

ALPHA AND BETA FACTORS OF RESILIENCE AND THE MEDIATING EFFECTS OF  
COPING AND PROBLEM-SOLVING STYLES ON FAMILY CAREGIVER ADJUSTMENT

A Dissertation

by

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## ABSTRACT

**Objective:** To explore the relationships among higher-order personality factors, resilience, coping patterns, social problem-solving orientations, and caregivers' well-being and general health. The study tests the existence of Alpