literature between family relationships, resilience, and parent outcomes (e.g., Ekas et al., 2016; Goedeke et al., 2019). Thus, a greater understanding of family relationship hope is needed.

By identifying predictors of family relationship hope, researchers can develop a better understanding of what leads a person to feel more hopeful about their family relationships. Several systemic factors exhibit promise as potential predictors of family relationship hope. I utilized the post-crisis phase of the Double ABCX model (McCubbin & Patterson, 1983) to conceptualize possible predictors of family relationship hope, specifically (a) pileup stressors, (b) new and existing resources, and (c) time.

Pileup stressors that may predict family relationship hope include (a) child symptom severity, (b) child age, and (c) total number of children in the family. Child problem behaviors predict decreased mental health in parents of children with ASD (Yorke et al., 2018). Additionally, researchers identified associations between hope and child problem behaviors and depression (Lloyd & Hastings, 2009). Mothers who reported lower levels of hope and more child behavior problems also reported more symptoms of depression and less positive affect. Thus, child behavior and symptom severity may contribute to parental hope and subsequent mental health. Regarding child age, families experience different stressors and level of family support at varied developmental periods (Goedeke et al., 2019; McKee et al., 2019). Therefore, since parenting demands differ based on the age of the child, family relationship hope too, may differ at different developmental stages of the child with ASD. Finally, parents in families that include more children reported higher levels of stress than parents with fewer children (Harper et al., 2013; Krakovich et al., 2016). Thus, pileup stressors may contribute to the level of family relationship hope experienced by a parent of a child with ASD.

New and existing resources that may predict family relationship hope include (a) family income, (b) parent relationship status, (c) social support, (d) use of ASD-specific support group, and (e) support from child's school. Prior research supports family income, parent relationship

status, and social support as predictors of parent outcomes for parents of children with ASD (Hsiao, 2018; Mathew et al., 2019; Zaidman-Zait et al., 2018). Greater school support and use of ASD-related resources are also associated with lower parental distress and caregiver demands (Krakovich et al., 2016). Therefore, new and existing resources available to parents of children with ASD may be associated with parental levels of family relationship hope.

Factors related to time for parents of children with ASD include (a) time since ASD diagnosis and (b) child age at diagnosis. According to the Double ABCX model, the impact of stressors and resources persist over time, which can result in chronic strains on the family. Time since diagnosis (TSD) is associated with increased parental acceptance of their child's ASD diagnosis as time passes (Yirmiya et al., 2015). However, research identified conflicting results regarding TSD's impact on parental stress and well-being (Garcia-Lopez et al., 2016), especially after considering child behavior and ASD symptom severity. Yet, parents whose child receives an ASD diagnosis earlier in life also often have access to more resources and early intervention services (e.g., Zwaigenbaum et al., 2015), which may be more beneficial for parent wellbeing later in the child's life regardless of the TSD. Therefore, the age at which a child receives their diagnosis may better explain parental well-being or, specifically, family relationship hope.

Overall, parents of children with ASD experience additional stressors regarding time, school systems, support, finances, and challenging child behaviors and, consequently, report more mental health challenges such as depression. However, parents who exhibit more family relationship hope may adapt better to life and the challenges associated with ASD. Current literature acknowledges the importance of family support, yet no studies examine family relationship hope. Thus, the current investigation seeks to fill this gap in the literature.

Purpose Statement

The purpose of the present study was to examine the relationships between family relationship hope, parental pileup stressors, new and existing resources, time, and depression in parents of children with ASD. High hope is linked with lower levels of depression (Ekas et al., 2016; Lloyd & Hastings, 2009), yet parents of children with ASD report significantly less hope than parents of children with other or without disabilities (Manor-Binyamini & Nator, 2016; Ogston, MacKintosh, & Myers, 2011). Thus, research is needed to increase understanding about hope in parents of children with ASD. Previous research identified family support as an important factor for the effect of hope on depression in parents of children with ASD (Ekas et al., 2016). Therefore, measures of hope in the context of the individual, such as that of Snyder's hope theory (2002) may overlook critical aspects of family systems that impact hope and well-being. Family relationship hope may be an important protective factor for parents to combat symptoms of depression. However, little is known about what predicts family relationship hope or its relationship with depressive symptoms. Therefore, the present study utilized three primary analyses to (a) examine the factor structure of the FRHS, (b) investigate possible predictors of family relationship hope based on the Double ABCX model and (c) assess the relationship between the presence of clinically significant depression and the levels of family relationship hope in parents of children with ASD.

Research Questions

Research Question 1: What are the psychometric properties of the Family Relationship Hope Scale (FRHS)?

Hypothesis: The FRHS will have a single-factor structure with good model fit similar to previous studies on the Relationship Hope Scale (i.e., Erickson, 2015; Hawkins et al., 2017).

Research Question 2: What post-crisis variables predict the presence of family relationship hope (as measured by the Family Relationship Hope Scale) in parents of children with ASD?

Null Hypothesis: Factors related to pileup stressors (i.e., child symptom severity, child age, total number of children), new and existing resources (i.e., family income, parent relationship status, social support from a significant other, family, and friends, use of ASD-specific support group, support from child's school), and time (i.e., time since ASD diagnosis, child age at diagnosis) will not significantly predict family relationship hope.

Alternative Hypothesis: Factors related to pileup stressors, new and existing resources, and time will significantly predict family relationship hope.

Research Question 2: What is the relationship between family relationship hope and presence of clinically significant depression (as self-reported on the PHQ-8) in caregivers of children with ASD?

Null Hypothesis: There is no significant difference between the amount of family relationship hope and the presence of clinically significant depression.

Alternative Hypothesis A: There is a significant difference between the amount of family relationship hope and the presence of clinically significant depression.

Alternative Hypothesis B: Participants with higher family relationship hope have lower odds of having clinically significant depression.

Study Significance

Results infer implications for future counselor training/education, practice, policy, and research. Specifically, the Council for Accreditation of Counseling and Related Educational Programs (CACREP, 2015), the accrediting body of counselor education, plans to incorporate disability concepts into the 2023 revisions of the CACREP standards. Hypothesized associations between family relationship hope and depression support counselor educator integration of family relationship hope into relevant courses as an identifiable protective factor in families and couples that include a child with ASD. Additionally, practicing counselors may target family relationship hope in treatment interventions for depression to increase parental mental health and well-being. Future policy may address parental needs through advocacy for funding for ASD specific programs and increased focus on parent support during the IEP process. Future research may continue to examine the FRHS and further support its validity and reliability as an ecological assessment of parental and family well-being. Finally, the present study is the initial step to understanding family relationship hope as a construct and provides a foundation for future research to further examine longitudinal and treatment effects on family relationship hope.

Methodological Overview

The study used existing data and is a non-experimental, multivariate, cross-sectional design that utilized a convenience sampling approach (McMillan, 2016). Researchers collected data in the fall of 2018 and spring of 2019 as part of a university-level internally funded grant which aimed to validate a measure of family adjustment in parents of children with ASD. I served as a member of the research team and assisted with survey development and distribution.

Participants were 18 years of age and a primary caregiver of a child formally diagnosed with ASD. Individuals who completed the 109 item survey were eligible to receive a five-dollar

Walmart gift card as compensation for their participation in the study. The instruments used in the current investigation included: (a) a researcher-developed parent and child demographic form, (b) a researcher-developed child ASD-symptom severity scale based upon diagnostic criteria from the DSM 5 (APA, 2013), (c) the *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet et al., 1988), (d) the *Family Relationship Hope Scale* (FRHS)*, a* researcher-revised version of the *Relationship Hope Scale* (Erickson, 2015), and (e) the *Patient Health Questionnaire-8* (PHQ-8; Kroenke et al., 2001).

The data analysis plan for the current investigation included data cleaning, assumptions testing, preliminary analyses, and primary analyses. Preliminary and primary statistical analyses included: (a) exploratory and confirmatory factor analysis of FRHS, (b) bivariate correlational analysis of variables to examine collinearity, (c) a hierarchical regression to determine the predictors of family relationship hope, and (d) a logistic regression to examine the likelihood of clinically significant symptoms of depression based on levels of family relationship hope.

<div align="center">**Definition of Key Terms**</div>

Autism Spectrum Disorder (ASD)

ASD is a neurodevelopmental disorder identified in the Diagnostic and Statistical Manual Fifth Edition (DSM-V; APA, 2014). It is a lifelong disorder characterized by deficits in language, communication, and social-emotional reciprocity, as well as increased stereotyped and repetitive behaviors and sensory differences. Symptoms of ASD exist on a spectrum ranging from a non-verbal individual with limited executive functioning to another with vast vocabulary with average to high levels of intelligence (formally known as Asperger's Syndrome).

Family Relationship Hope

Family relationship hope is a construct developed for the present study as an adaptation to couple relationship hope (Erickson, 2015) and is measured by the FRHS. Family relationship hope is one's belief and confidence in their family relationships and the efficacy they feel about the family's ability to overcome challenges.

Clinically Significant Depression

Depression, also known as major depressive disorder, is a mood disorder identified in the DSM-V (APA, 2014). Symptoms of depression include: depressed mood most of the day, nearly every day, diminished interest or pleasure, significant weight loss or gain, lethargy, fatigue, feelings of worthlessness or guilt, diminished ability to think or concentrate, and recurrent thoughts of death. The present study assesses the number and frequency of depressive symptoms experienced by participants, as measured by the PHQ-8 (Kroenke et al., 2001), but does not have medical information regarding formal diagnosis of major depressive disorder or related disorders. Therefore, clinically significant depression is defined according to the cut-off scores on the PHQ-8 as determined by Kroenke et al. (2001). Participants who report a PHQ-8 score greater than 9 are considered to have clinically significant depression whereas participants with scores of 9 or less are not.

<div align="center">

Chapter Summary

</div>

In Chapter One, I provided an overview of the present study including relevant background information, theoretical approach, statement of the problem, purpose, research questions, significance, methodology, and definitions of key terms. Parents of children with ASD are resilient, yet face many unique challenges. Limited research examines hope within the context of the family. Yet, such hope may be a key factor in understanding and responding to symptoms of parental depression. Augmented knowledge for factors influential to family

relationship hope is critical for an informed approach to assessment and intervention in support of parents of children with ASD. Therefore, the present study introduced a novel construct, family relationship hope, as a protective factor for mental health with implications for future education, practice, and research.

Chapter Two

LITERATURE REVIEW

In chapter two, I provide an overview of the literature on parent and family outcomes associated with raising a child with Autism Spectrum Disorder (ASD), to include challenges and factors associated with resilience. First, I discuss the prevalence and symptom presentation of ASD. I then discuss the Double ABCX model of family adjustment (McCubbin & Patterson, 1983), the theoretical framework of the current study. Next, I elaborate on the common experiences of parents of children with ASD, including effects on mental health and family relationship hope. Finally, I highlight theoretical components of the Double ABCX model and connect existing literature to demonstrate implications for family relationship hope in parents of children with ASD, a new concept in ASD literature.

The purpose of the current investigation is to increase understanding of family relationship hope and the role of family relationship hope for parental mental health among parents of children with ASD. Parents of children with ASD adjust to a life they did not expect when they gave birth to their child (Kingsley, 1987). Parents experience hopefulness while raising a child with ASD (Martin et al., 2019); yet, also face additional stressors not as commonly reported by parents of children without ASD (e.g., Hsiao, 2018). Extant literature examines the causes, predictors, and challenges experienced by parents of children with ASD, yet few explore hope (e.g., Ekas et al., 2016; Martin, et al., 2019) and no studies explore family relationship hope as a protective factor against mental health concerns (i.e., depression). In the current study, I applied existing research for couple relationship hope (e.g., Erickson, 2015; Hawkins et al., 2017) and posit family relationship hope as a parent's confidence and optimism for the future of their family. This study aimed to provide a foundation of understanding of

family relationship hope that may aid in future counselor training and mental health intervention strategies for parents of children with ASD.

Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by lifelong deficits in communication, social interaction including development and maintenance of social relationships, and increased restrictive and repetitive behaviors (American Psychiatric Association [APA], 2013). ASD symptoms are often observable when a child is 12-18 months old (Ozonoff, et al., 2008). Early symptoms include delays in meeting language milestones, delay or regression in social interactions such as (a) vocalization to others, (b) shared smiles, and (c) face gaze, and (d) atypical sensorimotor development (Estes et al., 2015; Ozonoff et al., 2010).

Estimates of ASD prevalence drastically increased in the past two decades. In 2000, 1 in 150 children had ASD; just 10 years later in 2010, prevalence doubled to one in 68 (Baio et al., 2018). The most recent estimation of ASD prevalence from the Centers for Disease Control (CDC) identified approximately 1 in 54 children at the age of eight years old had ASD in the year 2016 (Maenner et al., 2020), up from 1 in 59 from the year 2014 (Baio et al., 2018). As the number of children with ASD rises, so does the number of parents and families impacted by ASD.

ASD as a Family Stress Process

From early on in the ASD diagnostic processes, parents face barriers and pushback from the medical and educational system (Martinez et al., 2018). Trained clinicians can reliably diagnose a child with ASD by age two (Lord et al., 2006); however, on average, children do not receive a diagnosis until they are just over five years old ($n = 1,420$ parents of children with

ASD, M = 62.8 months, SE = 1.62; Oswald, et al., 2017). In a national study by Oswald et al.

(2017), children with ASD received their diagnosis seven months later than children who

received a diagnosis of a developmental disability, despite parents having concerns about their

child's development when the child is about two years old. Children whose parents completed an

autism screening with a primary care physician have lower odds of experiencing a delay in ASD

diagnosis compared to those who do not; however less than half (47.4%) the caregivers of

children with ASD in a recent study received screening forms (Martinez et al., 2018).

Additionally, many parents of children with ASD find it difficult to locate a psychologist or

psychiatrist that can evaluate their child and/or have to travel far to receive diagnostic services;

both circumstances increase the delay in ASD diagnosis up to 24 months. Finally, parents of

children with ASD were more likely than parents of children with developmental disabilities to

be told that there was nothing wrong with the child and that they would "grow out of it" (Oswald

et al., 2017). Parents of children with ASD whose child receives the diagnosis of

Asperger's/High Functioning Autism are at greater odds of being told their child does not have

ASD or receiving a delayed diagnosis compared to children with what was once called Autistic

Disorder (Diagnostic Statistical Manual-IV-TR, 2000; Martinez et al., 2018). Such responses

from professionals are the beginning of the challenges most parents experience in regards to

accessing support services for their child. Parents who waited longer to receive a diagnosis of

ASD were more dissatisfied with the diagnostic process than parents who waited less time from

their initial concerns about their child's development (Crane et al., 2016). The ASD diagnosis

process and stress in parents are also linked. Most parents reported that the diagnostic process

was 'very' (56%) or 'quite' (28%) stressful (Crane et al., 2019). Thus, delayed diagnosis often

results in prolonged parental stress as well as lagged response for intervention services.

Families experience a shift in both personal reactions and access to resources once a child receives an ASD diagnosis (Fernańdez-Alcántara, et al., 2016; Rabba et al., 2019; Wayment & Brookshire, 2018). Following a child's diagnosis, some parents experience grief, a sense of loss for the life they expected for themselves and their child, and post-crisis growth (Alon, 2019). Families often adapt to the diagnosis and related symptoms with time, which can indirectly affect hope as a form of post-crisis growth (Einav et al., 2012). Factors that promote post-crisis growth versus maladaptation are not yet well understood. Alon (2019) identified social support and family support to be a critical factor in predicting mothers of children with ASD's post-crisis growth.

All parents experience demands and stressors associated with a parenting role (Nelson, Kushlev, Lyubomirsky, 2014). For some families, parenting related demands and stressors are compounded by the additional systemic challenges associated with ASD diagnosis in one or more children in the family. Throughout the remainder of the chapter, I will highlight challenges supported in the literature as common among families that include a child with ASD (e.g., Fairthorne et al., 2015) through a family stress process framework; however, not all families will experience all of these challenges or will experience them to the same degree. A burgeoning area of ASD literature identifies resiliency factors such as family support and hope (e.g., Ekas, et al., 2016), which may offer insight into how to help the parents and families who do experience challenges adjusting and managing stress as a family. Hence, parents of children with ASD experience systemic challenges associated with the receipt of the ASD diagnosis. Thus, examination of challenges and resilience experienced in the family warrants the use of a family stress model.

Theoretical Framework for Family Stress and Adjustment

The Double ABCX model (McCubbin & Patterson, 1983), adapted from Hill's original ABCX model (1958), provides a framework for conceptualizing family stress and adjustment following a family crisis. According to Hill (1958), a stressor refers to any new situation that requires the family to adapt. However, Hill hypothesized that a family's response to a stressor (i.e., whether a stressor becomes a crisis or not) is dependent upon (a) the resources the family has to handle the stressor and (b) the family's perception of the stressor. A family who anticipates the stressors as problematic, crisis-producing events are more likely to experience them as such. Hill's ABCX conceptual framework for family stress serves as a seminal theoretical framework in the area of family stress.

However, the ABCX model solely accounts for pre-crisis variables and the crisis itself – a limitation and criticism of the model. In response, McCubbin and Patterson (1983) expanded Hill's model to form the Double ABCX Model. The Double ABCX model accounts for family adaptation to crisis over time and includes pre-crisis, crisis, and post-crisis components. The post-crisis component consists of new variables related to family's response to the crisis: (a) pileup stressors, (b) existing and new family resources, (c) the family's perception of the crisis, pileup stressors and resources, (d) coping styles, and (e) family adaptation outcomes.

In the Double ABCX model, adaptation is the family's response over time to the crisis. A family can experience bonadaptation, where family wellbeing is maintained and possibly strengthened due to coping with the change. Conversely, a family can experience maladaptation, where family wellbeing, including psychological health, deteriorates (McCubbin & Patterson, 1983). Parents of children with ASD are particularly vulnerable to experiencing deterioration in psychological health that presents as depression (e.g., Scherer et al., 2019). Research supports a

link between the stressors associated with ASD and parental depression (e.g., Jellett, et al., 2015; Scherer et al., 2019). Scherer et al. (2019) emphasized parents of children with ASD's need for mental health support due to high risk of depression.

Parental stressors demonstrated in the literature associated with raising a child with ASD align the Double ABCX model (Derguy et al., 2016). For instance, acuity of child behaviors and symptom presentation may contribute to pileup stressors for the parent (Giovagnoli et al., 2015). Thus, parents of children with ASD may find that greater severity of ASD-related symptoms adds to daily stress. Similarly, the 'existing and new family resource' variables influential to family stress adaptation include income (Hsaio, 2018), ASD-related services (Eskow, et al., 2019), social support (Zaidman-Zait et al., 2018), and family support (Derguy et al., 2016). Each resource demonstrates potential to impact family adjustment and parental mental health. Additionally, the 'family perception of the crisis' variable may be influenced by family relationship hope, the parent's confidence and optimism regarding the future of their family. However, no studies examined family relationship hope in a family stress framework. Finally, the Double ABCX model posits that a family's perception of the stressor pileup predicts their adaptation outcome (McCubbin & Patterson, 1983). Thus, the ABCX model supports the hypothesized link between family relationship hope and depression as highlighted for examination in the current study.

Several studies assessed the fitness of ABCX model with families of children with ASD with mixed empirical support and operationalized family perception in various ways (e.g., Paynter, et al., 2018; Paynter, et al., 2013; Pozo et al., 2014; Yu, et al., 2018). Paynter et al., (2013) conducted a correlational analysis of ABCX variables with parents of children with ASD ($N = 43$). Researchers identified links between pileup demands, social support, and coping with

psychological distress in parents of children with ASD. Parents with additional stressful life events, less social support, and use of active-avoidant coping (e.g., ignoring a problem instead of trying to solve it) were more likely to report symptoms of depression, anxiety, and stress. Parent's self-reports of positive and negative implications of having a child with ASD, the variable utilized to examine stressor perceptions in Paynter et al.'s (2013) study, did not significantly relate to parental psychological distress. Thus, results did not support a difference in psychological distress between parents who viewed their child's ASD as negatively impacting the family and those who viewed it positively. Yet, parent perceived positive and negative implications of having a child with ASD may not fully capture the parent's perceptions of their situation as it is deficit-focused by placing emphasis on the impact of the child's disability on the family. Additionally, Paynter et al.'s (2013) study applied correlational analyses to examine several variables and relied on a relatively small sample size ($N = 43$ parents). Future studies should use a larger sample size and multivariate analysis to increase the power of their analysis, as well as consider the use of a strength-based rather than a deficit-based approach in measuring family perception.

Similarly, Pozo et al. (2014) utilized the Double ABCX model as a conceptual framework to explore parental stress associated with ASD diagnosis and examine family quality of life and parental psychological well-being. Participants included 59 mother-father couples ($N = 118$) from Spain. Pozo et al. utilized path analysis via structural equation modeling, which resulted in four independent models separated by sex (i.e., mother and father) and outcome variable (i.e., family quality of life and parental psychological well-being). For both fathers and mothers of children with ASD, the perception construct (i.e., coherence) was pivotal, directly and indirectly, in family quality of life and parental well-being. Coherence indicated how

comprehensible, manageable, and meaningful a parent viewed their own life. Mothers'

coherence exhibited a direct effect on family quality of life ($b = .31$, $p < .01$) and psychological

well-being ($b = .77$, $p < .01$). Fathers' coherence exhibited a direct effect on family quality of life

($b = .73$, $p < .05$) and an indirect effect on family quality of life through a negative association

with active avoidance coping ($b = -0.69$, $p < .01$; $b = .37$, $p < .05$), as well as a direct effect on

psychological well-being ($b = .75$, $p < .01$). Thus, parents who found life more comprehensible,

manageable, and meaningful had a higher quality of life and experienced greater psychological

wellbeing. Interestingly, none of the four models supported a direct effect of child behavior

problems on either family quality of life or psychological well-being, but suggested an indirect

relationship through coherence whereby child behavior had a negative relationship with

coherence, which in turn had a positive relationship with the adaptation variables. Therefore,

parent perception may serve as a buffer between child behavior problems and parental well-

being. Results highlight the potential connection between other perception-related constructs,

such as family relationship hope, and parent outcomes. Future research should expand the

perception variable to explore a family-focused perception variable.

Yu et al., (2018) examined the applicability of the Double ABCX model on the caregiver

burden experienced by parents ($N = 105$) of emerging adults with ASD. Yu et al. (2018)

identified parent threat appraisal as a significant perception variable in understanding the link

between parent personality (i.e., neuroticism, extraversion, conscientiousness, openness,

agreeableness) and caregiver burden. Results of a hierarchical regression suggested that the

model was significant and explained 63% of the variance in explaining caregiver burden. Further

analysis examined mediating effects of variables that correlated with personality traits on

caregiver burden. Results revealed that coping and appraisal styles mediated the relationship of

personality (i.e. neuroticism) on caregiver burden. Thus, parents that have more neuroticism traits tend to view their situation as threatening, and therefore report greater caregiver burden. Overall, the study was relatively sound in its theoretical underpinnings and research methods. However, researchers' reference to Pearson's correlation in mediation analysis suggests the use of a joint significance test (Baron & Kenny, 1986) which is very liberal and prone to Type I error (MacKinnon, et al., 2007). Therefore, the results are more likely to support a relationship that does not exist in the present data; further exploration of the associations made between personality traits, appraisal, and caregiver burden is warranted. Additionally, Yu et al. assessed deficit-based perceptions (i.e. threat and challenge appraisals) in their model. Strength-based perceptions may provide unique insight into protective factors against depression.

Although measurement and operationalization of parent perception of child diagnosis with ASD differed between studies, perception constructs consistently predicted parent psychological outcomes (Paynter et al., 2018; Pozo et al., 2014; Yu et al., 2018). However, no studies with parents of children with ASD use the Double ABCX model to explain predictors of the Double ABCX perception construct, specifically in the form of family relationship hope. Increased understanding of what stressors and resources predict the perception construct (i.e. family relationship hope) may provide a guide for future studies and interventions. To this aim, I provide an overview of the literature for challenges that add stress and strain to parental well-being as well as predictors of hope and family relationship hope among parents of children with ASD within the Double ABCX framework.

Parent and Family Stress

Parents and caregivers (e.g., foster/adoptive parents, grandparents as primary caregivers, hereon referred to as parents) experience stressors at the systemic and individual level associated

with challenges raising a child with ASD. For instance, in school settings, parents of adolescents with ASD serve as advocates to make sure their child receives appropriate services (Rispoli et al., 2019). Parents reported that working with schools and navigating the school system led to feeling frustrated, defeated, stressed, and overall decreased well-being. Many parents find the special education services provided by schools for children with ASD dissatisfactory, especially regarding the individualized education plan (IEP) process (Slade et al., 2018; Walker et al., 2012). Therefore, parental navigation of school processes necessitated by having a child with special needs can be a stressful and disempowering experience.

Additionally, parents of children with ASD attend practitioners' offices (physician and non-physician) more often each year compared to children without ASD, leading to increased time and financial burden (Daire et al., 2011; Lavelle et al., 2014) as well as decreased parental wellbeing (Hodgetts et al., 2017). Demands on time and finances associated with an ASD diagnosis can add parental stress. Parents of children with ASD spend approximately $2,300 more on health care services and $10,500 more on non-healthcare related services (i.e., ASD related therapy, family coordinated services, caregiver time) per year than parents of children without ASD. Overall, Lavelle et al. (2014) estimated costs associated with childrearing when raising a child with ASD at $17,000 more per year than a neurotypical child. In the past decade, the federal and state governments in the United States implemented mandates on health insurance companies to provide coverage for ASD related services (Candon et al., 2019). The mandates resulted in lower total costs of ASD related services, however out-of-pocket costs for children with greater use of services increased, resulting in out-of-pocket costs of over $200 per month. Furthermore, research suggests that insurance mandates did little to decrease financial burden, access to care, and unmet need for services for individuals with ASD (Chatterji et al.,

2015). Therefore, parents of children with ASD spend more money each year for their children's healthcare needs than other parents, despite increased policy support. Parents of children with ASD provide necessary emotional, behavioral, and educational supports for their child. However, the time and financial costs of support services add to parental stress. Finally, at home, parents engage in emotional and behavioral management with their child with ASD. Some children with ASD exhibit increased aggressive behaviors and emotional reactivity (Giovagnoli et al., 2015). Further, such challenging child behaviors are predictive of parental well-being (e.g., Salomone et al., 2018; Yorke et al., 2018); which, literature consistently cites that parents of children with ASD experience increased psychological distress (e.g., Bailey, et al., 2007; Scherer, et al., 2019, Yorke et al., 2018) and mental and physical health concerns (e.g., Lovell, et al., 2012).

The physical health of parents of children with ASD gained increased attention in recent years. Fairthorn de Klerk and Leonard (2015) conducted a systematic literature review of the health of mothers of children with ASD. In the 60 original, peer-reviewed studies, mothers of children with ASD experienced poorer health outcomes than mothers of children with Intellectual Disabilities, Down Syndrome, or no disabilities. Therefore, parents of children with ASD seem to experience more adverse health challenges precipitated by and/or adding to the existing stressors associated with ASD. Similarly, in a large, national survey, parents of children with a disability (including ASD) were more likely to have asthma, back pain, obesity, heart conditions, chronic bronchitis, and migraines than other parents (Lee, et al., 2017). An association exists between parenting a child with a disability and poor parental health, which could infer health consequences associated with caregiver burden.

Several studies point to potential abnormalities in cortisol levels, a stress hormone associated with the "fight or flight" response (Jankord & Herman, 2008), in parents of children with ASD (e.g., Fecteau et al., 2017; Lovell et al., 2015). Therefore, poor health observed in parents raising a child with disabilities may result from increased stress and associated physiological changes. Emerging literature indicated ASD parent blunted cortisol activity (Lovell et al., 2015; Padden & James, 2017), when cortisol activity no longer responds normally to stress (Heim, et al., 2000). Blunted cortisol activity is historically associated with later stress-related diseases and mental health disorders, including depression (Burke et al., 2005; Heim et al., 2000). Thus, the physiological impact of stress related to challenges associated with ASD poses increased vulnerability to parental psychological concerns.

In addition to physiological effects, parents of children with ASD report greater psychological stress, depression, psychiatric disorders, poorer overall mental health, and lesser perceptions of quality of life than parents of children without developmental disabilities (Fairthorne et al., 2015a; Pastor-Cerezuala et al., 2016). Thus, parents of children with ASD also seem to experience greater adverse mental health concerns precipitated by the stressors associated with ASD. Mothers of children with ASD (even those without a psychiatric diagnosis before a child's birth) experienced higher rates of psychiatric related treatments (e.g., outpatient appointments, hospitalizations) after the birth of their child compared to other mothers (Fairthorne et al., 2015b). Mothers were also more likely to experience hospitalization related to psychiatric concerns, and receive diagnoses such as schizophrenia, affective disorders, bipolar disorders, or personality disorders. Since all of the causes of ASD are unknown (CDC, 2019), it remains unclear if such psychiatric diagnoses are a result of the stress related to parenting a child with ASD, or a risk factor for having a child with ASD. Regardless, the prevalence within

mothers remains striking. Notably, parents of children with ASD are at a greater risk of experiencing depression (e.g., Scherer et al., 2019), one of the most common mental health disorders in the United States (US Department of Health and Human Services, 2018)

Parent Depression

Ample research over the past several decades supports a greater presence of depressive symptoms in parents of children with ASD compared to the general population and parents of children with other disabilities (e.g., Bailey et al., 2007; Cohrs & Leslie, 2017; Cook et al., 1994; Scherer et al., 2019; Singer, 2006). Individuals who experience depression (i.e., major depressive disorder) often feel sad, empty or hopeless and/or feel diminished pleasure in most activities throughout the day (APA, 2013). Accompanying symptoms may include (a) significant weight loss or weight gain, (b) difficulty sleeping or sleeping too much, (c) restlessness or lethargy, (d) decreased energy, (f) difficulty concentrating, (g) feelings of excessive guilt or worthlessness, and/or (h) recurrent thoughts of death or suicidal ideation. Depression also leads to impairments in various areas of daily functioning, such as social and work life.

Depression is a common mental health disorder that impacts 7.1% of the adult population in the United States (US Department of Health and Human Services, 2018). Comparatively, prevalence of depression in parents of children with ASD may be as high as 21% (Scherer et al., 2019). A recent meta-analysis of studies between 2004 and 2018 comparing parents of children with and without ASD found that 21% parents of children with ASD met cutoff criteria for moderate depression compared to only 9% of parents of children without any intellectual and development disabilities (Hedge's g = 0.57; 95% CI: 0.25-0.89; Scherer et al., 2019). Similarly, Beeber et al. (2017) identified mothers whose child participates in early intervention services as at risk for depression. In the study, 8% of mothers met criteria for current major depressive

episode and 44% for a past episode. Critically, 26% of the mothers in the sample identified having suicidal ideations in the past month. Thus, depression and its effects are of critical concern for parents of children with ASD and society overall. In sum, parents of children with ASD are more susceptible to the effects of depression, including impairments in social and occupational functioning, and feelings of hopelessness.

Depression impacts multiple areas of functioning such as that of the brain, body, and relationships. Depression is associated with impairments in both visual and verbal memory performance, executive function, and attention (Gorwood et al., 2008; Woo et al., 2016). Individuals with current and partially remitted major depressive disorder performed poorer in terms of neurocognitive functioning (Frodl et al., 2008). Related, cognitive impairments are linked with occupational impairments in individuals with depression (Woo et al., 2016). The effects of depression on a person's ability to think, focus, and remember make work challenging. Mood disorders such as depression result in loss of productivity and high rates of missing work days (Kessler et al., 2006). Therefore, depression may exacerbate the challenges that parents with ASD experience.

Parents with depression may exhibit more withdrawn and harsh parenting behaviors (Vreeland et al., 2019). Consequently, links between depression and parent-child relationships exist. Depression severity and chronicity in mothers predicted the child's externalized and internalized behaviors (O'Connor et al., 2017). Children whose mothers had more severe depression symptoms or had previous and recurrent depressive episodes had more behavioral and mental health challenges, such as depression themselves. Related, adolescents with parents that reported depressive symptoms perceived less parent-adolescent support ($b = -0.97$, $p = .003$; Kim et al., 2015). Thus, symptoms of depression make parenting more challenging, resulting in

disrupted parent-child relationships and attenuated child outcomes. Within the ASD literature, research identified depression in parents of children with ASD as a mediator on the relationship between child behaviors and family functioning. Higher rates of depressive symptoms were associated with more child behavior problems which, in turn, related to decreased family functioning (Jellett et al., 2015). Depression impacts parents and the family system, especially within a family that includes a child with ASD. Thus, the present study aims to examine the relationship between depressive symptoms in parents and family relationship hope.

In sum, parents of children with ASD experience additional demands of their time, finances, and management of their child's symptoms or behaviors. As a result, parents of children with ASD experience increased rates of physical and mental health concerns, especially depression. Therefore, a family-stress model is an appropriate framework for further examination of stress, adjustment, and parental mental health in parents of children with ASD.

Parent Hope

Hope is an emerging construct in the ASD literature with implications for parental mental health. Parents of children with ASD, report less hope than parents of children without disabilities or with other disabilities (Manor-Binyamini & Nator, 2016; Ogston et al., 2011). Therefore, an increased understanding of hope among parents of children with ASD is needed. Snyder's Hope Theory (Snyder et al., 1991) and related instruments (Synder, 2002) are prevalent in ASD hope-related research (e.g., Einav et al., 2012; Lloyd & Hastings, 2009; Manor-Binyamini & Nator, 2016; Ogston et al., 2011; Shenaar-Golan, 2017).

Snyder (2002), a pioneer of hope research, theorized that hope was a way of thinking rather than an emotion. He and his colleagues defined hope as the desire to accomplish a goal and that exists in two forms– (a) *pathways hope* or the plans one creates to meet goals and (b)

agency hope or the belief that one can successfully use the derived pathway to accomplish the goal (Snyder et al., 1991). Snyder theorized that individuals learned pathways and agency thinking throughout childhood. Individuals who experience low hope did not learn hopeful ways of thinking as a child. Snyder's model of hope sequentializes hope as a 'goal pursuit' (for review, see Snyder, 2002). Goal pursuits are linked to what Snyder called an emotion set, or a group of moods that sets an affective tone to a goal pursuit process. These emotion sets, Snyder posited and later supported through research (e.g., Snyder et al., 1991), that those with high hope experienced success with goals in the past and thus feel happy, friendly, and confident about future goals. Conversely, individuals with low hope experienced failure with goals in the past and thus feel passive and negative about future goals. Snyder described emotions and their effects on the goal pursuit as intertwined, which shape one's hopefulness about future goals.

Additionally, Snyder (2002) identified the role of stressors to one's goal pursuit as viewed by individuals in one of two ways, (a) a derailment leading to negative emotions, or (b) a challenge meant to be overcome. Hope, in this instant, is critical to how a person will respond to the continued pursuit of their goal. When a person achieves, or fails to achieve, their goal, resulting emotions will influence their hope and, thus, their emotional set for future goal pursuits. Therefore, hope, as theorized by Snyder, relates to the perception of the achievability of a goal and to a person's emotional experience. Thus, the present study examined the relationship between hope and an emotional set (i.e., depression) in the context of family in parents of children with ASD.

Current research supports Snyder's theory of hope within families that include a child with ASD. In ASD specific populations, agency hope is associated with increased subjective well-being (Shenaar-Golan, 2017) and positive affect (Lloyd & Hastings, 2009). Therefore, a

parent's belief in their ability to meet their goals is important in their overall well-being. Related, both agency and pathways hope predicted depression in mothers, and agency hope predicted depression and anxiety in fathers (Lloyd & Hastings, 2009). Thus, hope is linked with mental health of parents of children with ASD. Furthermore, the DSM-5 (APA, 2013) includes hopelessness as a symptom in the diagnostic criteria for major depressive disorder. Evidence suggests that the link between hope and depression in parents of children with ASD may be mediated by family support (Ekas et al., 2016). Ekas et al. examined the relationships among hope, social support, and depressive symptoms in mothers of children with ASD ($N = 94$) through serial mediation models. Results indicated an indirect effect between hope agency and depression symptoms through family support and loneliness ($b = -0.07$, SE = 0.04, 95% CI [-0.21, -0.03]). Hope agency had a positive association with family support ($b = 0.30$, SE = 0.08, $p < 0.001$), which had a negative association with loneliness ($b = -0.85$, SE = 0.29, $p < 0.01$). Loneliness, in turn, had a positive association with depressive symptoms ($b = 0.37$, SE = 0.09, $p < 0.001$). More hopeful parents reported greater family support and, in turn, less loneliness and depression. Interestingly, results did not support a direct relationship between hope agency or pathways with depression, suggesting that family support fully mediated the relationship between hope and depression. Thus, a clear link between hope and family exists that may be explained by family relationship hope.

Consequently, conceptualization of hope through family relationships may be important in understanding parental mental health. Similarly, Snyder (2002) believed that one's ability to learn hope relies, in part, on the hopeful and goal-directed thinking of those they are surrounded by, especially family members. Overall, Snyder's (2002) hope theory offers a framework for understanding hope in families that include a child with ASD. However, Snyder's theory and

instruments (Snyder, 2002; Snyder et al., 1991) measure hope in the context of the individual and individual's goals, not in the context of relationships with others or family.

Relationship Hope

Hope offers a strength-based view of understanding parents of children with ASD perceptions. As Snyder (2002) outlined in his hope theory, hope is a thought process of one's perceived ability to plan and carry out a goal that persists despite challenges or stressors. Relationship hope, inspired by Snyder's (2002) hope theory, assesses an individual's belief in the potential of their romantic relationship, and the efficacy they feel that their relationship will be able to survive future challenges, regardless of current relationship satisfaction (Erickson, 2015; Hawkins, et al., 2017). Researchers first aimed to operationalize and measure relationship hope with development of the Relationship Hope Scale (RHS; Erickson, 2015). Initial psychometric testing assessed the RHS as a five-item, seven-point Likert scale using a nationally representative sample of 3,000 married participants (Erickson, 2015). Items examined self-perception through questions such as "I believe we can handle whatever conflicts will arise in the future," and "I'm hopeful that we have the tools we need to fix problems in our relationship now and in the future." Relationship hope strongly correlated with relationship happiness and attitudes about divorce, suggesting an association between hope and family stability. Relationship hope also discriminated between relationally distressed and non-distressed couples (defined as how often the participant thought about divorce) in the sample. Therefore, relationship hope related to psychological well-being and relational stress.

Similarly, Hawkins et al. (2017) used a four-item version of the RHS with economically disadvantaged couples expecting a child together ($N = 182$) attending a relationship education intervention. The study examined the relationship hope in couples before and following the

relationship education intervention (Hawkins et al., 2017). They found a wide range of baseline relationship hope among couples enrolled in the intervention. For a quarter of the couples, both partners' relationship hope fell below one or more standard deviation of the mean. Men reported slightly higher levels of hope than women. Participants experienced increased relationship hope from pre- to post-assessment as couples learned more positive relationship skills. Finally, hope moderated changes in relationship skills, where individuals with the lowest hope benefited most from the intervention in terms of their relationship skill gains. Therefore, hope may be a learnable trait in the way that Snyder (2002) theorized, providing mental health practitioners with a tangible goal in interventions. Unexamined previously in the literature, *family relationship hope* extends initial concepts of relationship hope beyond an intimate partner relationship to account for the family system as whole.

Family Relationship Hope

Family relationship hope refers to one's belief and confidence in their family relationships and the efficacy they feel about the family's ability to overcome challenges (adapted from Erickson, 2015). No published work examines the construct of family relationship hope as measured by the adapted RHS. However, connections exist in the literature between family relationships, resilience factors (e.g., hope, optimism, cohesion), and parent outcomes (Goedeke et al., 2019). For instance, as previously noted, Ekas et al. (2016) found that hope had an indirect effect on depressive symptoms of mothers of children with ASD through family support, which led to decreased loneliness and depressive symptoms. In fact, despite evidence of the importance of social support in this population (e.g., Zaidman-Zait et al., 2018), family support more strongly explained the association between hope and depression than friend support. Similarly, in a recent study, (Goedeke et al., 2019) parents of children with ASD

reported greater perceived support from family members and partners than friends and professionals.

Related, another study found that family support was associated with optimism in mothers of children with ASD, which had an indirect effect, mediated by optimism, on both positive and negative maternal outcomes (Ekas et al., 2010). Family support was as associated with increased optimism ($b = .24. p < .05$) which predicted higher levels of life satisfaction ($b = .43, p < .05$), positive affect ($b = .47, p < .05$), and psychological well-being ($b = .50, p < .05$), as well as lower levels of depression ($b = -.42, p < .05$), negative affect ($b = -.29, p < .05$), and parental stress ($b = -.45, p < .05$). Friend support was associated with increased positive affect ($b = .20, p < .05$), and partner support was associated decreased depression ($b = -.27, p > .05$) and increased life satisfaction ($b = .38, p < .05$) and psychological well-being ($b = .23, p < .05$). However, the impact of family support, through optimism, on all six aspects of maternal outcomes was greater than the direct effects of friend and partner support. Therefore, family support and resilience factors are integral in understanding the presence of both positive and negative outcomes in mothers of children with ASD.

Additionally, researchers examined the impact of social context factors, child factors, and family resilience in White and Latina mothers of children with ASD (Lopez & Magaña, 2018). Results indicated that maternal education, child's verbal ability, mother's optimism and family cohesion predict both perceived family problems related to the child's disability and pessimism about the child's future. Mothers with more education, greater optimism and reported family cohesion, and whose child was verbal reported experiencing fewer family problems (e.g. less time together as a family). Conversely, mothers with less education, lower optimism and reported family cohesion, and whose child was nonverbal reported greater pessimism about their

child's future. Family cohesion was the strongest predictor in both models, suggesting that family resiliency factors play a critical role in family perceptions of the impact of child's disability. Overall, literature supports a strong link between resiliency factors, including hope, and family.

Thus, greater understanding of family relationship hope in parents of children with ASD is needed. To address the deficit in research, the present study examined what factors, as outlined by the Double ABCX model (McCubbin & Patterson, 1983), contribute to family relationship hope, and if family relationship hope differentiates the parents who adapt to the challenges associated with raising a child with ASD and those who do not. With increased understanding of the mechanisms behind and effects of family relationship hope, mental health professionals could develop interventions targeted at increasing family relationship hope.

Predictors of Hope

Pileup Stressors

Parents handle unique stressors related to parenting a child with ASD, discussed previously in this chapter. Some children with ASD exhibit increased aggressive and disruptive behaviors compared to children without ASD (Giovagnoli et al., 2015). Child problem behaviors correlated and predicted physiological responses and mental health in parents of children with ASD (Lovell et al., 2015; Yorke et al., 2018). It is important to note that some studies found no association between child behaviors and negative parental outcomes (Paynter et al., 2013); however, Yorke et al. (2018) completed a meta-analysis of related studies that spanned almost 20 years. The study yielded moderate to strong effect sizes (pooled $r = .25\text{-}.36$; $p < .001$) for the association between child emotional and behavioral problems (internalizing and externalizing) and parental stress and mental health problems (e.g., anxiety, depression, etc.). Additionally, parent-rated impairment of ASD-related symptoms in children significantly predicted hope ($b = $ -

.38, $p < 0.001$) in parents of children with ASD and Down Syndrome (Ogston et al., 2011).

Therefore, child behavior acuity and symptom severity seem important contributors to parental

hope and subsequent mental health. Related, hope and child problem behaviors are associated

with depression (Lloyd & Hastings, 2009). In sum, both hope and child behavior problems

predicted maternal depression and positive affect in mothers of children with intellectual

disabilities. Mothers who reported lower hope and higher child behavior problems experienced

more depressive symptoms and less positive affect. Thus, the negative impact for parent's mental

health and stress from difficult child behaviors indicates that child behaviors add to pileup

stressors for parents of children with ASD.

Parents of children with ASD experience changing parental demands as the child ages.

Research supports differences in how families experience stress during different developmental

periods (McKee et al., 2019). Younger children often engage in more frequent aggressive and

restrictive and repetitive behaviors than adolescents (Esbensen et al., 2009; Kanne & Mazurek,

2011). Older children are less likely to exhibit self-injury, compulsions, rituals or inflexibility,

and restricted interests than younger children. Therefore, parenting demands differ based on the

age of the child. Conversely, level of support from family members and partners appears to

decrease as the child gets older (Goedeke et al., 2019). Finally, parents who had a greater number

of children (including the child with ASD) reported higher levels of parental stress, decreased

relationship quality with their partner, less daily positive experiences (Harper et al., 2013), and

more caregiver demands (Krakovich et al., 2016). Therefore, family relationship hope may relate

to family pileup stressors, especially child variables (i.e., symptom severity, developmental level,

number of children in the home).

New and Existing Resources

Demographic-related, existing resources such as income, relationship status, and education level are well-supported predictors of family and parent outcomes (Hsiao, 2018; Mathew et al., 2019; Zaidman-Zait et al., 2018). Income is consistently positively associated with parental well-being (e.g., García-López et al., 2016, Hsiao, 2018; Zaidman-Zait et al., 2018). Parents with higher family income may be better able to afford ASD-related services and therapies, therefore experiencing less distress related to their ability to provide for their child(ren). Thus, income may offset some of the stressors associated with ASD. However, little research on the impact of income on family relationship hope exists.

Autism specific resources, such as parent support groups and disability waivers (subsidized rates on intervention services throughout the child's life) provide additional support to parents, easing the demands that may exist when trying to provide the best possible resources for a child with ASD (Eskow, et al., 2019; Papageorgiou & Kalyva, 2010). Additionally, relationship-based resources such as social support are well supported by literature as a protective factor against psychological distress (e.g., Alon, 2019, Paynter et al., 2013; Pozo et al, 2014; Zaidman-Zait et al., 2018). Parents of children with ASD who report experiencing more social support experience (a) less stress and depression (Paynter et al., 2013; Zaidman-Zait et al., 2018) and more (b) post-traumatic growth (Alon, 2019), (c) benefit finding (Slattery, et al., 2017) and (d) hope (Ekas et al., 2016). As previously noted, parent's perceived family support impacts the relationship between hope and depression in parents of children with ASD (Ekas et al, 2016). Therefore, the benefit from access to material and relationship-based resources on parental mental health and resilience indicate that income, ASD-specific resources (i.e. disability waivers and support groups), and various forms of social support (i.e. friend and family) add to new and existing resources for parents of children with ASD. Overall, parents of children with

ASD report increased stress, demands of time, and finances associated with challenging behavior and additional needs of raising a child with ASD. As a result, parents report lower social support, more isolation, and greater mental health concerns than parents of children with other or without disabilities (e.g., Caicedo, 2014; Scherer et al., 2019).

Time

The Double ABCX model acknowledges the impact of stressors and resources that persist over time, which may result in chronic strains on the family. For families that include a child with ASD, time may also be a factor related to adjustment and family relationship hope.

Time since diagnosis (TSD) is a relatively common variable in many studies on parents of children with ASD (e.g., Kuhn & Carter, 2016; Milshtein et al., 2010; Yirmiya et al., 2015). TSD predicted self-efficacy ($r = -.25$, $p < .01$) and knowledge of ASD in mothers of children with ASD (Kuhn & Carter, 2016). Parents are likely to obtain and learn more information about ASD over time. TSD did not, however, correlate with psychological stress or depression in mothers of children with ASD (Kuhn & Carter, 2016). Thus, it appears that TSD might help researchers understand maternal self-efficacy, but not outcomes of psychological well-being (e.g., depression, stress). In an initial study by Milshtein et al. (2010), TSD was not associated with baseline parent resolution or acceptance of an ASD diagnosis in child. However, TSD significantly predicted maternal (but not paternal) acceptance/resolution three years later in a follow-up study (Yirmiya et al., 2015). Therefore, TSD may predict parental perception of ASD diagnosis.

Related, García-López et al., (2016) conducted a multilevel model analysis with 120 parent dyads ($N = 240$) of parents of children with ASD. In the initial model TSD predicted parent stress and psychological well-being. However, TSD no longer significantly predicted

well-being once the model accounted for child variables (i.e., ASD severity and aggressive/destructive behavior). TSD showed promise, yet since TSD lost predictive ability after accounting for child variables, other factors should be considered along with TSD. The age at which the child receives the diagnosis may explain the effect of time on the parent's perception, especially family relationship hope.

Parents whose child received an early diagnosis, whereby the child is age three or younger, have expedited access to early intervention services (CDC, 2019), which improves child outcomes and encourages parental involvement in treatment (Zwaigenbaum et al., 2015). Therefore, parents whose child received an early diagnosis have increased access to resources and experience notable gains in their child's development and in turn, may feel more hopeful for their child's and family's future. However, after a review of existing literature, no studies examine the child's age of diagnosis as a factor predictive of parent's feelings of hope. Child age of diagnosis could be critical in understanding the discrepancies in results of TSD studies and caregiver psychological outcomes.

Chapter Summary

The present study explores family relationship hope in parents of children with ASD. Specifically, it aims to identify predictors of family relationship hope and the association between family relationship hope and parent mental health (i.e., symptoms of depression). Parenta of children with ASD unique systemic and mental health challenges. Depression is prevalent among parents (e.g., Scherer et al., 2019), yet not all families experience depression. Resiliency factors such as hope, optimism, and family support are identified strengths within families that include a child with ASD. Understanding resilience factors within a family context may provide a more ecological view of parental well-being. Thus, family relationship hope may

serve as a protective factor against symptoms of depression in this population. Yet, researchers know little about what contributes to family relationship hope. With improved understanding of family relationship hope, counselors and counselor education programs can increase awareness and adjust mental health services provided to parents of children with ASD to better meet their unique needs and strengths. Therefore, the present study utilizes a multivariate regression analyses using the Double ABCX framework to identify predictors of family relationship hope and assess the relationship between family relationship hope and depression in parents of children with ASD. Results demonstrate the applicability of family relationship hope in protecting against depression in parents of children with ASD and thus offers important considerations for counselor training, clinical practice, policy, and research.

Chapter Three

METHODOLOGY

In chapter three I specify the research design, methodology, and procedures of the current investigation. The research design examined the factors that predict family relationship hope based on the tenets of the Double ABCX model (McCubbin & Patterson, 2983). Additionally, the study sought to assess the relationship between family relationship hope and depression among parents of children with Autism Spectrum Disorder (ASD). First, I outline the research design for the present study including sampling methods. Next, I elaborate on the data collection procedures, measures, and variables of the study. Then, I outline the data analysis plan and justify the use of multivariate regression analyses to answer the study research questions. Finally, I discuss ethical considerations of the present study.

Research Design

The present study is a non-experimental, multivariate, and secondary data analysis of a cross-sectional quantitative study that used a convenience sampling approach (McMillan, 2016). Researchers collected the survey data as part of a school-level internally funded grant initiative to foster collaboration between students, faculty, and school centers and institutes. Specifically, the data for the present study reflect a project that aimed to validate a measure of family adjustment in parents of children with ASD previously established with parents of children with varied disabilities and special needs. I served as the student member of the grant collaboration team. Therefore, the present study uses a post-secondary data approach. The university's Institutional Review Board (IRB) approved the original study, and required no further action for the present study.

Research Questions

Research Question 1: What are the psychometric properties of the Family Relationship Hope Scale (FRHS)?

Research Question 2: What post-crisis variables predict the presence of family relationship hope (as measured by the Family Relationship Hope Scale) in parents of children with ASD?

    Null Hypothesis: Factors related to pileup stressors (i.e., child symptom severity, child age, total number of children), new and existing resources (i.e., family income, parent relationship status, social support, use of ASD-specific support group, support from child's school), and time (i.e., time since ASD diagnosis, child age at diagnosis) will not significantly predict family relationship hope.

    Alternative Hypothesis: Factors related to pileup stressors, new and existing resources, and time will significantly predict family relationship hope.

Research Question 2: What is the relationship between family relationship hope and the presence of clinically significant depression (as self-reported on the PHQ-8) in caregivers of children with ASD?

    Null Hypothesis: There is no significant difference between the amount of family relationship hope and the presence of clinically significant depression.

    Alternative Hypothesis A: There is a significant difference between the amount of family relationship hope and the presence of clinically significant depression.

    Alternative Hypothesis B: Participants with higher family relationship hope have lower odds of having clinically significant depression.

Sampling

Inclusion criteria required that participants be (a) at least 18 years of age and (b) a primary caregiver of a child formally diagnosed with ASD. During data collection, which occurred from November, 2018 to May, 2019, 253 individuals agreed to participate in the study. However, 56 of those individuals exited the survey prior to completing any items and one participant who did not meet criteria and were thus excluded from the study, resulting in 196 total participants.

The anonymous nature of the data collection combined with the multi-organizational recruitment partnerships made response rate challenging to accurately capture. Moreover, some organizations did not respond to researcher requests regarding total number of members who received the recruitment materials. The research team utilized convenience sampling, as research with parents of children with ASD report low response rates (Becerra et al., 2017). Becerra et al. (2017) experienced an overall response rate of 13% after contacting over 9,000 parents of children with ASD. In their study, active recruitment utilizing more staff and intensive follow-up yielded a response rate of about 23%, whereas traditional, passive recruitment strategies yielded 7-15% response rate. The study researchers utilized passive recruitment strategies due to limited resources, including time, staff, and access to ASD-related events. Random sampling, which would allow for more generalizability and increased methodological rigor (McMillan, 2016), did not appear feasible for the desired sample size for the original study.

I used G*Power 3 software (Faul et al., 2007) to determine the sample size required for sufficient power for both regression models. Power analysis for multiple hierarchical regression requires estimations of effect size, alpha (as an indicator of allowable Type I error), and number of predictors (Faul et al., 2007; Hancock et al., 2019). The number of predictors in the HLR was

determined by the correlation analysis. Twelve variables served as predictors in the full HLR, three-step, model. Therefore, I used 12 parameters to estimate the required sample size as to be more conservative since required sample size increases with the number of parameters (Hancock et al., 2019). According to the G*Power analysis, a sample size of 127 participants is required to have sufficient statistical power of .80 at an alpha of .05 (α = .05) and medium effect size (f^2 = 0.15). Similar research on the predictors of hope in parents of children with ASD and Down Syndrome found a medium to large effect size (R^2 = 0.23; f^2 = 0.30; Cohen, 1988; Ogston et al., 2011). Thus, a medium effect size also provides a conservative estimate. I conducted a similar power analysis for the logistical regression. According to G*Power analysis and guidelines established by Lipsey and Wilson (2001), a sample size of 166 participants is required to have sufficient statistical power of .80 at an alpha of .05 05 (α = .05) and medium effect size (odds ratio = 1.72), a two-tailed test, and an estimation of a medium effect size for other covariates in the model (R^2 = .15). A medium effect size for the covariates included in the model (i.e., participant sex, relationship status, education, employment, race) is appropriate due to the significant correlations with depression and the covariates (Kroenke et al., 2009).

Data Collection

The research team used REDCap (Research Electronic Data Capture; Harris et al., 2009), a secure, online, research database that allowed for anonymous data collection (without attached IP addresses) to collect the data. The research team distributed the study information to ASD-related organizations across the east coast of the United States. Some of the organizations posted the study flyer to their social media pages (i.e., Facebook). Recruitment flyers and emails contained a link that directed potential participants to a study information page that contained information about the purpose, benefits, risks, and opportunity for compensation after

participation in the study. The information page directed participants to follow a link to the survey if they consented to participation. The survey contained 109 total items. See Appendix A for survey materials (i.e., information page, survey items). On the survey completion page, directions for compensation directed participants to a second and optional survey where participants input university required, identifiable information that researchers used to mail five-dollar Walmart gift-cards as compensation for participation in the study. Databases containing participant survey responses and identifiable information were separate to ensure anonymity of responses provided to survey items.

Measures

Participants completed several instruments via the online survey including: (a) a researcher-developed parent and child demographic form, (b) a researcher-developed child ASD-symptom severity scale based on the diagnostic criteria of the DSM 5 (APA, 2013), (c) the *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet et al., 1988), (d) the family relationship hope scale (FRHS), a researcher-revised version of the *Relationship Hope Scale* (Erickon, 2015), and (e) the *Patient Health Questionnaire-8* (PHQ-8; Kroenke et al., 2001).

Demographic Questionnaire

The demographic questionnaire contained several items relevant to the present study including information about the parent: race, ethnicity, level of education, employment status, household income, relationship status, number of children, number of children with ASD, informal social support systems, and relationship to the child(ren) with ASD, as well as information about the child: time since ASD diagnosis and the child(ren)'s current age. Researchers used federal reporting guidelines regarding identification of race and ethnicity. Options for race included: American Indian/Alaska Native, Asian, Black/African American,

Native Hawaiian/Other Pacific Islander, White, or Other. The option for ethnicity included

Hispanic or Non-Hispanic.

Child Symptom Severity Scale

The research team created the *Child Symptom Severity Scale* (CSS) based on diagnostic

criteria for Autism Spectrum Disorder from the DSM-5 (APA, 2013). Current autism severity

measures are often expensive, long, and require direct observation by a trained professional

(Reszka et al., 2014). Thus, due to the cost- and time-prohibitive nature of existing symptom

severity measures, we developed a short, three-item instrument to measure the intensity of

symptoms related to DSM-5 diagnostic criteria for ASD (APA, 2013). ASD is characterized by

deficits with social communication and restricted and repetitive behaviors (APA, 2013).

Therefore, the CSS measures the child's restricted/repetitive behaviors, communication, and

aggression. While not specifically noted as a core ASD symptom, children with ASD may also

exhibit aggressive behaviors (e.g., kicking, hitting, pinching) which may contribute to parent

challenges associated with ASD (e.g., Giovagnoli et al., 2015; Wayment et al., 2019).

Participants identified their agreement with items regarding their child's behavior (i.e.,

aggression, restricted/repetitive behaviors, communication) in the past 30 days on a six-point

Likert scale ranging from "*Strongly Disagree*" to "*Strongly Agree*." The summed scores of the

three items represented the overall child symptom severity score. Thus, scores ranged from three

to 18, with lower scores indicating less severity of ASD-related symptoms in the past 30 days.

Multidimensional Scale of Perceived Social Support

The *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet et al., 1988),

examined the participant-reported level of support received by family members, friends, and

significant others. The MSPSS contains 12-items that comprise three subscales of social support

(i.e., family, friends, significant others). Participants reported their level of agreement to the statements on a seven-point Likert scale ranging from one (*very strongly disagree*) to seven (*very strongly agree*) with four indicating neutral response, or neither agreement nor disagreement. The MSPSS includes items such as "my family tries to help me" (i.e., family support), "there is a special person with whom I can share my joins and sorrows" (i.e., significant other support), and "I can count on my friends when things go wrong" (i.e., friend support).

Zimet et al. (1990) conducted a confirmatory factor analysis and subscale validity testing on the MSPSS in a diverse sample which contained three sub-samples: (a) pre-partum mothers ($N = 265$), (b) adolescents ($N = 74$), and (c) pediatric residents ($N = 55$). Results of the confirmatory factor analysis confirmed a three-factor structure with strong factor loadings for items on all three subscales (friend subscale =.87-.89), family subscale (.74-.85), significant other subscale (.72-.88). Additionally, the MSPSS exhibited good internal reliability across all three participant subgroups. For instance, Cronbach's alphas for pre-partum mothers, as they most closely relate to the current study's sample, were: family subscale = 0.90, friend subscale = 0.94, significant other subscale = 0.90, and total score = 0.92. The MSPSS exhibited strong subscale validity for both the significant other and family subscales. Zimet et al. (1990) assessed the significant other subscale validity using the pediatric resident sub-sample. Married pediatric resident participants reported significantly higher levels on the significant other subscale than single pediatric residents. No other subscales varied based on marital status. The MSPSS also showed strong subscale validity for the Family subscale. Zimet et al. assessed the Family subscale validity using the adolescent sub-sample. Adolescents who reported high frequency of sharing concerns with their mother also reported higher levels of the family subscale. No other

subscales varied based on frequency of sharing concerns (Zimet et al., 1990). Results suggest

that the MSPSS can differentiate between friend, family, and significant other support.

The MSPSS also shows strong internal consistency among parents of children with ASD.

In a study with mothers of children with ASD and mothers of children with Down Syndrome

(Alon, 2019), Cronbach's alpha for the MSPSS family, friend, significant other, and total scales

indicated strong internal reliability ($\alpha = 0.89, 0.91, 0.80, 0.91$ respectively). Another study on

parents of children with ASD in early intervention services (Paynter et al., 2013) reported a

Cronbach's alpha of 0.96 for the total MSPSS score. Overall, the MSPSS is a psychometrically

sound instrument to assess social support in broad range of populations, including parents of

children with ASD.

Family Relationship Hope Scale

The *Family Relationship Hope Scale* (FRHS) is the adapted version of the Relationship

Hope Scale (RHS). The RHS is a four-item measure of couple relationship potential, change and

growth (Erickson, 2015); the study used a modified version of the RHS to examine hope for

family relationships rather than the hope associated with an intimate partner relationship.

Erickson (2015) first assessed the psychometric properties of the RHS in a nationally

representative sample ($N = 3,000$) of adults in a romantic relationship. The original RHS

instrument contained five items: (a) "I believe we can handle whatever conflicts will arise in the

future," (b) "I am very confident when I think of our future together," (c) "I'm hopeful that we

can make our relationship work," (d) "I'm hopeful that we have the tools we need to fix problems

in our relationship now and in the future," (e) "I feel like our relationship can survive what life

throws at us." Answers ranged on an eight-point Likert scale from "*Strongly Disagree*" to

"*Strongly Agree.*" Exploratory factor analysis showed high factor loadings (.816 or higher) for

the five items on one factor. Eigenvalues supported single factor loading, which explained 81%

of the variance. Cronbach's alpha for the five item scale indicated high internal reliability (α =

.942). Next, confirmatory factor analysis identified the RHS as a unidimensional instrument as

all five items loaded strongly onto one factor (.778 or higher) and exhibited good model fit

(RMSEA = .061, CFI = .998, TLI = .992). Analysis of variance found that RHS scores

significantly differed based on sex; men reported higher relationship hope than women. RHS

scores also differed based on number of marriages; individuals in first marriages reported higher

relationship hope that individuals in their second (or higher) marriage. Results of a multiple

regression found that race, education, and income level were not significant predictors of

relationship hope, but relationship happiness, first/second marriages, and age were significant

predictors. Overall, the five-item RHS exhibited good psychometric properties including strong

factor loadings, good model fit, and promising convergent and discriminant validity (albeit,

measures for convergent and discriminant validity, such as relationship happiness were

researcher-made and did not have psychometric properties reported).

 Hawkins et al. (2017) assessed the effect of relationship education on relationship hope

with the RHS in couples expecting a child. The study used a four-item, four-point Likert scale

version of the RHS that researchers adapted for the specific participant relationship type [i.e.,

couples expecting a child] for the study. Items included: (a) "You believe you and your

mother/father of the baby can handle whatever conflicts will arise in the future," (b) "You are

hopeful that you and mother/father of the baby can make your relationship work, (c) "You

believe that you and mother/father of the baby possess the tools you need to fix problems in your

relationship now and in the future, (d) "You feel like your relationship can survive what life

throws at you." Answers ranged from zero, "*Strongly Disagree*" to three, "*Strongly Agree.*"

Confirmatory factor analysis supported relatively good model fit ($\chi^2(703) = 1148.70$, $p < .01$, CFI = .94, TLI = .94, RMSEA = .06). Hawkins et al. did not specify individual factor loadings for each item. Additionally, McDonald's omega measured internal reliability at pretest and posttest ($\omega = .90$-$.94$). Overall, the four-item, four-point Likert scale appears psychometrically sound. Researchers made the empirical determination to remove one item from the original RHS (Erickson, 2015) for the adapted version administered in the Hawkins et al., (2017) study, as the four item scale worked better in the study model than the five item scale (A. Hawkins, personal communication, November, 25, 2019).

The present study examined a version of the RHS adapted to focus on hope for one's family, rather than hope specific to an intimate partner relationship (Erickson, 2015) or hope specific to a co-parent (Hawkins et al., 2017), thus here forward referred to as the Family Relationship Hope Scale (FRHS). We used the four-item version of the RHS used in the study by Hawkins et al. (2017), yet retained first-person voice (e.g., "I feel" instead of "you feel") in the items. Wording changes shifted the language from "partner" or "mother/father of child" to "family" (e.g., 'I feel like my family can survive what life throws at us'). Responses for the modified RHS include a six-point Likert scale agreement from one "*Strongly Disagree*" to six "*Strongly Agree.*" Researchers used a six-point Likert scale for the adapted RHS as a 6-point Likert scale is more likely to adhere to assumption of normality than a 4-point Likert scale (Leung, 2011), and increases the sensitivity and variability of an instrument (McMillan, 2016). We chose an even-point Likert scale for various reasons. Research indicates that an odd numbered Likert scale, which allows for a middle (sometimes labeled 'neutral') response is inappropriate and confounds the measure responses (Dalal et al., 2014). Additionally, an odd-

numbered Likert scale presents a response set threat to validity, as participants tend to pick the same response (e.g., 'neutral') for all items (McMillan, 2016).

We chose to modify the RHS to the FRHS to be able to include parents who may report no current romantic partner or intimate relationship. We made this decision due to the high rate of divorce among parents of children with ASD (e.g., Hartley et al., 2010) and general increase in single-parent homes in the United States (United States' Census Bureau, 2018). The FRHS served as a measure for family relationship hope, which researchers defined, consistent with prior theory and research with the RHS, as one's optimism and confidence in the future of their family. In the current investigation, I conducted an exploratory factor analysis on the FRHS with the study sample to determine validity of the items and omega reliability for the internal consistency of the FRHS.

Patient Health Questionnaire-8

The *Patient Health Questionnaire-8* (PHQ-8; Kroenke & Spitzer, 2002) examined the presence of depressive symptoms. The PHQ-8 contains eight-items that participants answer on a four-point Likert scale. Participants provided the frequency in which they experienced depression symptoms in the past two weeks. Responses ranged from zero, "Not at all" to three, "Nearly every day" for prompts such as "Little interest or pleasure in doing things." Total scores range from zero to 24, and a score greater or equal to 10 indicated clinically significant depression (Kroenke et al., 2001). The PHQ-8 is a brief version of the PHQ-9, as it omits the ninth item, "Thoughts that you would be better off dead or of hurting yourself." In concurrence with previous studies (e.g., Kroenke et al., 2009), we excluded the item on suicidal ideation and self-harm due to the sensitive nature of the question and anonymity of the study, which prevents researchers from providing adequate support to a participant with a highly affirmative response

to the item. Previous studies note that the ninth item is the least frequently endorsed in the PHQ-9 (e.g. Huang et al., 2006). Additionally, when researchers used the PHQ-8, the cut off score of 10 or more continued to indicate presence of clinically significant depression (Kroenke et al., 2009). Thus, the research supports the fidelity of the eight item PHQ as an adequate depression assessment.

The PHQ-8 exhibited excellent psychometric properties (Kroenke et al., 2001) including high internal reliability ($\alpha = .89$) and test-retest reliability (.84) in the original sample ($N = 6,000$) of primary care and obstetrics-gynecology patients. Additionally, criterion validity suggested a strong relationship between scores of 10 or higher and presence of depression. A score of 10 accounted for 88% of the participants diagnosed by a mental health professional with major depressive disorder. Finally, the PHQ-8 demonstrated strong construct and external validity (see Kroenke et al., 2001 for detail), as well as good psychometric properties among a racially and ethnically diverse sample (Huang et al., 2006). The PHQ-9 also exhibited great internal reliability in a sample ($N = 110$) of parents of children with disabilities ($\alpha = .85$). Therefore, the PHQ-8 demonstrates generalizability across various populations and is an appropriate assessment to measure depression in parents of children with ASD.

Variables

Variable selection was theory driven based upon prior research and literature. The following section outlines the nature of the variables I used in the preliminary and primary analysis.

Dependent Variables

Family Relationship Hope. Family relationship hope scores are a continuous variable. I calculated scores from the FRHS as specified by Erickson (2015), summed and divided by four to receive the mean score for each participant.

Depression. Results of the PHQ-8 served as a dichotomous variable, for it is the outcome variable in a binary logistic regression. Since the purpose of the study is to determine the likelihood of clinically significant depression, the variance of depression symptoms is not necessary. PHQ-8 scores ranging from zero to nine identified no presence of depression (0 = no depression) and scores 10 or higher identified the presence of depression (1 = depression). Dichotomous coding in this manner is consistent with previous research and is psychometrically valid (e.g. Kroenke et al., 2001; Kroenke et al., 2009).

Independent Variables

Participant Demographics. Participant demographics included: (a) sex, (b) race, (c) ethnicity, (d) education, (e) employment status, and (f) relationship to child. Participant sex was measured as a dichotomous variable (0 = male, 1 = female). Participant race was measured as a categorical variable (1 = American Indian/Alaska Native, 2 = Asian, 3 = Black/African American, 4 = Native Hawaiian/Other Pacific Islander, 5 = White, or 6 = Other Race). Participant ethnicity was measured as a dichotomous (0 = Non-Hispanic, 1 = Hispanic). Participant education was measured as a categorical variable (1 = no degree or diploma earned, 2 = high school diploma/GED, 3 = vocational/technical certification, 4 = associate's degree, 5 = bachelor's degree, 6 = master's degree/advance degree, 7 = other). Participant employment status was measured as a categorical variable (1 = full-time, 2 = part-time, 3 = student, 4 = retired, 5 = disabled, 6 = unemployed). Finally, relationship to child was measured as a categorical variable

(1 = biological parent, 2 = foster or adoptive parent, 3 = grandparent, 4 = extended family member, 5 = other).

New and Existing Resources. Variables associated with a family's new and existing resources included: (a) family income, (b) parent relationship status, (c) social support from significant other, friends, and family (as measured by the MSPSS subscales), (d) use of ASD-specific support group, and (e) support from child's school. Family income was measured as a continuous variable created from participant response to item asking for family income. Participants indicated if amount of family income was "per week," "per month," or "per year." The present study variable was calculated to indicate participant annual family income. Relationship status was measured as a categorical variable (1 = single, never married, 2 = committed relationship (not married), 3 = engaged, 4 = married, 5 = separated, 6 = divorced, 7 = widowed). The MSPSS subscales (significant other [MSPSS SO], friend [MSPSS FRI] and family [MSPSS FAM]) represented three separate continuous variables for social support. I centered each MSPSS subscale total score at the mean to provide a more logical interpretation of the results. Support group was a dichotomous variable (1 = yes, 0 = no) created from responses to the item "Are you currently involved in any parent/caregiver support groups?" School support was a dichotomous variable (1 = yes, 0 = no) created from affirmative responses to the check box item "Where do you get informal support?" where "My child's school" was listed as a possible response. Addition possible response for the informal support item included in the survey but not used in the present study were: the participants' spouse/partner, parents, extended family members, or friends of the participant or participants' spouse/partner, older children, other parents, neighbors, co-workers, parent group members, social groups/clubs, church members/minister, ASD specific group, or other.

Pileup Stressors. Variables associated with pileup stressors included: (a) child symptom severity, (b) child age, and (c) total number of children. The child symptom severity items were summed to represent the continuous variable for child symptom severity. I used dummy variables to convert the reported academic grades of a child to categorical variables to represent child age based on developmental stage (i.e., early childhood, childhood, pre-adolescence, adolescence, adulthood). Children who are reportedly in pre-kindergarten and kindergarten represented the "early childhood" category (early childhood = 0), Children who are reportedly in grades one through five represented the "childhood" category (childhood = 1). Children who are reportedly in grades six through eight represented the "pre-adolescence" category (preteen = 2). Children who are reportedly in grades nine through 12 represented the "adolescence" category ("teen" = 3). Children who are reported not in school due and were 18 or older represented the "adulthood" category (adult = 4). Categorization by grade level allowed for differentiation of family relationship hope across different transitionary stages of the child's life. Previous studies reported mixed results regarding parent outcomes based on child's age as a continuous variable (Benson, 2006; Cohrs & Leslie, 2017; Pozo et al., 2014). This may be due to the ebb and flow of demands through different stages of child development (e.g. early childhood versus adolescence). Finally, the total number of children in the household was a discrete numerical variable which ranged from one (minimum) to 6 (maximum).

Time. Variables associated with time include: (a) time since diagnosis and (b) age of diagnosis. The child with ASD's time since diagnosis was a continuous variable measured in months. Participants indicated the amount of time that has passed since each child with ASD received their diagnosis in years and months. For participants who reported multiple children with ASD, the time since diagnosis of the first child to be diagnosed with ASD was used in the

model. The child with ASD's age of diagnosis was a continuous variable calculated by subtracting time since diagnosis from the child's present age. For participant who reported multiple children with ASD, the age of diagnosis of the first child to be diagnosed with ASD was be used in the model.

<div align="center">**Data Analysis Plan**</div>

The following section provides an overview of data cleaning, assumptions testing, and data analyses for the current study. Preliminary analysis included a bivariate correlational analysis of all variables to examine collinearity. To answer the research questions, primary analysis included (RQ1) an EFA and CFA to examine the psychometric properties of the FRHS, (RQ2) a hierarchical regression to determine the predictors of family relationship hope, and (RQ3) a logistic regression to examine the likelihood of clinically significant depression based on levels of family relationship hope. Computing software for analysis procedures included Mplus Version 8 (Muthén & Muthén, 2017) and Stata 14.2. (StataCorp., 2015)

Data Cleaning and Assumptions

Data cleaning consisted of determining patterns of missingness, addressing missing items, and identifying outliers. Missing data is a challenge in data analysis. Generally, less than 5-10% missingness is considered acceptable (Tabachnick & Fidell, 2013). A Little's MCAR test assessed the pattern of missing items in the sample. A non-significant result of Little's MCAR test indicated that missing data shows random patterns and is likely missing completely at random or missing at random (Little, 1988). Data were missing completely at random (MCAR) or missing at random (MAR), thus statistical analysis included multiple imputation to account for missing items. Multiple imputation is a popular method for dealing with missing data in the

social science field (Rubin, 1996). Multiple imputation provides a statistically valid inference of missing data by replacing missing values with multiple iterations of simulated data.

Data collected in the original study resulted in largely unequal demographic groups (e.g., relationship to child, sex, race), therefore Chi-square tests assessed the invariances in depression between categorical groups: (a) relationship to child, (b) participant sex, (c) participant race and (d) participant ethnicity and the dichotomous variable for depression (Meredith, 1993). Analysis of variance (ANOVA) tests assessed the invariances in family relationship hope and the aforementioned categorical groups. Results examined if groups varied significantly based on demographics. Groups did not differ, as shown in chapter four, and the research questions were not adjusted to include analysis of the demographic variable(s).

To identify outliers, I used the standardized deviation method (Brownlee, 2018; Field, 2009). Outlier responses that were two standard deviations above the mean were examined. Participants with such outliers were removed from the dataset until the outlying variables were due to natural variance (Salgado et al., 2016). A series of tests following the HLR models determined if the models violate any assumptions. The Breusch-Pagan/Cook-Weisberg assessed homoscedasticity of residuals to ensure that error variance is homogenous across all values, a non-significant result indicates no problems (Breusch & Pagan, 1979). Non-collinearity was assessed through correlation analysis and examination of variance inflation factors (VIF), where $VIF < 5$ indicate no problem (Daoud, 2017). A link test assessed for specification problems (Pregibon, 1980). Shapiro-Wilk test assessed for normal distribution of residuals; a non-significant result indicating no problems (Hancock, et al., 2019). For the logistic regression, a non-significant linktest assessed for specification errors (Pregibon, 1980). VIF ($VIF < 5$) and tolerance levels (around 1, Daoud, 2017) examined collinearity. Box Tidwell assessed the

assumption of linearity. According to Box and Tidwell (1962) a non-significant result indicates

the assumption is met. Finally, Pregibon's dbeta of 2 or higher indicated any outliers of

parameter estimates (Pregibon, 1981).

Factor Analysis

Exploratory factor analysis (EFA) and Confirmatory Factor Analysis (CFA) examined

the psychometric properties and latent factor(s) present in the FRHS. An EFA is more

appropriate to conduct initially because there is currently minimal empirical support for the

construct of family relationship hope as measured by the FRHS (Hancock et al., 2019).

Furthermore, a CFA was used to confirm the properties and latent factor(s) of the FRHS to

increase confidence in the scale. Researchers seem to have mixed consensus on appropriate

sample size for factor analysis. However, researchers commonly use, at minimum, a one to ten

item to participant ratio (Everitt, 1975; Hogarty et al., 1992). Thus, factor analysis procedures for

the four-item FRHS required a minimum of 40 participants per factor analysis. Therefore, I

randomly split the sample into two individual data sets and used each one for either the EFA or

CFA individually. The study employed Mplus Version 8 software (Muthén & Muthén, 1998-

2017) to conduct the EFA and CFA as it provides output for goodness of model fit, unlike many

other software packages. The relationship between items in social sciences often correlates

(Hancock et al., 2019). The theoretical foundation of the FRHS identifies family relationship

hope as a single factor construct, thus correlations among items are expected. Therefore, the EFA

and CFA included Geomin rotation. Geomin is a form of oblique rotation, which is more

appropriate for the FRHS as it accounts for the correlation that exists between items, whereas an

orthogonal rotation does not (Hancock et al., 2019).

Due to the prior analyses of the RHS (Erickson 2015), I hypothesized that Eigenvalues greater than one suggest a one factor solution. Several fit indices tests examined model goodness-of-fit including Chi-Square test, Confirmatory Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

Researchers interpret good fit indices to include an insignificant Chi-Square test ($p >$ .05), CFI of 0.95 or larger (Schermelleh-Engel & Moosbrugger, 2003), a TFI of 0.95 or larger, a RMSEA less than 0.05 (MacCallum, et al., 1996), and a SRMR less than .08 (Hu & Bentler, 1999). MacCallum recommended that items with low factor loadings (below 0.35; Clark & Watson, 1995) and communality (below .05) be dropped, and model fit indices rerun. The model with the best model fit served as the final scale of the FRHS. McDonald's omega (Dunn, et al., 2014; McDonald, 1999) and Cronbach's alpha determined internal consistency of the FRHS following the EFA. Cronbach's alpha assumes that true score variance in constant across all items, however this is often not the case and measures rarely meet this requirement (Dunn et al., 2014). McDonald's omega, which researchers consider a more sensible index, is an alternative measure that accounts for the variance across items. Additionally, omega is less prone to both over and underestimation of reliability. Therefore, the McDonald's omega ultimately determined the internal consistency of the FRHS.

Bivariate Correlational Analysis

*C*orrelational analysis first examined the relationship between hypothesized variables to develop a parsimonious model for the hierarchical regression. Pearson product-moment *r* correlation measures the association (strength) of the relationship between the continuous variables in the model. I initially planned to used Cohen's (1992) Pearson's *r* effect sizes to

determine weak ($r \leq 0.1$) and high ($r \leq 0.8$) correlations with family relationship hope for

dropping or retaining independent variables. However, justification from the literature supported

the retention of a variable, regardless of correlation with family relationship hope. Once the

model contained all predictors, I removed insignificant predictors to assess a parsimonious

model. The procedure intended to ensure that the final model procures a balance of model

goodness-of-fit and parsimony (i.e., simplicity; Vandelkerckhove, et al., 2015). Overly complex

prediction models often result in poor predictability of the model, as the increasing number of

predictors increases the effect size of the model when the variables used may not be true

predictors—often referred to as noise in research versus the signal. Parsimonious models are

simpler with few but strong predicting variables. Such models are more likely to discriminate

between signal and the noise, consequently resulting in a more efficacious and generalizable

prediction model.

Hierarchical Linear Regression

The purpose of the hierarchical linear regression (HLR) was to answer the first research

question: What predicts the presence of family relationship hope in caregivers of children with

ASD? Hierarchical linear regression steps represented the components of the Double ABCX

model as outlined in chapter two. The outcome variable for the model was family relationship

hope as measured by the FRHS. The model consisted of three steps. The first step of the HLR

represented the 'New and Existing Resources' component of the Double ABCX model.

Predictors included (a) family income, (b) parent relationship status, (c) social support (as

measured by the MSPSS), (d) use of ASD-specific support group, and (e) support from child's

school. The second step of the HLR represented the 'Pileup Stressors' component of the Double

ABCX model. Predictors included (a) child symptom severity, (b) child age, and (c) total number

of children. The final third step represented the 'Time' component of the Double ABCX model. Predictors in the third step included (a) time since diagnosis and (b) age of diagnosis. I used the Adjusted R-squared as the model fit index (MacCallum, et al., 1996). The Adjusted R-squared statistic explains the percent variance in the outcome variable explained by the predictors. Adjusted R-squared accounts for the number of predictors added to the model, whereas R-squared does not. Therefore, a higher Adjusted R-squared indicates a better fitting and parsimonious model. Therefore, after removing non-significant covariates, I reassessed model fit and choose the model with the highest Adjusted R-squared (Vandelkerckhove, et al., 2015).

Logistic Regression

I utilized a logistic regression to answer the second research question: What is the relationship between amount of family relationship hope and presence of symptoms of depression in caregivers of children with ASD? Logistic regression allows for the analysis of binary outcomes by predicting the odds that an outcome will occur, such as presence or absence of clinically significant depression. Odds, however, are difficult to interpret and may not be linear (Hancock et al., 2019). Therefore, the present study also rescaled the outcome by taking the natural logarithm of the odds, resulting in a log odds transformation. Log odds are often considered easier to interpret than odds (Lomax & Hahs-Vaughn, 2013). Findings of the present study report both odds ratios and log odds. The outcome variable of the model was the presence or absence of clinically significant symptoms of depression, as measured by the dichotomous PHQ-8 variable. The main predictor in the model was family relationship hope. Participant demographics including sex, race, education, marital status, and employment status were included as possible confounding variables. Research with the PHQ-8 indicated that individuals who are either female, nonwhite, less educated, unmarried, and unemployed are more prone to

depression (Kroenke et al., 2009). I assessed model fit before and after adding covariates and retain variables that result in good fit and sound sensitivity and specificity. I assessed model fit using a Hosmer-Lemeshow test. Non-statistically significant results indicate good model fit (Hosmer & Lemeshow, 1980). I also examined the sensitivity, the percentage of participants who had clinically significant depression were predicted to have depression by the model, and specificity, the percentage of participants who did not have clinically significant depression and were predicted to not have depression by the model (Parikh et al., 2008). A model high in sensitivity infers that the model adequately categorized the participants who reported clinically significant depression as having depression. However, low sensitivity infers that the model missed participants who indicated having depression and may be overly conservative in predicting depression. A model that is high in specificity likely captures the participants who did not report clinically significant depression as not having depression. However, low specificity indicates false positives. That is, the model may over-predict depression. Therefore, a model with a non-significant Hosmer-Lemeshow test and high sensitivity and specificity will generally be the best fitting model.

Ethical Considerations

The present study is a post-secondary data analysis. The IRB at Virginia Commonwealth University reviewed and approved the data collection and analysis of the original study. The IRB determined that the original study data collection (a) protected the anonymity and confidentiality of participants, (b) ensured voluntary participation in the study, and (c) received informed consent by the participants who acknowledged that the participant could withdrawal from the study at any time without consequence.

For the present study, I took the following actions to address any ethical considerations. First, informed the IRB of the post-secondary nature of the study via public comment on the original IRB application. According to VCU IRB protocol (Virginia Commonwealth University, 2019), since the present study was (a) part of a previously approved study of exempt status, (b) made no changes to research protocol, and (c) is using a de-identified dataset, no IRB action was required as it is no longer consider human-subjects research.

Chapter Summary

The present study examined the factor structure of the FRHS and utilized the Double ABCX model as a framework for understanding family relationship hope as a resilience factor in parents of children with ASD. It also explored the relationship between family relationship hope and clinically significant depression. The chapter includes details of the study research design, data collection, and data analysis plan. Furthermore, it outlines possible ethical considerations and limitations of the study.

Chapter Four

DATA ANALYSIS

In chapter four I provide results from the data cleaning, participant demographics, and research questions of the current study. First, I outline the data cleaning and assumptions testing procedures, specifically how I assessed and addressed missing data, invariances in groups, outliers, and scale reliabilities. Next, I describe participant demographics. In the final portion of the chapter, I provide the results of the statistical analysis for research questions one, two, and three which sought to identify the factor structure and constructs related to the family relationship hope scale and to examine the contribution of family relationship hope for predicting symptoms of depression in parent/caregivers of children with ASD.

Data Cleaning and Assumptions Testing

Data cleaning included assessment of missing items, tests of invariances, examination of outliers and scale reliabilities. Further, I discuss justification regarding the treatment of missing data and data outliers for the various analyses in the present study.

Missing Items

Of the 253 participants who agreed to take the survey, 56 participants did not complete any survey items, including study eligibility criteria (i.e., age, current caregiver of a child with ASD). Additionally, one participant indicated that they were not 18 years or older and thus ineligible for participation. Therefore, I removed the 57 participants who did not indicate eligibility via listwise deletion, which resulted in a final usable sample of 196 participants. While listwise deletion has limitations, such as increased risk for biased estimates in parameters (Allison, 2003), removal of the data was required due to IRB research procedures that outlined participation requirements.

Next, I used Little's Missing Completely At Random (MCAR) test to assess the missing data patterns. Little's MCAR test of all study variables was non-significant ($N = 196$, $\chi^2 = 455.68$, $p = 0.208$) which indicated that missing data could be assumed to be MCAR (Little, 1988; Rubin, 1976). For research question one and subsequent factor analyses, 19 participants did not complete any items on the FRHS (i.e., unit non-response) and were removed via pairwise deletion (see below for details). Additionally, less than 1% ($n = 1$) of participants who completed the FRHS missed one or more items (i.e., item non-response), which as it concerns less than 5% of values for a variable, according to Kline (2016), may not be of significant concern. I therefore retained the participant missing one FRHS item for the factor analysis.

For research question two and subsequent HLR, I used multiple imputation (MI) using multivariate normal regression (mvn) in Stata 14.2 to address missing data (see Table 1) for continuous variables (i.e., social support [MSPSS subscales], income, Child Symptom Severity [CSS], number of children, time since diagnosis [TSD], age of diagnosis) except FRH, the outcome variable (Rubin, 1996). Statisticians often discourage imputation of outcome variables as it estimates values for the dependent variable being examined, which researchers sometimes view as creating factious data (Garison, 2019). Additionally, Stata 14.2 (StataCorp., 2015) currently cannot impute factor variables (categorical variables) using MI estimates. Yet, according to Allison et al. (2005), when data is MCAR, there is no particular benefit to imputation of categorical variables and minimal risk of bias from pairwise deletion. Therefore, for categorical variables in the analyses for research questions two and three I chose not to impute and instead omitted missing observations via pairwise deletion for those variables (i.e., relationship status, support group, school support, child age, participant race, sex, education). For research question three, only one participant was missing a total score for FRH, therefore I

decided to omit the one participant via listwise deletion, as it is a negligible amount of missing

data (Kline, 2016) and not impute for research question two analyses.

Table 1

Missing Values

Variable	Missing	Observed
FRH	20	167
Income	34	153
Relationship Status	7	180
MSPSS SO	22	165
MSPSS FRI	20	167
MSPSS FAM	24	163
Support Group	15	172
CSS	17	170
Child Age	7	180
Total Children	10	177
TSD	14	173
Age of Diagnosis	22	165

Note. MSPSS (SO) = FRHS = Family Relationship Hope Scale. Multidimensional Scale of

Perceived Social Support (significant other subscale). MSPSS (FRI) = Multidimensional Scale

of Perceived Social Support (friend subscale). MSPSS (FAM) = Multidimensional Scale of

Perceived Social Support (family subscale). CSS = Child Symptom Severity scale. TSD = Time

since diagnosis.

According to Bodner (2008) and White et al. (2011), the number of imputations should

match the percent of data missing. In the present study, Stata 14.2 removed 41 observations

(24.5%) from the HLR when all predictors were in the model due to missing data via pairwise

deletion. Therefore, in accordance with Bodner (2008) and White et al. (2011), the multiple

imputation ran with 25 imputations for research question two. I used Fisher's r to z

transformation to calculate Adjusted R^2 estimates from the 25 imputed data sets (Harel, 2009).

Estimates are calculated by taking the squared root of each model's Adjusted R^2, transforming the values from r to z, then averaging the z values and transforming them back into Adjusted R^2. The resulting estimates for Adjusted R^2 are likely underestimated, whereas R^2 estimates are overestimated. Therefore, while the research reports results with Adjusted R^2, Table 13 reports both Fisher's z transformed Adjusted R^2 and R^2, as recommended by Harel (2009).

Test of Invariances

To address unequal representation of demographic groups in the data (e.g., relationship to child, sex, race, ethnicity), I used Chi-square tests to assess the potential invariances in the dichotomous variable (Meredith, 1993) for depression between categorical groups: (a) relationship to child, (b) participant sex, (c) participant race, and (d) participant ethnicity. Chi-squared tests showed no significant differences between the presence of clinically significant depression among participants with different relationships to the child (e.g., biological parent, grandparent, etc.; $\chi2 = 7.24$, $p = .124$), participant sex ($\chi2 = 1.56$, $p = .21$), participant race ($\chi2 = 6.64$, $p = .156$), and participant ethnicity ($\chi2 = 2.58$, $p = .11$). Analysis of variance (ANOVA) tests assessed the invariances in family relationship hope and the demographic groups. Results of the ANOVA indicated no significant differences in amount of family relationship hope among relationship to the child ($F(4, 171) = 0.71$, $p = .59$), participant sex ($F(1, 174) = 0.11$, $p = .75$), participant race ($F(4, 171) = 0.49$, $p = .74$), and participant ethnicity ($F(1, 173) = 0.55$, $p = .46$). As a result, I did not adjust any of the analyses because groups did not significantly differ from one another.

Assumptions Testing

Statistical outliers existed in income ($N = 162$, $M = 144,147.9$, $SD = 266,418$), time since diagnosis (TSD), and age of diagnosis variables. Outliers in the income variable included nine

participants who reported income two standard deviations above the mean. After review of the

data, the outliers appeared to be the result of respondent error, where participants indicated

income "per month" instead of "per year." Since outliers appeared to be due to data entry error

and not as a result of natural variance, the cases of the participants with the nine highest incomes

where removed from the dataset ($M = 1,116,889$, minimum $= 750,000$, maximum $= 1,800,000$).

Therefore, the income variable without outliers was used for the hierarchical linear regression (N

$= 153$, $M = 83,986.71$, $SD = 61,037.79$, minimum $= 0$, maximum $= 420,000$). Outliers in the

TSD variable included 10 participants reporting TSD two standard deviations above the mean.

However, the TSD values appear to be due to natural variance as the outlier participants reported

having older children and were therefore retained in the sample (Salgado et al., 2016). The age of

diagnosis variable indicated eight participants with reported child age at diagnosis two standard

deviations above the mean. Similarly, outliers appeared to be due to natural variance in the

sample and were therefore retained (Salgado et al., 2016).

In the HLR analyses for research question two, I used several tests to examine

assumptions necessary for Ordinary Least Squares (OLS) regressions. In step one for 'New and

Existing Resources' (Model 1), tests of assumptions indicated no problem with

heteroskedasticity (non-significant Breusch-Page hettest p $= .074$), multicollinearity (all VIF $<$

5.00), distribution of residuals (insignificant Shapiro Wilk test; p $= .614$), specification (non-

significant linktest; p $= .949$), and no influential observations (all Cook's distance < 1). In step

two for 'Pileup Stressors' (Model 2), tests of assumptions indicated no problem with

heteroskedasticity (insignificant Breusch-Page hettest $p = .224$), multicollinearity (all VIF $<$

5.00), distribution of residuals (insignificant Shapiro Wilk test; $p = .821$), and no specification

problem (insignificant linktest; $p = .329$). One influential observation (Cook's distance > 1) was

observed, however when removed, the results remained the same. Therefore, the outlier was retained in the model. Finally, in step three for Time (Model 3), tests of assumptions indicated no problem with heteroskedasticity (insignificant Breusch-Page hettest $p = .209$), multicollinearity (all VIF < 5.00), distribution of residuals (insignificant Shapiro Wilk test; $p = .829$), specification (non-significant linktest; $p = .316$), and no influential observations (all Cook's distance < 1). Therefore, the sample data met basic assumptions to suggest acceptability for analysis with OLS regression.

I also used several tests of assumptions to examine acceptability of the data for logistic regression in research question three. For the null logistic regression model, several tests indicated no violations of assumptions. A linktest confirmed that no specification errors were present or important variables omitted (hat^2 $p = .972$). A test of collinearity indicated low VIF = 1.07 and low tolerance levels (depression = 0.93, FRH = 0.91, relationship = 1.02) which supported the assumption of non-collinearity. Box Tidwell tests were non-significant suggesting linearity associations with predictors (FRHS p = .992) Pregibon's dbeta indicated no outliers above dbeta of 2, therefore I took no further action (Pregibon, 1981). For the model with covariates, some violations of assumptions existed in the data. A linktest confirmed that no specification errors were present or important variables omitted (hat^2 $p = .512$). A test of collinearity indicated low VIF (VIF = 1.10) and low tolerance levels (depression = 0.8785, frh = 0.8493, race = 0.9682, employment = 0.8947, sex = 0.9496, education = 0.8943, relationship = 0.9468) which supports the assumption of non-collinearity. Box Tidwell tests were non-significant suggesting the assumption of linearity was met (FRHS $p = .954$, race $p = .862$, employment $p = .769$, education $p = .11$, relationship $p = .203$). Pregibon's dbeta indicated four

outliers above dbeta of 2. When removed from the model there were no difference in results, therefore I chose to retain the outliers in the model (Pregibon, 1981).

Instrument Psychometrics

Table 2 outlines scale means, standard deviations, and minimum and maximum scores. Following data cleaning procedures, I conducted reliability tests for each of the scales used in the study (i.e., PHQ-8, MSPSS subscales, CSS). Reliability of the FRHS is addressed in the following section. Overall, internal reliability of scales used in the present study was good. Statisticians consider a Cronbach's alpha and McDonald's omega above .7 to represent acceptable reliability (Field, 2013). The PHQ-8 ($\alpha = .88$, $\omega = .882$, 95% CI [.847, .909]), MSPSS significant other social support (SO; $\alpha = .916$, $\omega = .921$, 95% CI [.89, .945]), MSPSS friend social support (FRI; $\alpha = .93$, $\omega = .933$, 95% CI [.91, .953]), and MSPSS family social support (FAM; $\alpha = .93$, $\omega = .932$, 95% CI [.907, .951]) all had good internal reliability.

The CSS total score had poor internal reliability ($\alpha = .536$, $\omega = .534$, 95% CI [.42, .758]). However, symptom presentation can differ from person to person along the autism spectrum and we could therefore anticipate low internal reliability for the three items (i.e., aggression, communication, restrictive/repetitive behaviors). Cronbach's alpha measures the internal reliability of a scale that is intended to measure a latent construct (Cohen, 1992; Tavakol & Dennick, 2011). However, we did not develop the CSS to represent a single latent construct of child symptoms, but to identify the parent's reported frequency of ASD associated behaviors and diagnostic criteria pre-established in the DSM-5 (APA, 2013). Measures of internal consistency, such as alpha, assume uni-dimensionality, however, the CSS utilizes three hetero-dimensional items that may not correlate based on a persons' presentation of ASD. Additionally, Cronbach's alpha is likely to underestimate the reliability of instruments with a small number of items

(Graham, 2006; Tavakol & Dennick, 2011). Therefore, I chose to retain the CSS as a measure despite low reported internal reliability of the scale.

Table 2

Scale Scores

Scale	*Mean*	*SD*	Min	Max
MSPSS (Total)	4.92	1.30	1.75	7
MSPSS SO	5.22	1.45	1	7
MSPSS FRI	4.76	1.51	1	7
MSPSS FAM	4.81	1.53	1	7
CSS	11.9	3.45	3	18

Note. MSPSS (SO) = Multidimensional Scale of Perceived Social Support (significant other subscale). MSPSS (FRI) = Multidimensional Scale of Perceived Social Support (friend subscale). MSPSS (FAM) = Multidimensional Scale of Perceived Social Support (family subscale). CSS = Child Symptom Severity scale. FRHS = Family Relationship Hope Scale.

Participant Demographics and Latent Variable Descriptive Statistics

Table 3 outlines participant demographics. Overall, most participants self-identified as a biological parent, female, White, Non-Hispanic, educated, and married. The present sample demographic makeup is similar to most ASD caregiver studies (e.g., Ratto et al., 2017). Participant age varied from 23 to 74-years ($M = 41.04$, $SD = 8.6$). The average reported age of the participant's child with ASD was 126.65 months, or about 10.5 years-old ($n = 179$, minimum = 20 months, maximum = 336 months, $SD = 71.49$).

New and Existing Resources

New and existing resources consisted of family income, relationship status, social support from a significant other, friend, and family (as measured by the MSPSS), participation in an ASD-specific support group, and informal support provided by the child with ASD's school. Descriptive statistics of the income variable are outlined above in the test of assumptions section

due to outliers. With outliers removed, the median income of the sample is $74,400 per year ($N =$ 153, $M = 83,986.71$, $SD = 61,037.79$, minimum = 0, maximum = 420,000). Additionally, MSPSS social support subscale descriptive statistics are also outlined above in Table 2, and relationship status is described in Table 3. In general, participants reported high levels of perceived support from significant others (scores between 5.1 and 7 are considered high support) and moderate levels of support from family and friends (scores between 3.1 and 5 are considered medium support; Zimmet, 1988). For research question two analyses, I opted to use the grand centered mean of MSPSS subscales of social support for more logical interpretation of regression coefficients (Aiken & West, 1991). With regards to formal and informal support, 63 participants (32.14%) reported participation in an ASD-specific support group, while the majority (59.69%, n = 117 participants) did not. Additionally, in the informal support section of the demographic questionnaire, 47 participants (23.98%) checked that they perceived their child's school to be a source of support.

Pileup Stressors

Pileup stressors included child symptom severity (as measured by the CSS), total number of children, and child age. CSS score consisted of the sum of three items of parental agreement for the presence of (a) aggression, (b) difficulties with communication, and (c) restrictive and repetitive behaviors. The average score for aggression was 3.05 ($n = 172$, $SD = 1.78$), communication was 4.26 ($n = 173$, $SD = 1.5$) and restrictive and repetitive behaviors was 4.54 (n = 171, $SD = 1.49$). Table 2 outlines CSS score descriptive statistics. For research question two analyses, I opted to use the grand centered mean of CSS for more logical interpretation of regression coefficients (Aiken & West, 1991). Most (44.9%) participants reported having two children ($n = 186$, $M = 2.02$, minimum = 1, maximum = 6, $SD = 0.97$).

Child age consisted of five categories of development, based on grade in school. Participants reported 42 children (21.43%) in early childhood (Pre-Kindergarten or Kindergarten), 76 children (38.78%) in childhood (first through fifth-grade), 28 children (14.29%) in pre-adolescence (sixth through eighth-grade), 23 children (11.73%) in adolescence (ninth through twelfth-grade), and 20 children (10.2%) in adulthood (post-high school). Seven participants (3.57%) were missing child grade level used for this variable.

Time

Time variables consisted of TSD and age of diagnosis. The average reported TSD (of the first child diagnosed, if multiple) was 70.33 months, or 5 years and 10 months ($n = 173$, minimum = 1 months, maximum = 300 months, $SD = 60.42$). The average age at which the child with ASD (eldest child, if multiple) was diagnosed was 56.24 months, or 4 years and 8 months old ($n = 165$, minimum = 0 months, maximum = 216 months, $SD = 43.3$).

Table 3

Demographic Characteristics

Demographic	Frequency	Percent
Relationship to child		
Biological Parent	179	91.33
Foster or Adoptive Parent	2	1.02
Grandparent	7	3.57
Extended Family Member	3	1.53
Other	2	1.02
Missing	3	1.53
Race		
American Indian/Alaskan Native	2	1.02
Asian	7	3.57
Black/African American	16	8.16
White	160	81.63
Other	5	2.55
Missing	6	3.06

Ethnicity		
Hispanic	26	13.27
Non-Hispanic	163	83.16
Missing	7	3.57
Employment		
Full-time	96	48.98
Part-time	36	18.37
Student	4	2.04
Retired	4	2.04
Disabled	14	7.14
Unemployed	35	17.86
Missing	7	3.57
Education Level		
No degree or diploma earned	1	0.51
High school diploma/GED	30	15.31
Vocational/Technical certification	14	7.14
Associates degree	24	12.24
Bachelor's degree	65	33.16
Master's degree/Advance degree	53	27.04
Other	2	1.02
Missing	7	3.57
Relationship Status		
Single, never married	9	4.59
Committed relationship (not married)	8	4.08
Engaged	2	1.02
Married	148	75.51
Separated	5	2.55
Divorced	16	8.16
Widowed	1	0.51
Missing	7	3.57

Family Relationship Hope

The current study measured family relationship hope via the family relationship hope

scale (FRHS). The FRHS consisted of four items: (1) I believe my family and I can handle

whatever conflicts will arise in the future, (2) I am hopeful that my family and I can make our

relationships work, (3) I believe that my family and I have the tools we need to fix problems in our relationships, (4) I feel like our family relationships can survive what life throws at us. Table 4 outlines the descriptive statistics of each item in the FRHS. The average FRHS score was 4.65 ($SD = 0.91$). The data was slightly skewed to the left, with almost full variability with scores ranging from two to six. Full variability would be from one to six, however no participants indicated a one ("*Strongly Disagree*") for item two. Figure 1 shows the FRHS score distribution among participants and indicates a slight left skew with an increase in frequency for a total score of six.
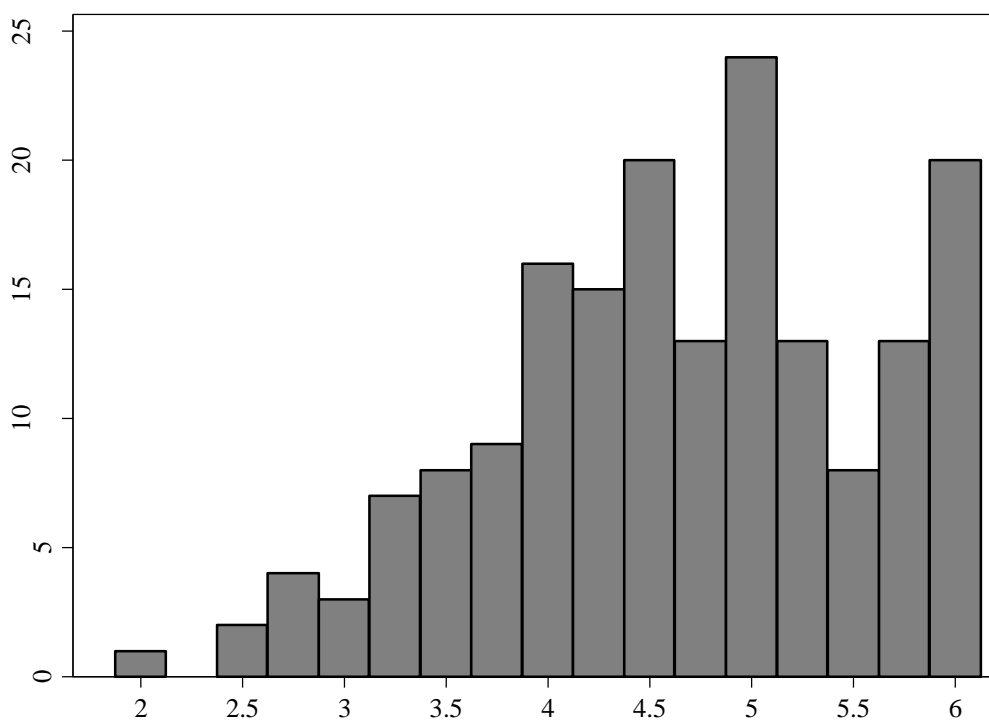
Figure 1

FRHS Score Distribution

Table 4

FRHS Item Descriptive Statistics

Item	Mean(Variance)	Min	Max	Skewness
Item 1	4.84(1.26)	1	6	-0.59
Item 2	5.07(0.79)	2	6	-0.69
Item 3	4.35(1.58)	1	6	-0.53
Item 4	4.7(1.19)	1	6	-0.71

Depression

The current study measured depression via the PHQ-8. The average PHQ-8 score was

9.24 (SD = 5.80, min = 0, max = 24). Participants with a score of nine or less were categorized as

not having depression (n = 89; 52.35%) and participants with a score of ten or higher were

categorized as having clinically significant depression (n = 81, 47.65%).

<div align="center">

Research Question One

</div>

Research question one examined the psychometric properties of the FRHS. To answer the

question, the sample was randomly split to conduct independent exploratory and confirmatory

factor analyses. I split the data using the RANDBETWEEN function in Microsoft Excel and

participants were assigned to the EFA dataset (n = 100) or to the CFA dataset (n = 97).

Demographics for participants in each dataset were similar. Participants included in the EFA

were 83.16% White (n = 79), 7.37% Black (n = 7), 3.16% Asian (n = 3), 1% American

Indian/Alaskan Native (n = 1), and 5.26% Other Race (n = 5). Participants included the CFA

were 85.26% White (n = 81), 9.47% Black (n = 9), 4.21% Asian (n = 4), 1% American

Indian/Alaskan Native (n = 1), and 0% Other (n = 0). In both datasets, 90.63% (n = 87) were

female and 9.38% (n = 9) were male. A one-way ANOVA indicated that there was no significant

difference in FRHS total score between the two randomly split datasets ($F(1, 174)$ = .02; p =

0.88).

Exploratory Factor Analysis

Of the 100 participants in the EFA sample, 13 participants did not complete the FRHS and were therefore not included in the analysis resulting in a total of 87 observations. According to Hogarty et al. (1992), a factor analysis should include five to 20 observations per item. Since the FRHS contains four items, a sample size of 87 is adequate. Additionally, a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.83, which suggested excellent sampling adequacy (Beavers et al., 2013). Similarly, Bartlett's test of sphericity was non-significant ($\chi2(6)$ = 174.85, p < .001). A non-significant Bartlett's test indicates that the data is appropriate for an EFA, as it confirms that linear combinations in the data exist (Beavers et al., 2013). Mplus Version 8 (Muthén & Muthén, 2017 is currently unable to calculate the KMO measure of sampling adequacy or Bartlett's test of sphericity, therefore, I used Stata 14.2 to obtain the aforementioned statistics (StataCorp., 2015).

Prior to analysis, I examined the correlations among FRHS items to ensure the amenability of data to factoring (Hancock et al., 2019). Table 5 is the correlation matrix of FRHS items. Correlations exceed .30, which provides support for the assumption that there is enough commonality among items to run a factor analysis (Beavers et al., 2013; Tabachnick & Fidell, 2001). Common factor analysis includes shared variance in the extraction of factors and assumes that item responses result from an underlying construct (Beavers et al., 2013). Conversely, component analysis includes total variance in the extraction and assumes that item responses have no underlying structural assumptions. Thus, I used common factor analysis as I assumed the FRHS item responses had shared variance and would result in a unidimensional construct. Maximum likelihood estimation (ML) is one of the most common extraction methods of common factor analysis (Beavers et al., 2013). Factor analysis with a ML estimator is an

inferential method, thus it adjusts the solution to best represent population correlation values rather than solely sample values (Hancock et al., 2019). Additionally, analysis with ML provides goodness of fit statistics. Finally, ML assumes that data is normal. The data in the present study was normal, as indicated in Table 6 which shows skewness and kurtosis of FRHS items were within acceptable limits (Field, 2009). Therefore, I utilized a ML estimator for the EFA.

Table 5

FRHS Item Correlation Matrix

	Item 1	Item 2	Item 3	Item 4
Item 1	1			
Item 2	0.587	1		
Item 3	0.615	0.703	1	
Item 4	0.558	0.678	0.719	1

Next, I utilized an EFA with a Geomin oblique rotation to examine the factor structure of the FRHS and account for the anticipated association between variables (Hancock et al., 2019). Oblique rotation in an EFA assumes variance among factors and statisticians often argue oblique rotation is more efficacious than orthogonal rotation (Costello & Osborne, 2005). The analysis also provided FRHS item descriptive statistics (Table 6). Results indicated a single factor structure for the FRHS (i.e., Eigenvalue 1 = 2.95); all Eigenvalues for more than one factor were lower than one (e.g., Eigenvalue of 2 = 0.47). However, according to Cabrera-Nguyen (2010), reliance on Eigenvalues alone is not enough as it may be inaccurate. Therefore, Figure # is a scree plot that supports a single factor structure of the FRHS, yet indicated that a two factor structure may be plausible. However, researchers argue that factors require a minimum of three items per factor (Cabrera-Nguyen, 2010), I elected to maintain a single-factor structure.
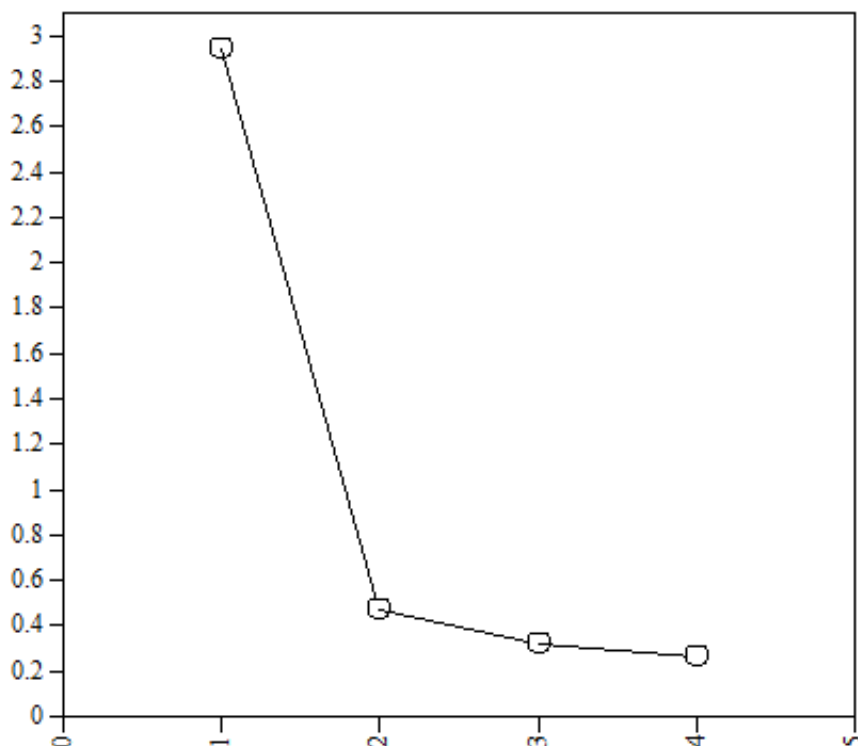
Table 6

Exploratory Factor Analysis FRHS Item Descriptive Statistics

Item	Mean(Variance)	Min	Max	Skewness	Kurtosis
Item 1	4.51(1.34)	2	6	-0.54	-0.35
Item 2	5.10(0.77)	2	6	-0.69	0.14
Item 3	4.30(1.75)	1	6	-0.50	-0.45
Item 4	4.69(1.39)	1	6	-0.86	0.68

Figure 2

Family Relationship Hope Scale Scree Plot

All four items of the FRHS loaded strongly (Matsunaga, 2010) on one factor. Therefore, I retained all four items in the FRHS. Table 7 depicts the pattern coefficients (i.e., loadings) and variances of the observed variables. Variance reported are the estimated residual variances, which are the variances of items after the program accounted for all of the variance in the model.

All estimated residual variances are positive, which indicated an appropriate solution to the model (Flora et al., 2012).

Table 7

FRHS Exploratory Factor Analysis Statistics

Item	Pattern Coefficient	Variance
Item 1	.702	.51
Item 2	.822	.33
Item 3	.871	.24
Item 4	.826	.32

I used several criteria to examine FRHS goodness-of-fit. As I noted in chapter three, an insignificant Chi-Square test, a CFI of 0.95 or higher (Schermelleh-Engel & Moosbrugger, 2003), a TFI of 0.95 or higher, a RMSEA less than 0.05 (MacCallum, et al., 1996), and a SRMR less than .08 (Hu & Bentler, 1999) support good model fit. The FRHS exhibited good model fit ($\chi^2 = 0.42$, $p = 0.81$; RMSEA < 0.001; CFI = 1.00; TLI = 1.03; SRMR = 0.007). McDonald's omega indicated good scale reliability of the FRHS ($\omega = 0.88$, 95% CI [0.833, 0.919]) with 5,000 iterations of bootstrapping (Geldhof, et al., 2014). Omega is a more accurate measure of a scale's internal structure than Cronbach's alpha (Revelle & Zinbarg, 2009). However, Cronbach's alpha ($\alpha = 0.87$) also supported good internal reliability. Overall, the EFA indicated that the FRHS is a unidimensional instrument that loaded strongly on one factor and demonstrated good scale reliability.

Confirmatory Factor Analysis

Of the 96 participants in the second-half of the sample, six participants did not complete the FRHS and were not included in the analysis resulting in a total of 90 observations. Table 8 shows the FRHS item descriptive statistics. I assessed the one-factor solution for the FRHS as

identified by the EFA results. Similar to the EFA, the analysis included a ML estimator and Geomin rotation. Standardized model estimate results suggested high item loadings (see Figure 2; Matsunaga, 2010). The analysis results indicted good model fit ($\chi^2 = 0.53$, $p = 0.77$; RMSEA < 0.001; CFI $= 1.00$; TLI $= 1.03$; SRMR $= 0.01$). Consistent with the EFA findings, both tests yielded strong support for scale internal reliability of the FRHS ($\omega = 0.84$, 95% CI [0.77, 0.885]; $\alpha = 0.83$). Overall, results of research question one supported the hypothesis that the FRHS is a reliable, single factor, four item instrument that measures family relationship hope.
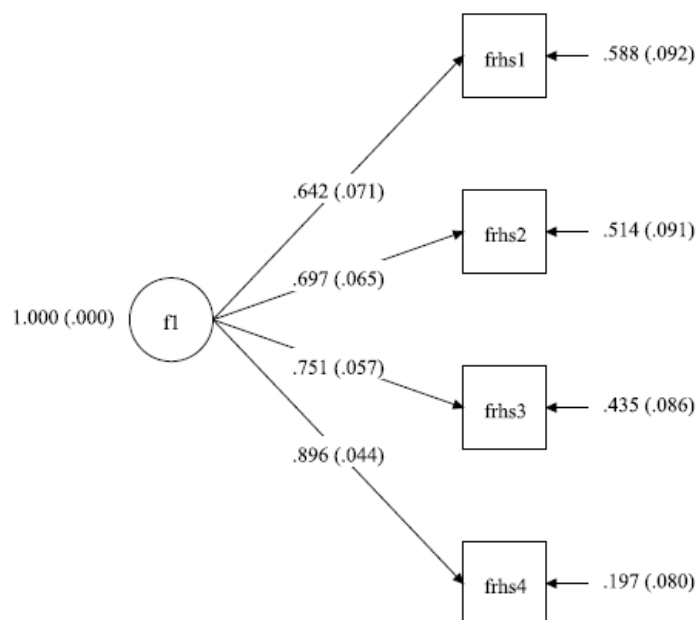
Table 8

Confirmatory Factor Analysis Item Descriptive Statistics

Item	Mean(Variance)	Min	Max	Skewness	Kurtosis
Item 1	4.46(1.16)	1	6	-0.66	0.41
Item 2	5.07(0.80)	2	6	-0.69	0.12
Item 3	4.40(1.40)	1	6	-0.53	-0.06
Item 4	4.71(1.01)	2	6	-0.46	-0.32

Figure 3

Confirmatory Factor Analysis: Family Relationship Hope Scale

Research Question Two

Research Question Two examined possible predictors of family relationship hope (FRH) as theorized by the Double ABCX Model of Family Adjustment (McCubbin & Patterson, 1983). To answer the research question, I used bivariate correlation analysis, analyses of variance, and a hierarchical linear regression to examine the relationship of several variables with FRH.

Correlations

First, I re-examined FRHS without income outliers for the present analysis. Results of the FRHS remained similar to prior analysis with outliers ($n = 167$, $M = 4.66$, $SD = 0.92$, min = 2, max = 6). Bivariate correlations (Table 9) examined the relationship between proposed continuous variables and FRH (as measured by the FRHS). Pearson's correlations indicated that the FRH had medium strength associations with MSPSS subscales for significant other ($r = 0.427$, $p < 0.001$) and friend ($r = 0.35$, $p < 0.001$) and moderately high association with MSPSS family subscale ($r = 0.52$, $p < 0.001$). The next highest correlation with FRH was child age at diagnosis ($r = -0.121$, $p = 0.143$), followed by total number of children ($r = -0.105$, $p = 0.214$), which were low strength and not significant. All other variables correlated with FRH at less than 0.1 (i.e., income, CSS, TSD). All three MSPSS subscales had moderately high correlations with each other. Such correlations may pose a possible threat of multicollinearity. However, similar research differentiated the effects of friend support from family support (Ekas et al., 2016). Therefore, I retained all three subscales in the first step of the HLR, with increased focus on assumptions testing for possible violations of collinearity.

Further analysis of variance examined the relationship between FRH and the categorical variables (i.e., relationship status, school support, support group participation, and child age). Results indicated no significant difference in FRH among relationship status ($F(6, 160) = 0.89$, p

= .512), school support ($F(1, 165) = 0.19$, $p = .666$), support group participation ($F(1, 163) = 0.08$, $p = .779$), or child age ($F(4, 162) = 1.26$, $p = .287$).

With few significant correlations between predictors and FRH, I revised my prior plan to handle the large number of predictors. Due to the limited relationships between variables and FRHS, I chose to retain all initial predictor variables for the HLR, with the expectation that few variables would be significant. While some researchers consider parsimony in model building to be best practice (i.e., Vandelkerckhove, et al., 2015), others (i.e., Braun & Oswald, 2011) emphasize the importance of theory. In the current study, a parsimonious model of predictors that significantly correlated with FRH parses the model to include only sources of social support. Such a model is incongruent with the theoretical foundation of the study, the Double ABCX model (Patterson & McCubbin, 1983). Additionally, Braun and Oswald (2011) found that no one method is superior in assessing importance of predictors in linear regression models and an exploratory approach may be appropriate.

Table 9

Bivariate Correlations

	FRHS	Income	MSPSS (SO)	MSPSS (FRI)	MSPSS (FAM)	CSS	Number of Children	TSD	Age of Diag.
FRHS	1.000								
Income	-0.066	1.000							
MSPSS (SO)	.427***	0.065	1.000						
MSPSS (FRI)	.356***	0.032	.651***	1.000					
MSPSS (FAM)	.569***	0.027	.627***	.576***	1.000				
CSS	0.037	-0.012	-0.660	-0.086	-0.097	1.000			
Number of Children	0.105	0.067	-0.079	-0.165	0.056	.183*	1.000		
TSD	-0.061	0.035	-0.140	-0.013	-1.014	-0.107	0.045	1.000	
Age of Diagnosis	-0.127	0.080	-0.023	-0.183*	-0.100	-0.205*	0.018	-0.072	1.000

Note. p < .05 *. p < .01 **. p < .001 ***. FRHS = Family Relationship Hope Scale. MSPSS (SO) =

Multidimensional Scale of Perceived Social Support (significant other subscale). MSPSS (FRI) =

Multidimensional Scale of Perceived Social Support (friend subscale). MSPSS (FAM) =

Multidimensional Scale of Perceived Social Support (family subscale). TSD = time since diagnosis.

Age of Diag. = age of diagnosis.

Hierarchical Linear Regression

A three stage hierarchical linear regression examined the relationship between family

relationship hope and predictor variables associated with the Double ABCX model including

'New and Existing Resources' (i.e., income, relationship status, significant other support, friend support, family support, presence in support group, support from child's school), 'Pileup Stressors' (i.e., CSS, age of child, total number of children), and Time (i.e., TSD, age of diagnosis). I utilized multiple imputation estimates with 25 imputations for the analysis (Bodner, 2008; White et al., 2001). Tables 2 and 3, along with the participant demographics section above outline the descriptive information of the variables used in the models.

Step One

'New and Existing Resources' (i.e., income, relationship status, significant other support [centered at mean], friend support [centered at mean], family support [centered at mean], presence in support group, and support from child's school) were entered for step one (Table 10, Model 1). The overall model was significant ($n = 165$, $F (12, 149.9) = 5.94$, p $< .001$) and accounted for 27.32% of the adjusted variance in family relationship hope. Only family support, as measured by the MSPSS family subscale, contributed significantly to the model ($B = 0.32$, p $<$ .001). Family relationship hope increased 0.32 points for each one point increase in family support above the mean. However, 'single, never married' relationship status approached significant contribution to the model ($B = 0.52$, $p = .074$), with single participants reporting higher family relationship hope than parents who were married.

Table 10

Hierarchical Linear Regression Model 1

Variable	B	SE B	P	CI (95%)	
Income	-6.86E-7	1.18E-6	.563	-3.03E-6	1.66E-6
Relationship Status					
Single, never married	0.52	0.29	.074	-0.05	1.08
Committed relationship	-0.15	0.31	.633	-0.77	0.47
Engaged	0.04	0.81	.964	-1.56	1.63
Separated	-0.02	0.41	.959	-0.84	0.79

Divorced	0.09	0.23	.696	-0.37	0.55
Widowed	0.33	0.86	.702	-1.36	2.02
MSPSS SO	0.07	0.06	.281	-0.06	0.20
MSPSS FRI	-0.04	0.06	.542	-0.15	0.08
MSPSS FAM	0.32	0.06	.00***	0.21	0.44
Support Group	-0.10	0.14	.485	-0.37	0.17
School Support	-0.03	0.15	.816	-0.32	0.25
_cons	4.72	0.14	.00	4.44	5.00

Note. Reference category: relationship status = married. MSPSS (SO) = Multidimensional Scale of Perceived Social Support (significant other subscale). MSPSS (FRI) = Multidimensional Scale of Perceived Social Support (friend subscale). MSPSS (FAM) = Multidimensional Scale of Perceived Social Support (family subscale).

*p < .05. **p < .01. ***p < .001.

Step Two

The 'Pileup Stressor' variables (CSS [centered at mean], age of child, total number of children) explained an additional 1.4% of the variance (Adjusted R^2 = .287) in the second step (Table 11, Model 2). The model remained significant (n = 165, F (18, 143.9) = 4.53, p < .001). Family support was still a significant contributor to the model (B = 0.31, p < .001). Family relationship hope increased 0.31 points for each one point increase in family support. 'Single, never married' relationship status reached statistical significance in step two (B = 0.60, p = .039).

Table 11

Hierarchical Linear Regression Model 2

Variable	B	SE B	P	CI (95%)	
Income	-6.58E-7	1.18E-6	.578	-3.00E-6	1.68E-6
Relationship Status					
Single, never married	0.60	0.287	.039**	0.03	1.16
Committed relationship	-0.12	0.316	.701	-0.75	0.50
Engaged	0.14	0.818	.869	-1.48	1.75
Separated	-0.21	0.418	.62	-1.03	0.62

Divorced	0.11	0.232	.628	-0.35	0.57
Widowed	0.26	0.851	.759	-1.42	1.94
MSPSS SO	0.08	0.066	.238	-0.05	0.21
MSPSS FRI	-0.02	0.059	.742	-0.14	0.10
MSPSS FAM	0.31	0.061	.00***	0.19	0.43
Support Group	-0.06	0.136	.666	-0.33	0.21
School Support	-0.05	0.148	.737	-0.34	0.24
CSS	0.00	0.020	.829	-0.03	0.04
Child Age					
Childhood	0.14	0.166	.414	-0.19	0.46
Pre-adolescence	-0.02	0.207	.942	-0.42	0.39
Adolescence	0.43	0.245	.084	-0.06	0.91
Adulthood	-0.22	0.234	.342	-0.69	0.24
Total Number of Children	0.11	0.068	.11	-0.03	0.25
_cons	4.42	0.227	.00	3.97	4.87

Reference categories: relationship status = married, child age = early childhood. MSPSS

(SO) = Multidimensional Scale of Perceived Social Support (significant other subscale).

MSPSS (FRI) = Multidimensional Scale of Perceived Social Support (friend subscale).

MSPSS (FAM) = Multidimensional Scale of Perceived Social Support (family subscale).

CSS = Child Symptom Severity Scale.

*p < .05. **p < .01. ***p < .001.

Step Three

In the third step (Table 12, Model 3), 'Time' variables explained an additional 0.8% of

the variance (Adjusted R^2 = .295). The model remained significant (n = 165, F (20, 141.44) =

4.26, p < .001). Family support remained a significant contributor (B = 0.29, p < .001). Family

relationship hope increased 0.29 points for each one point increase in family support.

Relationship status as "Single, never married" was no longer significant, but trending towards

significance (B = 0.55, p = .055), with single participants still reporting higher levels of FRH

than married participants. Child age (high school category) became significant (B = 0.68, p =

.035). Parents of children in high school reported .68 points more family relationship hope than parents of children in early childhood. Finally, age of diagnosis was non-significant but trending at the p < .08 level (*B* = -0.003, *p* = .07). As age of diagnosis decreased, FRH increased.

Table 12

Hierarchical Linear Regression Model 3

Variable	B	SE B	P	CI (95%)	
Income	-4.57E-7	1.18E-6	.7	-2.81E-6	1.89E-6
Relationship Status					
Single, never married	0.55	0.287	.055	-0.01	1.12
Committed relationship	-0.14	0.314	.658	-0.76	0.48
Engaged	0.02	0.842	.977	-1.64	1.69
Separated	-0.21	0.418	.616	-1.04	0.62
Divorced	0.02	0.238	.944	-0.45	0.49
Widowed	0.20	0.880	.816	-1.54	1.95
MSPSS SO	0.10	0.067	.137	-0.03	0.23
MSPSS FRI	-0.03	0.059	.613	-0.15	0.09
MSPSS FAM	0.29	0.061	.00***	0.17	0.41
Support Group	-0.07	0.136	.593	-0.34	0.20
School Support	-0.07	0.148	.621	-0.37	0.22
CSS	0.00	0.020	.985	-0.04	0.04
Child Age					
Childhood	0.22	0.180	.215	-0.13	0.58
Pre-adolescence	0.16	0.247	.506	-0.32	0.65
Adolescence	0.68	0.322	.035**	0.05	1.32
Adulthood	0.01	0.345	.978	-0.67	0.69
Total Number of Children	0.10	0.068	.134	-0.03	0.24
TSD	0.00	0.002	.683	0.00	0.00
Age of Diagnosis	0.00	0.002	.07	-0.01	0.00
_cons	4.57	0.240	.00	4.10	5.04

Reference categories: relationship status = married, child age = early childhood. MSPSS (SO) = Multidimensional Scale of Perceived Social Support (significant other subscale).

MSPSS (FRI) = Multidimensional Scale of Perceived Social Support (friend subscale).

MSPSS (FAM) = Multidimensional Scale of Perceived Social Support (family subscale).

CSS = Child Symptom Severity Scale. TSD = time since diagnosis. Age of Diag. = age of

diagnosis.

*p < .05. **p < .01. ***p < .001.

Parsimonious Model

The high number of predictors (12 total) increased the risk for a potential Type I error or

false significant results (Vandelkerckhove, et al., 2015). Therefore, an additional, more

parsimonious model (Table 13; Model 4) with variables that showed statistical significance or

trending significance was re-run to further examine the variables with stronger relationships with

family relationship hope. I ran a multiple linear regression to predict family relationship hope

based on four predictors, (a) family support, (b) relationship status, (c) child age, and (d) age of

diagnosis. The model was significant ($n = 167$, F (12, 151.9) = 6.93, $p < .001$) and accounted for

30.48% of the adjusted variance. Family support ($B = 0.33$, $p < .001$) and having a child in high

school ($B = 0.55$, $p = .028$) remained significant predictors, relationship as "Single, never

married" approached significance ($B = 0.50$, $p = 0.065$), and age of diagnosis ($B = -0.003$, $p =$

.102) was no longer significant.

Table 13

Hierarchical Linear Regression Model 4

Variable	B	SE B	P	CI (95%)	
Relationship Status					
Single, never married	0.50	0.270	.065	-0.03	1.04
Committed relationship	-0.22	0.286	.448	-0.78	0.35
Engaged	-0.01	0.802	.987	-1.60	1.57
Separated	-0.19	0.398	.632	-0.98	0.60
Divorced	0.01	0.228	.968	-0.44	0.46
Widowed	0.32	0.811	.691	-1.28	1.93
MSPSS FAM	0.33	0.042	.00***	0.24	0.41
Child Age					

Childhood	0.18	0.164	.282	-0.15	0.50
Pre-adolescence	0.16	0.210	.442	-0.25	0.58
Adolescence	0.55	0.249	.028**	0.06	1.05
Adulthood	-0.12	0.229	.591	-0.58	0.33
Age of Diagnosis	-0.003	0.002	.102	-0.01	0.00
_cons	4.65	0.142	.00	4.37	4.93

Reference categories: relationship status = married, child age = early childhood. MSPSS

(FAM) = Multidimensional Scale of Perceived Social Support (family subscale). Age of

Diag. = age of diagnosis.

*p < .05. **p < .01. ***p < .001.

Since family support was a consistent and significant predictor of family relationship

hope, a simple linear regression was run to better understand family supports individual

contribution to the prediction of family relationship hope (Table 14). The model was significant

($n = 167$, $F(1, 159) = 68.11$. $p < 0.001$) and accounted for 29.24% of the adjusted variance.

Family support was a significant predictor ($B = 0.33$, $p < 0.001$). For every one point increase in

family support, family relationship hope increased 0.33 points.

Table 14

Simple Linear Regression of Family Relationship Hope and Family Support

Variable	B	SE B	p	CI (95%)	
MSPSS FAM	0.33	0.039	.00***	0.25	0.40
_cons	4.65	0.060	0.00	4.53	4.77

Note. MSPSS (FAM) = Multidimensional Scale of Perceived Social Support

(family subscale).

*p < .05. **p < .01. ***p < .001.

Although family support is a major predictor in every model, the parsimonious model

with four predictors exhibited to best model fit (Table 15). Therefore, I retained and accepted the

parsimonious model as the best representation of predictors in our study sample for the final

model.

Table 15

R^2 and Adjusted R^2 for HLR Models

Model	R^2	Adjusted R^2
Step 1	0.326	0.273
Step 2	0.365	0.287
Step 3	0.382	0.296
Parsimonious	0.355	0.305
Simple	0.297	0.292

Note. According to Fisher's z to r transformation

Research Question Three

I used a logistic regression to determine the extent to which having clinically significant

depression differed by the amount of family relationship hope (FRH; Table 16). The predictor,

FRH (centered at the mean) was significant in the null model that did not include covariates (n =

169, O.R. = 0.56, log odd = -0.579 z = -3.16, p = 0.002). The odds ratio indicated that for every

one-unit increase in FRH above the FRHS mean, the likelihood of participants having depression

decreased by 44%. Good model fit was evidenced by non-statistically significant results on the

Hosmer and Lemeshow test, χ^2 (g = 10) = 3.62, df = 8, p = 0.89, and the model had a small effect

size (McFadden adjusted R^2 = 0.03). Overall, the null model accurately predicted 62.13% of all

the parents in the sample. Additionally, the model demonstrated higher specificity (63.64%) than

sensitivity (60.49%). Model fit indices indicated AIC = 227.17 and BIC = 233.43.

Table 16

Logistic Regression Null Model

Variable	O.R.	Logit	S.E of O.R.	p	CI (95%) of O.R.

FRH	0.56	-0.58	0.10	0.002	0.39	0.80
_cons	0.92		0.15	0.618	0.68	1.26

Note. O.R. = Odds Ratio. FRH = family relationship hope.

To assess for the possible confounding effects of demographic variables previously associated with depression (i.e., sex, race, employment status, relationship status, and education; Kroenke et al., 2001), I added covariates to the model (Table 17). The predictor, FRH, was significant in the model that included all covariates (race, employment, sex, education, and relationship status, $n = 154$, O.R. = 0.497, log odd = -0.699 $z = -3.08$, $p = 0.002$). The odds ratio for FRH indicated that for every one-unit increase in FRH, the likelihood of participants having depression decreased 50.3%. Statistically significant covariates included participants with a Vocational/Technical degree (O.R. = 10.846, log odd, 2.383, $z = 1.93$, $p = 0.053$) and participants in a committed relationship (O.R. = 10.576, log odd, 2.359, $z = 2.03$, $p = 0.042$). Good model fit was evidenced by non-statistically significant results on the Hosmer and Lemeshow test, χ^2 ($g = 10$) = 11.02, $df = 8$, $p = 0.2$, and a small effect size (McFadden (adjusted) $R^2 = 0.018$). Overall, the model accurately predicted 70.78% of all the parents in the sample. Additionally, the model demonstrated higher specificity (74.36%) than sensitivity (67.11%). Model fit indices indicated AIC = 209.69 and BIC = 264.36, which suggested a worse fit than the null model due to the increase in BIC (Cangur & Ercan, 2015).

Table 17

Logistic Regression Covariate Model

Variable	O.R.	Logit	S.E of O.R.	p	CI (95%) of O.R.	
FRH	0.50	-0.70	0.11	0.002	0.32	0.78
Race						
American Indian	0.80	-0.22	1.22	0.885	0.04	15.98
Asian	0.46	-0.78	0.60	0.549	0.04	5.82

Black/African American	0.37	-1.00	0.30	0.227	0.07	1.86
Other	1.00		(empty)			
Employment Status						
Part-time	0.80	-0.22	0.44	0.692	0.27	2.37
Student	1.61	0.48	2.23	0.731	0.11	24.29
Retired	1.00		(empty)			
Disabled	3.01	1.10	2.38	0.163	0.64	14.18
Unemployed	0.96	-0.04	0.53	0.946	0.33	2.82
Sex						
Male	2.82	1.04	2.00	0.142	0.71	11.28
Education Attained						
No degree or diploma	1.00		(empty)			
Vocational/Technical degree	10.85	2.38	13.38	0.053	0.97	121.60
Associates degree	1.39	0.33	1.00	0.645	0.34	5.67
Bachelor's degree	1.26	0.23	0.74	0.696	0.40	3.99
Master's degree/ Professional Degree	0.49	-0.72	0.31	0.264	0.14	1.72
Other	1.16	0.15	1.79	0.925	0.06	24.16
Relationship Status						
Single, never married	1.89	0.64	1.97	0.54	0.25	14.55
Committed relationship	10.58	2.36	12.27	0.042	1.09	102.78
Engaged	1.00		(empty)			
Separated	1.00		(empty)			
Divorced	1.13	0.12	0.72	0.852	0.32	3.95
Widowed	1.00		(empty)			
_cons	0.73	-0.31	0.39	0.562	0.26	2.08

Note. Reference categories: race = White, employment status = full-time, sex = female, education attained = high school diploma/GED, relationship status = married.

I retained and accepted the null model as the final model due to the homogeneity and minimal variance in the groups in the covariates and weakening of the model fit. Although overall classification in the covariate model is higher than the null, that is likely due to the natural tendency of classification to increase when more variables are added to a model (Acock,

2018). Thus, I prioritized model fit and simplicity in my decision to accept the null model as the final logistic regression model for research question three.

Chapter Summary

The present study used a variety of statistical analyses to examine the construct of family relationship hope. In chapter four, I presented results related to (a) data cleaning and assumptions testing, (b) participant demographics, and (c) analysis of research questions and hypotheses. Data cleaning and assumptions testing illuminated that data were missing completely at random and had significant outliers in the income variable. Test of invariances indicated no significant differences among demographic groups in the data. Scale reliabilities were generally good except for the CSS, which is theoretically supported as a measure of observed behaviors associated with ASD diagnostic criteria. Participant demographics indicated a predominately White, Non-Hispanic, middle-aged, female sample - consistent with the typical lack of diversity in ASD research (Ratto et al., 2017). Through research questions one through three, I inspected the psychometric properties of the FRHS, examined predictors of family relationship hope, and assessed the ability of family relationship hope to predict the presence of clinically significant depression. Results of factor analyses indicated that the FRHS is a one-factor, psychometrically sound instrument. A HLR indicated that family relationship hope may not respond as hypothesized to the three components of the Double ABCX model ('New and Existing Resources', 'Pileup Stressors', 'Time'). The change in Adjusted R^2 did not significantly vary between each step in the HLR, and few predictors were significant. However, family support was a strong and consistent significant predictor of family relationship hope. Other variables, namely relationship status (Single, never married), child age (high school), and age of diagnosis showed promise as predictors. Participants who reported being single indicated higher levels of family

relationship hope than married participants. Participants whose child was in high school reported higher levels of family relationship hope than participants whose child is in early childhood. Finally, family relationship hope was higher for participants whose child received the ASD diagnosis earlier. While the statistical significance of relationship status, child age, and age of diagnosis varied by model, their presence with the family support variable resulted in the strongest model (Model 4). Finally, a logistic regression supported the hypothesis that family relationship hope is a significant negative predictor of clinically significant depression. Participants who reported higher levels of family relationship hope were less likely to have depression. In chapter five, I discuss the results and impactions for counselor training, practice, policy, and future research.

Chapter Five

DISCUSSION

In chapter five, I provide a discussion of the study findings. First, I outline the overall study summary including the goals, methods, and analyses. Next, I discuss the descriptive data in regards to parent and child demographics, frequencies and summaries of the variables related to New and Existing Resources, Pileup Stressors, and Time, as well as descriptive information about the study outcome variables, family relationship hope and depression. Then, I summarize the results of the three study research questions. In the final portion of the chapter, I examine study limitations and offer implications of the findings for counselor education, practice, policy, and future research.

Study Summary

The current study examined the psychometric properties of the Family Relationship Hope Scale (FRHS), hypothesized predictors of family relationship hope, and the relationship between family relationship hope and clinically significant depression in parents of children with ASD. I utilized a secondary dataset of parents of children with ASD from a school-level internally funded grant initiative on which I served as a student member of the collaborative research team. Participants were primary caregivers of a child with ASD and at least 18 years of age. The final sample consisted of 196 caregivers, mostly biological parents (91.33%). Participants completed a series of instruments including: (a) a researcher-developed parent and child demographic form, (b) a researcher-developed child ASD- symptom severity scale based on the diagnostic criteria of the DSM 5 (APA, 2013), (c) the *Multidimensional Scale of Perceived Social Support* (MSPSS; Zimet et al., 1988), (d) the family relationship hope scale (FRHS), a researcher-revised version of the *Relationship Hope Scale* (Erickson, 2015), and (e) the *Patient Health Questionnaire-8*

(PHQ-8; Kroenke, Spitzer, & Williams, 2001). I conducted various quantitative analyses to clean and assess data and answer the study research questions. Preliminary and primary analyses included: (a) exploratory factor analysis (EFA), (b) confirmatory factor analysis (CFA), (c) bivariate correlation, (d) hierarchical linear regressions (HLR), and (e) logistic regression.

Descriptive Data Analysis

In this study, I sought to include a large sample of parents of children with ASD. Previous research with parents of children with ASD resulted in low response rates (Becerra et al., 2017) and highlights some of the challenges with recruitment of participants from this population. The present study adds to the literature in that it retained a moderate sample size of parents and caregivers of children with ASD. However, the overall sample of the study was mostly White, Non-Hispanic, female, married, and employed and most demographic categories had little variation. The average and median income of the sample was within the middle-class range for a family income (Pew Research Center, 2018). The homogeneity of the sample is consistent with most ASD-related studies (Ratto et al., 2017; Trembath et al., 2019) and is a considerable limitation. Research and treatment with low income, ethnically diverse families of children with ASD is sparse (Norbury & Sparks, 2013). Historically, economically and ethnically diverse persons found research and medical systems discriminating, making research recruitment of a diverse sample challenging (Yancey et al., 2006). Related, economically and ethnically diverse families often report later diagnosis of ASD and less access to services (Magaña et al., 2013). Primary recruitment for the present study occurred through ASD-specific services and organizations, which may have inadvertently excluded parents who do not have access to such resources. Research suggests that cultural adaptations are likely needed for the implementation of results and interventions (Huey & Pollo, 2008; Lang et al., 2011).

Consequently, the results of the present study should be interpreted with caution as they may not be generalizable to a nationally representative population. Future research should consider innovative, collaborative strategies for research development and recruitment of diverse families that include a child with ASD (Ratto et al., 2017; Trembath et al., 2019). Such inclusion in study design, selection of study outcomes, intervention development, and enrollment show promise in increasing diverse participation of individuals (Forsythe et al., 2019, Pickard et al., 2019).

New and Existing Resources

The present study examined several areas of instrumental and social support including family income, relationship status, social support from a significant other, friend, and family, current participation in a support group, and perceived support from the child's school. As previously noted, the sample was mostly in the economic middle-class (Pew Research Center, 2018). With increased monetary costs associated with ASD treatments (Lavelle et al., 2014), higher income may provide a buffer for parents against negative mental health outcomes (Zaidman-Zait et al., 2018). The lack of variability in family income in the present study may be a limitation in understanding the impact of income on family wellbeing, such as family relationship hope. Regarding social support, parents reported slightly higher levels of support from significant others, followed by family and then friends. Overall, average reports of social support were moderate (family, friend) to high (significant other; Zimmet, 1988). Overall support (as measured by the MSPSS) was about one point higher than reported support from mothers of children with ASD in a study by Alon (2019; $M = 3.95$, $SD = 0.85$). Thus, the sample in the current study may report higher levels of support than the general ASD-parent population and inadvertently influenced by the recruitment techniques used in the study (i.e., recruitment from ASD support organizations). However, there is not enough information to fully draw this

conclusion; thus, future research can further investigate levels of social support in this population. About one-third of participants reported current participation in a parent support group, which is consistent with previous studies with similar populations (Clifford & Minnens, 2012). Critical barriers to support group participation exist, such as time, location, and childcare (Clifford & Minnes, 2012). Finally, just less than a quarter of participants indicated their child's school as a source of informal support. Since a majority of children with ASD are involved in the special education system, which requires regular meetings with school teachers, staff, and administrators, reported support from a school is surprisingly low. Yet, results appear to be consistent with previous research that found that parents felt dissatisfied by services provided by schools (Slade et al., 2018; Walker et al., 2012). Overall, 'New and Existing Resource' variables indicated that the present sample have access to many external and internal resources such as income and sources of social support, however informal supports such as support groups and school support are less utilized or accessible.

Pileup Stressors

The present study examined several possible pileup stressors including child symptom severity (CSS), total number of children, and child age. The CSS, which measured child symptom severity, demonstrated poor internal reliability. Yet, the CSS was a measure of frequency of behaviors related to DSM-5 (APA, 2013) criteria for ASD and not a unidimensional latent construct. Additionally, many studies examine challenging behavior in parent studies on ASD (e.g., Giovangoli et al., 2015; Wayment et al., 2019), few included the potential influence of difference in frequency of ASD symptoms. Therefore, I chose to use the CSS in analyses for research question two. Future research should further examine the utility of the CSS. According to items on the CSS, on average, parents were less likely to report recent aggression (i.e., mean

score associated with the 'disagree somewhat' to the observation of this symptom in the past 30

days), and more likely to report difficulties with communication and restrictive and repetitive

behaviors (i.e., mean score for observation of these symptoms associated with 'somewhat

agree'). Overall, CSS average scores were towards the middle of possible values, indicating a

general agreement to the presence of aggression, difficulties communicating, and restrictive and

repetitive behaviors from their child with ASD in the last 30 days, which is consistent with the

ASD diagnosis criteria (APA, 2013). Number of children ranged between one and six children

and most participants had two children. Finally, I chose to categorize child age based on school

status (i.e., early childhood, elementary school, middle school, high school, post-high school) as

it mirrors major developmental stages (early childhood, childhood, pre-adolescence,

adolescence, adulthood). Developmental stages of participants' children varied, however the

largest group was the 'childhood' stage at just under 40% of the sample. Overall, Pileup Stressor

variables offered insight into possible stressors that parents experience when raising a child with

ASD.

Time

The present study examined TSD and age of diagnosis as possible time-related predictors

of family relationship hope. On average, participants completed the survey about 5 years and 10

months following their child's diagnosis of ASD. TSD ranged as broadly as one month to 25

years. Additionally, participants reported that their child was, on average, 4 years and 8 months

old (56.24 months) when they received the diagnosis of ASD, and age of diagnosis ranged from

zero months to 18 years old. Interestingly, the present sample received the ASD diagnosis 6.56

months earlier than a nationally representative sample of children with ASD, (Oswald et al.,

2017; n = 1,420, M = 62.8 months, SE = 1.62). Again, this finding highlights the need for a diverse sample and I reiterate that researchers interpret results of the present study with caution.

Family Relationship Hope

The present study was the first to examine the construct of family relationship hope using the FRHS. Results indicated that there is generally good variability among item responses and total scores. However, a left skew in total scores with an increase in scores of six (the highest score), indicates that the scale may be subject to a threat to internal validity, namely social desirability bias (McMillan, 2016). Thus, participants may be more likely to rate their family relationship hope higher than it is in an attempt to respond in a way that they consider socially acceptable. Social desirability bias is a major concern in self-report research studies (Van de Mortel, 2008). Some techniques limit the likelihood of socially desirable responses such as use of instruments with equal number of positively and conversely worded items, forced-choice responses, and ensuring anonymity of responses (McMillan, 2016). Future research should explore ways to limit potential participant bias and increase variation in item responses. I further discuss family relationship hope and the FRHS in discussion of findings below.

Depression

The present study revealed high levels of depression among the sample of parents of children with ASD. The average PHQ-8 score was 9.24, which is above the threshold for clinically significant depression. Similarly, the sample was split almost in half, with almost 48% of the sample categorized with clinically significant depression scores. Additionally, presence of depression did not significantly differ among categorical groups: (a) relationship to child, (b) participant sex, (c) race, or (d) ethnicity, albeit each category had limited variation. The findings of the current study are consistent with previous research that noted high rates of depression

among parents of children with ASD (Bailey et al., 2007; Cohrs & Leslie, 2017; Cook et al., 1994; Scherer, et al., 2019; Singer, 2006). Yet, the rate of depression in the present sample is much higher than that of the most recent study, which speculated that 21% of parents of children with ASD met criteria for depression (Scherer et al., 2019). Even more striking, the present sample experienced depression at a higher rate than the general adult population, which is at 7.1% (US Department of Health and Human Services, 2018). The high prevalence of depression in the sample may be due to the high percentage of females in the sample. Females are more likely than males to report clinically significant depression (Kroenke et al., 2009). Regardless, the present study further highlights the importance of mental health awareness among parents of children with ASD and emphasizes the need for professionals to identify effective treatment interventions with this population.

Discussion of Findings

Research Question One

Research question one investigated the psychometric properties of the FRHS. Based on previous research on the Relationship Hope Scale (e.g., Erickson, 2015), I hypothesized that the FRHS would be unidimensional construct. I used both an EFA and CFA with a split sample to test the hypothesis. The EFA confirmed a single factor structure for the FRHS, similar to research on the Relationship Hope Scale, from which the FRHS was derived (RHS; Erickson, 2015; Hawkins et al., 2017). All four items contributed strongly to the scale and the overall model fit was good. Results of the CFA supported and confirmed EFA results. The FRHS items had good internal consistency and scale reliability. Thus, the FRHS instrument with the present data was a valid and reliable measure of family relationship hope. These findings are novel, as the FRHS is the first known instrument to measure family relationship hope. Hope in parents of

children with ASD is a burgeoning research area with many implications for practice to support families. Previous studies examined hope in parents of children with ASD and related disabilities with instruments from Snyder's (2002) hope theory. Snyder defined hope as the belief one has in their ability to accomplish a goal (agency hope), and that they have a plan to accomplish that goal (pathways hope). Previous research identified family support as an explanatory path between hope and parental depression (Ekas et al., 2016). Yet, current hope instruments measure an individual's hope and individual's goals without consideration of the family relationships. The results of the current study suggest that the FRHS provides a link between hope and family support. The FRHS is a brief, reliable measure with potential to add to research and practice for parental and family well-being, especially among families that include a child with ASD.

Research Question Two

Research question two examined the relationship between Double ABCX post crisis variables and family relationship hope in parents of children with ASD. I utilized a hierarchical linear regression (HLR) to examine the extent to which three post crisis components (i.e., new and existing resources, pileup stressors, and time) predicted family relationship hope, which I hypothesized would be significant predictors of family relationship hope. Results did not support the Double ABCX model as I expected. While each of the three models explained a significant amount of variance in family relationship hope, the variance did not significantly change with each new step. Thus, the post crisis components did not individually contribute to the variance in family relationship hope. Few variables significantly predicted family relationship hope and those that did (i.e., relationship status, child age, age of diagnosis), besides family support, were very small in their effect size. However, the original interpretation of the role of family relationship hope in the Double ABCX model appeared to differ from the findings. According to

McCubbin and Patterson (1983), perception (which I theorized as family relationship hope) is the individual's discernment of the 'Pileup Stressors' and 'New and Existing Resources', not necessarily the number of stressors or resources, as originally assumed. Therefore, it is understandable that the model did not work as I initially theorized. It may be important for future researchers to seek to better understand family relationship hope and other aspects of perception related to well-being and adaption in parents of children with ASD.

Analyses for research question one resulted in three HLR models, one for each step, and two additional exploratory models. Step one of the model investigated 'New and Existing Resources,' which included family income, relationship status, social support from a significant other, friends, and family, current participation in a parent support group, and support from the child with ASD's school (Model 1). In Model 1, family support was the only variable that significantly predicted family relationship hope. According to McCubbin and Patterson (1983), families use 'New and Existing Resources' such as informal and formal social supports to adjust to the changes caused by the crisis. The present study supports the notion that family support that contributes to the perception variable, which in the current study is family relationship hope. However, other sources of support did not contribute to family relationship hope, which deviates from the original Double ABCX model.

Step two included 'Pileup Stressors' (i.e., child symptom severity, total number of children, child age), along with previous predictors (Model 2). In Model 2, family support remained significant and "single, never married" relationship status became significant. In the Double ABCX model, 'Pileup Stressors' are experiences that cause stress to the family and can include the original stressor that led to the crisis, chronic strains related to the stressor, and transitions. The current investigation found that variables associated with 'Pileup Stressors' did

not uniquely contribute to family relationship hope when all variables for both 'New and Existing Resources' and 'Pileup Stressors' were in the model. Additionally, 'Pileup Stressors' did not contribute to a change in variance of family relationship hope explained by the model. Therefore, the present data acted differently than the original theoretical framework hypothesized in which double ABCX components contribute uniquely to the variance in family relationship hope.

Step three, or the full model, included 'Time' variables (i.e., time since diagnosis (TSD), child age of diagnosis) along with previous predictors (Model 3). Again, family support remained a significant predictor, yet "single, never married," was no longer significant but trended significance. Additionally, adolescence (child age) also became significant and age of diagnosis trended towards significance. Similar to previous models, Model 3 performed differently than hypothesized in that 'Time' variables did not uniquely contribute to the variance in family relationship hope. However, when the model accounted for all three components, at least one variable in each component was significant or trending significance. Thus, while some of the proposed variables were not significant predictors of family relationship hope, the present study relatively supports the Double ABCX framework.

A parsimonious model (Model 4) of the strongest predictors from the full HLR model (i.e., family support, relationship status, child age, age of diagnosis) was the best fit and explained a moderate amount of variance in family relationship hope. Similar to Model 3, family support and having an adolescent remained significant predictors, while 'single, never married' relationship status and age of diagnosis were trending significance and no longer significant, respectively. Finally, a simple linear regression confirmed that family support contributed the most in explained the variance in family relationship hope. Thus, family relationship hope is

strongly explained by a parent's perceived family support. Since Model 4 explained the most

variance, I chose to retain it as the best representation of predictors of family relationship hope.

Overall, the HLR indicated that the general framework of the Double ABCX model supports the

data in the present study, however many of the predictors responded in a way inconsistent with

the initial hypotheses.

New and Existing Resources

Income. The present study found no relationship between income and family relationship

hope. Income weakly and negatively correlated with family relationship hope in the preliminary

analysis. Then, in models that included income (Model 1-3), income did not predict family

relationship hope. While not significant, the relationship between income and family relationship

was unexpectedly negative, with parents who reported more hope reported lower income.

Previous research linked income with well-being in parents of children with disabilities. Parents

with more income reported greater well-being including less depression and stress (García-López

et al., 2016, Hsiao, 2018; Zaidman-Zait et al., 2018). Thus, the present study is inconsistent with

previous research, which may indicate that family relationship hope is not predicated by a

family's income level. However, the present sample contained limited variance in income and

should thus be considered in context.

Relationship Status. Relationship status may be related to family relationship hope as it

fluctuated in significance during the HLR. Contrary to the hypothesis, parents who reported

being "single, never married" indicated higher levels of family relationship hope than married

participants. Such a result contradicts previous research which indicated increased parental

parent distress and mental health concerns in single parents (Theodoritsi et al., 2018). Thus, the

present findings offer new insight and direction into single parent research. Single parents may

feel more hopeful about their family's ability to stick together through tough times as they may have already done so in navigating common challenges of single-parenthood (e.g., Theodoritsi et al., 2018). Moreover, single parents may define family more broadly than other participants and include extended family members in their responses to the FRHS.

      Social Support. Social support is a known protective factor against parental distress (e.g., Alon, 2019; Zaidman-Zait et al., 2018). The present study investigated three forms of social support: (a) significant other support, (b) friend support, and (c) family support. Initial examination of the three forms of social support indicated moderately strong correlations between each form of support and family relationship hope. However, when the regression analyses accounted for all three forms of support, family support was the only significant predictor. Family support strongly predicted family relationship hope in all regression models. Therefore, parents who report high levels of family support are likely to have higher levels of family relationship hope. Findings are similar to results from Ekas et al. (2016) which found that family support was associated with parental depression whereas friend support was not. The results indicate that family relationship hope as a construct can differentiate between different types of social support. Interestingly, support from a significant other did not predict family relationship hope. Future research should examine family relationship hope and significant other, friend, and family support in regards to sample demographics, namely participant relationship status. Thus, family relationship hope measures the parent's hope about the family as a whole, not just related to a partner, spouse, or significant other. Further, family relationship hope is an appropriate measure of resilience regardless of family structure as it is not limited to only coupled parents.

Support Group. The current investigation found no evidence of an association between family relationship hope and parent participation in a support group. While parents often find support groups helpful, results of a study with a similar sample to the current investigation found no difference in measures of wellbeing (i.e., depression, anxiety) between parents who currently, previously, and never participated is support groups (Clifford & Minnes, 2013). Therefore, current participation in a support group may not necessary for family-focused parent outcomes such as family relationship hope. Future research may find more efficacy of support groups for other parent outcome variables such as coping (i.e., Clifford & Minnes, 2013).

School Support. The present study found no evidence to support parents' perceived informal support from their child's school as a predictor of family relationship hope. Little research on the relationship between perceived school support and parent outcomes, such as hope, exists. Parental discouragement and frustration with their child's school, especially in relation to special education services, are well-documented (Slade, et al., 2018; Walker et al., 2012). While the present study does not provide information regarding negative or positive experiences with schools, the number of parents who indicated that they see their child's school as a source of informal support was strikingly low (23.98%). While more examination of school support on parent well-being is warranted, the current study indicates that the hope a parent feels about their family relationships may not be dependent upon outside support from the school.

Pileup Stressors

Child Symptom Severity. Parent reports of child symptom severity was not related to family relationship hope in this sample. Results of the study did not support previous research regarding the impact of child symptom severity on parent well-being and hope (Ogston et al., 2011; Yorke et al., 2018). In previous studies, parents of children with ASD who reported more

problem behaviors and symptom severity had greater parental distress and mental health problems (Yorke et al., 2018). However, discrepancies in literature on the impact of child symptom severity on parental well-being exist (e.g., Paynter et al., 2013). Interestingly, results contradict findings from a similar study by Ogston et al. (2011) where parent-rate impairment of ASD symptoms significantly predicted hope in parents of children with both ASD and Down Syndrome. Therefore, the current findings may illuminate a novel difference between previous measures of hope and family relationship hope when assessed with child behaviors. Furthermore, the present study utilized a researcher-created instrument to measure child symptoms. The CSS demonstrated poor internal consistency that, while expected of such a short measure on ASD symptoms, may results in incongruent results. The CSS also used a Likert scale measuring parent level of agreement of symptom presentation. Researchers who use the CSS in the future should consider revisions to the instrument such as added number of items to increase internal reliability within constructs (i.e. aggression, communication, restricted/repetitive behaviors) as well as use a frequency-based Likert scale to get more objective results.

Total Number of Children. The present study found no evidence to support total number of children a parent has as a predictor of family relationship hope. Previous studies found that parents with more children experience increased negative effects such as higher levels of parental stress, diminished partner relationship quality, and fewer daily positive experiences (Harper et al., 2013). The current results, however, did not support a negative impact of more children on family relationship hope. However, about 78% of the sample reported two or fewer children in the family which, consequently, may have contributed to the non-significant findings.

Child Age. Parenting demands and experiences change for parents of children with ASD at different developmental stages (McKee et al., 2019, Goedeke et al., 2019). The present study

appears to support this notion. Parents of adolescents, or children who are currently in high school, reported higher levels of family relationship hope than parents whose child is still in early childhood. Results conflict with prior research which found that parents of children report a decrease in family support when the child with ASD is older (Goedeke et al., 2019). However, as a child transitions through primary and secondary school, parents find ways to adjust the hopes and expectations they held regarding their child to ones that match their child's actual strengths and abilities (Tobin et al., 2012). Therefore, parents of adolescents with ASD in the present sample may have also adjusted their hopes, especially about the family relationships, by the time the child is in high school.

However, child age only became a significant variable after 'Time' variables entered the model, specifically age of diagnosis. The age at which a child receives an ASD diagnosis may be important to understanding family relationship hope in parents of children with ASD. In the current study, investigation of an interaction effect between child age and age of diagnosis was not feasible due to collinearity (i.e., a child coded as 'early childhood' could only have an age of diagnosis up to four years). Thus, more advanced analyses such as structural equation modeling may be more appropriate to examine how age of diagnosis influences the relationship between child age and family relationship hope.

Overall, limited research exists related to developmental stages, especially transitions periods, for children with ASD and their parents' well-being. The present study suggests that parents of children, specifically adolescents in high-school, may be more hopeful about their family relationships than parents with younger children. Future research can continue to explore how parent well-being may differ during different developmental stages of their children, especially when a child has ASD.

Time

Time Since Diagnosis. TSD was not a significant predictor of family relationship hope. Findings are similar to previous studies that found no relationship to TSD and parent well-being (García-López et al., 2016; Kuhn & Carter, 2016). TSD is a common variable in similar studies (e.g., Kuhn & Carter, 2016). TSD is positively associated with increased feelings of self-efficacy when navigating ASD resources, however, shows mixed results in relation to parent well-being (García-López et al., 2016). The present study supports previous findings, as TSD both weakly correlated and poorly predicted family relationship hope in the present data. Therefore, TSD may not be useful variable in research regarding well-being in parents of children with ASD. Instead, other variables such as age of diagnosis or child developmental stage may be more informative.

Age of Diagnosis. Age of diagnosis showed promise as a possible predictor of family relationship hope. Parents whose child received an earlier diagnosis reported higher levels of family relationship hope. This may be due to increased availability of resources to parents when a child is diagnosed before the age of three (CDC, 2019). When a doctor diagnoses a child with ASD when the child is younger than three, the parents have expedited access to free early intervention services provided by their State. Since early intervention is associated with improved child outcomes and parent involvement in treatment (Zwaigenbaum et al., 2015), parents may feel more hopeful about their family's ability to overcome challenges together, as the challenges may not be as great as if they had not received early intervention services. The tie between age of diagnosis and access to early intervention services is tentative, however, as the present study did not assess parent access or use of early intervention services.

Research Question Three

Research question three examined the relationship between family relationship hope and the presence of clinically significant depression. Based on previous research that found an association between hope and depression (e.g., Ekas et al., 2016), I hypothesized that family relationship hope would significantly predict presence of depression, with higher hope associated with fewer odds of having depression. I utilized logistic regression to test the hypothesis. Results of the logistic regression supported the hypothesis; family relationship hope significantly predicted depression. Parents who experienced higher levels of family relationship hope were less likely to have depression. In fact, for every one point increase in family relationship hope above the mean, likelihood of having depression decreased by 44%. As hypothesized, family relationship hope appeared to be a protective factor against depression for parents of children with ASD. Such a finding is critical, as previous research and the present study found that parents of children with ASD report notably high rates of depression (e.g., Scherer et al., 2019).

Hope, especially agency hope (Snyder, 2002), relates to aspects of mental health in parents of children with disabilities including subjective well-being, positive affect, depression, and anxiety (Ekas et al., 2016; Lloyd & Hastngs, 2009; Shenaar-Golan, 2017). Yet, one study found no direct relationship between hope and depression in mothers of children with ASD (Ekas et al., 2016). Instead, family support mediated the relationship between hope and loneliness and depression. The present study is novel, as it examines a form of hope embedded in the context of family.

Some demographic groups are at greater risk of depression than others include people who identify as female, nonwhite, less educated, unmarried, and unemployed (Kroenke et al., 2009). Therefore, I chose to add sex, race, education, relationship status, and employment status

as covariates when I examined family relationship hope and depression. After controlling for covariates, family relationship hope remained a significant and negative predictor of depression. Results suggested a positive relationship between depression and attainment of a vocational/technical degree and relationship status as "committed relationship, not married." I chose not to retain the model with covariates as the model fit was worse and demographic groups were unequal (as I discussed previously). Results warrant further exploration with more equal groups (i.e., gender, relationship status, education) and findings of the relationships between covariates and depression should be tentative.

<div align="center">**Limitations**</div>

Several limitations of the research study exist. The present study is correlational, therefore only associations between variables may be supported with no reference to causation of one variable on another (McMillan, 2016). Another limitation is the convenience sampling approach. While warranted due to the niche population whose response rates are notably low (Becerra et al., 2017), it reduces the generalizability of the sample as the participant effect may be a threat to internal validity (McMillan, 2016). Meaning, individuals who participated may have been more motivated to participate, which may be confounding to the outcome results for family relationship hope and depression. Future studies should consider a random sampling approach to reduce the aforementioned threat to validity. As noted previously, the participant sample is homogenous and does not represent the general population. Thus, I advise all results be interpreted with caution as they are not generalizable to a broader, more diverse population. Future research should seek partnerships with organizations that work with diverse and historically marginalized parents and families, as they are often left out nor benefit from the results of studies on majority White, middle-class, females (Norbury & Sparks, 2013; Ratto et

al., 2017). An additional threat to internal validity includes participant attrition due to the large

number of survey items, possibly resulting in missing data. The current investigation collected

data at a single time point, presenting another limitation in the design. Future studies should

consider a longitudinal approach, collecting data on family relationship hope over time and at

specific developmental stages such as transitional periods which will eliminate additional threats

to validity including statistical regression (McMillan, 2016). Additionally, the present study

examines only one member of the parental dyad, yet family relationship hope of one parent may

co-vary with the other parent. Thus, future research on parental dyads would provide more

insight into the construct of family relationship hope. Limited research examines the RHS (e.g.,

Hawkins et al., 2017), and no research examines the FRHS. The present study examines the

internal consistency and latent structure of the FRHS. However, further analysis of the

psychometric properties of the FRHS would provide more information regarding the external

validity of the instrument. Specifically, examination of concurrent and discriminant validity in

relation to Snyder's hope assessments (Snyder, et al., 1991) may be useful for understanding the

relationship between family relationship hope and agency and pathways hope.

Implications

Results of the present study supported family relationship hope as a novel construct of

resilience in parents of children with ASD. Hope is a learnable trait for both the general

population (Hawkins, et al., 2017; Snyder, 2002) and parents of children with ASD (Navroodi, et

al., 2018). Thus, the results of the present study implicate future assessment practices and

interventions regarding depression and family relationship hope both in the parent and family

contexts. Improved understanding for the utility of the FRHS, the predictors of family

relationship hope, and the protective influence of family relationship hope for parental symptoms

of depression have implications for counselor training and education, practice, policy, and research.

Training and Education

Counselor educators identified training in disability-related topics as a deficit in counselor education programs (Feather & Carlson, 2019). Feather and Carlson (2019) conducted the only study to date that investigated the competencies of counselor educators working with and teaching content on individuals with disabilities. Of the 141 counselor educators surveyed, 21% noted that their counselor education program required disability courses and 25% recommended students complete an elective disability-related or special education course. However, about three-fourths of the counselor educators reported incorporating disability-related content into their curriculum, mostly in multicultural (50%) school counseling (34%), human development (32%), assessment (28%) and introduction to counseling (24%) courses. Thus, while most counselor education programs do not require counselors-in-training to take a disability specific course, most educators do incorporate disability content into core counseling courses.

Yet, most (69%) counselor educators felt that the amount of time spent on disability-related content was too little. Additionally, counselor educators who previously worked with people with disabilities were more competent and skilled for working with people with disabilities than those who did not have such experiences (Feather & Carlson, 2019). Therefore, counselor education programs need increased disability-related content coverage and experiences in order to adequately prepare counselors to serve this growing population.

The Counsel for Accreditation of Counseling and Related Education Programs (CACREP, 2015) is the accrediting body for counselor education programs. CACREP enforces the presence of

important teaching objectives for teaching counselors-in-training. In the most recent revision,

CACREP and the Counsel on Rehabilitation Education (CORE) established an affiliation

agreement merging the education standards of both programs (CACREP, 2016). CORE served as

the accrediting body for master's level rehabilitation counseling programs, which train

rehabilitation counselors to help people with disabilities achieve their goals, such as employment

and independent living. The merge highlights the counseling field's recognition of the need for

professional awareness of disability concepts in counselor training. Thus, the next revision of the

CACREP standards in 2023 will incorporate disability concepts into the eight common core

curriculum areas (CACREP, 2016). CACREP's dedication to incorporating disability concepts

into future standards is monumental, and future research aimed at ways to do so is critical.

Hence, the results of the current study provide a step towards incorporating disability concepts

into specific core counseling courses. Since results of the current study confirmed the connection

between family relationship hope and depression, counselor educators could increase focus on

family relationship hope in marriage, couples, and family courses as a construct to consider

during initial assessment and treatment of a couple or family that includes a child with ASD. For

instance, counselor educators teaching family courses may use examples, role plays, or case

studies that present families that includes a child with ASD. Such activities could provide

learning opportunities for counselors-in-training to better understand the high rates of depression

among parents of children with ASD but also of the protective properties of family relationship

hope. Similarly, when teaching family systems theories, counselor educators can acknowledge

the benefit of client conceptualization from a systems perspective when working with a parent of

a child with ASD. Additionally, results provide insight into possible risk factors for low family

relationship hope, namely parents of children in transitionary periods of development or who received a delayed diagnosis.

Counseling Practice

Historically, intervention and research with families of children with ASD have prioritized (albeit with merit; Hemdi & Daley, 2017) parent training for management of child behaviors and less emphasized sources of resilience or factors critical to child, parents, and family well-being (Derguy et al., 2016). Research already indicates an increased need to focus on parental mental health following diagnosis and in conjunction with child early intervention services (Beeber et al., 2017). Evidence suggests ecological factors influence parental stress and well-being, yet, the deficit-view of changing child behavior negates a systemic or ecological view for how to support both parent and child (Derguy et al., 2016; Derguy, et al., 2018). In fact, results of the current study highlight this point, for it found no relationship between family relationship hope and the severity of the child's ASD symptoms. However, support from a significant other, friends, and family positively correlated with family relationship hope, and family support was the main predictor of hope in the sample. Therefore, interventions with focus on increasing natural supports for parents may be beneficial in increasing parental well-being.

Current specific areas for intervention with existing support for their efficacy include (a) stress management skills, (b) problem solving skills, (c) training on ASD related knowledge and resources and (d) social support groups (albeit not a predictor of family relationship hope in the present sample) in improving parent mental health outcomes (Catalano, et al., 2018). However, of the 23 studies identified in the systematic literature review, no studies examined interventions aimed at hope within the family context. As a result, systemic approaches to support are needed to enhance family well-being and reduce parental stress. Such approaches may include counselor

assessment of family relationship hope when counseling a parent or family that includes a child with ASD, or implementation of relationship education. Relationship education (RE) is a psychoeducational intervention which teaches couples and individuals communication tools to help resolve conflict and improve relationship satisfaction (Hawkins et al., 2008; Hawkins & Fackrell, 2010). Hawkins et al. (2017) examined the efficacy of RE with couples on their relationship hope. Participants reported higher levels of relationship hope following participation in RE. Results highlight the potential of similar interventions to have a positive impact on family relationship hope. Thus, counselors may consider utilizing relationship education in a family context. Additionally, counselors may consider taking an ecological approach when working with this population. Previous researchers recommended a decreased focus on singular outcomes in counseling and increased focus on ecological factors associated with raising a child with ASD, such as social support, family support, partner support, child age, and access to resources including psychoeducation on ASD (Derguy et al., 2018; Derguy et al., 2016; Ekas et al., 2016; Zaidman-Zait et al., 2018). Thus, a counselor serving a client who is a parent of a child with low family relationship hope may co-develop a treatment plan with the client to identify ways to increase family support as well as explore other internal and external resources that the client considers important to their well-being.

Policy

With the rise in prevalence of ASD, government agencies and politicians increased focus on policies regarding ASD-related research. For instance, the Autism Collaboration, Accountability, Research Education, and Support Act (Autism CARES Act; H.R. 1058; 2019) is a government funding initiative through the National Institute of Health. The bill, which first passed into law in 2006 (Combating Autism Act, P.L. 109-419), supports expansion of ASD

research and related data collection, education, early detection, intervention activities, as well as funds programs that address the shortage of personal health services for individuals and families that include a child with ASD. Notably, the Autism CARES Act supports an interprofessional training program known as Leadership and Education in Neurodevelopmental Disabilities (LEND). LEND trains a variety of physical and mental health professionals to work collaboratively to offer family centered practices to families that include a child with a neurodevelopmental disability. Results of the present study support the use of programs like LEND, which provides opportunities for professionals that work with neurodiverse families to learn ways to increase family support and, possibly, family relationship hope. As the results indicate, if professionals serve families in a way that increases family relationship hope, the family may be more protected against mental health disorders such as depression. Previous research identified parent-focused interventions as efficacious tools to increase hope in parents of children with ASD (Navroodi et al., 2018). Navroodi et al. implemented a positive parenting training with a group of parents of children with ASD that taught parenting skills to decrease challenging behavior. While the present study found no link between hope and ASD related behavior, such studies indicate that hope is dynamic and changeable. Furthermore, interventions focused on increasing family support help increase family relationship hope and possibly decrease depression. Therefore, practitioners of many disciplines (e.g., mental health, social work, genetic counseling, special education, medicine) should consider ways to support family involvement and cohesion as they provide services to a child with ASD., such as family-centered relationship education, as previously mentioned. Such results are the overall mission of LEND (Autism CARES Act; H.R. 1058; 2019). Practitioner support may include specific family

support-based interventions (e.g., Heller et al., 2015), or simply offers to explain current treatment goals and interventions with family members.

Another major policy which impacts children and families with ASD is the Individuals with Disabilities Education Act (IDEA, 2004). In the United States, all children with a disability are entitled to free and accessible education in the least restrictive environment (IDEA, 2004). Public schools often place children with ASD in special education programs and develop an Individualized Education Plan (IEP) and respective IEP team. An IEP team can consist of the child (when appropriate), the parents, teachers, school counselors, and relevant administration. IEPs focus on measurable goals related to academic achievement and functional performance, which may result in specialized instruction, supplemental aid and services (e.g., occupational therapy, speech therapy), appropriate accommodations, and transition services. Currently, IDEA poses no requirements for parental or familial support through the IEP process. Parents and children may benefit from an additional family component that would address supports that a family could benefit from the community or ways to foster family support. While such a suggestion is aspirational, as IDEA is an encompassing, complex, and comprehensive system, educators may still be able to apply such suggestions at the school level. For example, staff present in an IEP meeting with a parent of a child with ASD can connect the parent with resources that provide supports to families, such as ASD specific organizations (e.g., Autism Society of America and local affiliates) and other families who are open to supporting other parents. While conducting the child's social behavior history from the parents, school staff may consider using the FRHS and asking the parent about their definition of family support, as it may look different for each family. Such information may give school staff a deeper understanding of the child's supports at home and how to utilize them to further support the child and parents.

Similarly, professionals who conduct parent training during early intervention services can help

parents include other pertinent family members in training on how to provide therapeutic

services to the child. The present study found that family relationship hope predicted depression

and previous research linked parental well-being to child outcomes (Osborne et al., 2008). Thus,

to better address the developmental needs of children, policy that supports a systemic approach

may be warranted. Moreover, because few families identified schools as a source of support,

such a shift could alter the outlook for future child and parent experiences, success, and well-

being.

Future Research

The current study is an initial examination of family relationship hope as a potential

ecological assessment of parental well-being. Results supported the psychometric properties and

scale reliability of the FRHS. Future studies may continue to validate and support the construct

of family relationship hope as measured by FRHS. Future research should continue to examine

the constructs of family support and family relationship hope. The present study found a strong

relationship between the two variables, thus future research should continue to differentiate

between them as constructs. One explanation may be the obscurity of the definition of family in

which participants answered the instruments for family support and family relationship hope.

Future studies should either define family or ask respondents to identify who they include in

their definition of family. It is also possible that the difference between family support and

family relationship hope is similar to Erickson (2015) and Hawkin et al.'s (2017) theory on

relationship satisfaction versus relationship hope. Specifically, Erickson (2015) theorized that

relationship satisfaction is a measure of one's current satisfaction (or lack thereof) with their

romantic relationship, whereas relationship hope transcends one's current satisfaction and

instead measures their hopefulness about the future of the relationship. Similarly, family support may measure one's current perception of the support they receive from their family whereas family relationship hope is one's long-term view and optimism for the family's future relationship strength.

Furthermore, longitudinal studies on family relationship hope may provide additional information by accounting for parental adjustment to the child's diagnosis over time, the age of the child (particularly during transition years), and perceived family support. Similarly, research may examine the receptivity of the FRHS to change from participant participation in various formats of intervention (e.g., advocacy groups, support groups, psychoeducation, counseling). Research for outcomes from parent interventions inclusive of family relationship hope may be an important next step for mental health counselors. In theory, interventions that aim to increase family relationship hope may prove useful to decrease symptoms of depression in parents of children with ASD and indirectly improve child outcomes (e.g., Osborne, et al., 2008). As previously noted, RE is an efficacious treatment for increasing relationship hope in couples (Hawkins et al., 2017). Future studies may examine a slightly altered RE intervention focused on teaching communication skills within a family context and include additional members of the family such as siblings and grandparents. Previous research identified family support interventions as efficacious treatments to increase parent well-being and services access satisfaction (Heller et al., 2015). Other disciplines, such as nursing, developed and supported situation-specific interventions for development and maintenance of hope (Herth, 2001). Thus, future research may develop and examine ASD-specific interventions aimed at supporting family relationship hope for parents and other members of a family that includes a child with ASD.

Finally, future research on family relationship hope should utilize additional methods of statistical analysis to better understand causational direction, influence of partners, and presence of profiles within parents of children with ASD. For instance, structural equation modeling may be a more useful tool for the assessment of theories such as the Double ABCX model (Crockett, 2012; McCubbin & Patterson, 1983). Actor-Partner Interdependence Modeling is a statistical analysis that examines the influence of one partner's responses on the other partner's responses (Ledermann et al., 2011). Family relationship hope in one partner, such as a child's mother, may predict the presence of family relationship in the other partner, such as the child's father. Additionally, latent profile analysis as another advanced technique that identifies clusters of participants with similar reports based on latent constructs (e.g., participants with high SES and poorer mental health). Analysis of such clusters may be helpful to identify at risk populations of parent of children with ASD who may benefit from more targeted intervention recruitment from professionals. In sum, results of the present study offer promise for implications for training, practice, policy, and research in the realm of counselor education and supervision.

Chapter Summary

In chapter five, I provided a detailed discussion of the current investigation's descriptive statistics, research question findings, study limitations, and implications for counseling education, practice, policy, and research. The study supported the reliability and applicability of the Family Relationship Hope Scale and family relationship hope as an ecological form of resilience in parents of children with ASD. While future research should re-examine the hypothesized relationships with a more diverse sample, results suggest that family relationship hope may operate independent of many contextual factors that are often outside of a parent's control (e.g., income, support from school, child symptoms severity, number of children, TSD).

Thus, the study offers a strength-based look at factors of parent hope within the family context along with its protective ability against depression. While parenting is challenging in general, and parents of children with ASD have additional unique challenges, parents of children with ASD reported hopefulness about their family's ability to overcome challenges together.

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APPENDIX A

Please tell us a little bit about you by answering ALL the questions below.	
1. Are you currently the parent or primary caregiver of a child diagnosed with an autism spectrum disorder (ASD)?	☐Yes ☐No
2. What is your relationship to the child with ASD you are currently caring for?	☐Biological Parent ☐Foster or Adoptive Parent ☐Grandparent ☐Extended Family Member ☐Other
3. Your age:	_____
4. Your sex:	☐Female ☐Male ☐Prefer not to answer
5. Current Zip Code	_____
6. Ethnicity	☐Hispanic ☐Non-Hispanic
7. Race	☐American Indian/Alaskan Native ☐Asian ☐Black/African American ☐Native Hawaiian/Other Pacific Islander ☐White ☐Other: _____
8. Highest Education Completed	☐No degree or diploma earned ☐High school diploma/GED ☐Vocational/Technical certification ☐Associate's degree ☐Bachelor's degree ☐Master's degree/Advance degree ☐Other: _____
9. Relationship Status	☐Single, Never married ☐Committed relationship (not married) ☐Engaged ☐Married ☐Separated ☐Divorced ☐Widowed
10. Length of time in relationship status?	_____
11. Employment Status	☐Full-time ☐Part-time ☐Student ☐Retired

	☐Disabled ☐Unemployed
12. Family Income	$_____ , per (choose one) ☐Week ☐Year
13. Number of children with ASD in your household:	_____
14. Current age of your child(ren) with ASD:	_____
15. Current grade in school of your child(ren) with ASD:	☐Pre-Kindergarten ☐Kindergarten (K) ☐First (1) ☐Second (2) ☐Third (3) ☐Fourth (4) ☐Fifth (5) ☐Sixth (6) ☐Seventh (7) ☐Eighth (8) ☐Ninth (9) ☐Tenth (10) ☐Eleventh (11) ☐Twelfth (12) ☐Other
16. Does your child currently qualify for free or reduced lunch in school?	☐Yes ☐No ☐Unsure/Don't Know ☐Does Not Apply
17. Do you currently use any waivers for services for your child with ASD?	☐Yes ☐No ☐Unsure/Don't know
18. How much time has passed since your child was diagnosed with ASD?	_____ years _____ months
Please indicate your level of agreement with the below questions. *Child Symptom Severity Scale and Informal Supports*	
19. In the past 30 days, my child has been aggressive towards others (e.g., hitting, biting, scratching)?	☐(1) Strongly Disagree ☐(2) Disagree ☐(3) Disagree somewhat ☐(4) Agree somewhat ☐(5) Agree ☐(6) Strongly Agree
20. In the past 30 days, my child has had restricted and repetitive behaviors (e.g., difficulty with change, ritualized patterns, flapping, rocking)?	☐(1) Strongly Disagree ☐(2) Disagree ☐(3) Disagree somewhat ☐(4) Agree somewhat

	☐(5) Agree ☐(6) Strongly Agree
21. In the past 30 days, my child has had difficulty communicating with others (e.g., avoids eye contact, nonverbal, avoids interaction)?	☐(1) Strongly Disagree ☐(2) Disagree ☐(3) Disagree somewhat ☐(4) Agree somewhat ☐(5) Agree ☐(6) Strongly Agree
22. What (if any) other mental health diagnoses has your child received?	☐None ☐Intellectual Disability ☐Learning Disability ☐Rett Syndrome ☐Anxiety ☐Depression ☐Obsessive Compulsive Disorder ☐Other: _____
23. Are you currently involved in any parent/caregiver support groups?	☐Yes ☐No
24. Where do you get informal support from (check all that apply)	☐None ☐My parents ☐My spouse or partner's parents ☐My relatives ☐My spouse or partner's relatives ☐My spouse or partner ☐My friends ☐My spouse or partner's friends ☐My older child(ren) ☐Neighbors ☐Other parents ☐Co-workers ☐Parent group members ☐Social groups/clubs ☐Church members/Minister ☐Other: _____
Please indicate your level of agreement with the below questions. *Modified version of the Relationship Hope Scale (Erickson, 2015).*	
25. I believe my family and I can handle whatever conflicts will arise in the future.	☐(1) Strongly Disagree ☐(2) Disagree ☐(3) Disagree somewhat ☐(4) Agree somewhat ☐(5) Agree ☐(6) Strongly Agree
26. I am hopeful that my family and I can make our relationships work.	☐(1) Strongly Disagree ☐(2) Disagree

	☐(3) Disagree somewhat ☐(4) Agree somewhat ☐(5) Agree ☐(6) Strongly Agree
27. I believe that my family and I have the tools we need to fix problems in our relationships now and in the future.	☐(1) Strongly Disagree ☐(2) Disagree ☐(3) Disagree somewhat ☐(4) Agree somewhat ☐(5) Agree ☐(6) Strongly Agree
28. I feel like our family relationships can survive what life throws at us.	☐(1) Strongly Disagree ☐(2) Disagree ☐(3) Disagree somewhat ☐(4) Agree somewhat ☐(5) Agree ☐(6) Strongly Agree
Over the last 2 weeks, how often have you been bothered by any of the following problems? *Modified version of the PHQ-9 (Spitzer, Williams, Kroenke, Hornyak, & McMurray, 2000).*	
29. Little interest or pleasure in doing things.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
30. Feeling down, depressed, or hopeless.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
31. Trouble falling or staying asleep, or sleeping too much.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
32. Feeling tired or having little energy.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
33. Poor appetite or overeating	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
34. Feeling bad about yourself—or that you are a failure or have let yourself or your family down.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
35. Trouble concentrating on things, such as reading the newspaper or watching television.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days

	☐(3) Nearly every day
36. Loving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual.	☐(0) Not at all ☐(1) Several days ☐(2) More than half the days ☐(3) Nearly every day
We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement. *MSPSS (Zimet, Dahlem, Zimet, & Farley, 1988)*	
37. There is a special person who is around when I am in need.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
38. There is a special person with whom I can share my joys and sorrows	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
39. My family really tries to help me.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
40. I get the emotional help and support I need from my family.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
41. I have a special person who is a real source of comfort to me.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree

42. My friends really try to help me.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
43. I can count on my friends when things go wrong.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
44. I can talk about my problems with my family.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
45. I have friends with whom I can share my joys and sorrows.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
46. There is a special person in my life who cares about my feelings.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
47. My family is willing to help me make decisions.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral ☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree
48. I can talk about my problems with my friends.	☐(1) Very Strongly Disagree ☐(2) Strongly Disagree ☐(3) Mildly Disagree ☐(4) Neutral

	☐(5) Mildly Agree ☐(6) Strongly Agree ☐(7) Very Strongly Agree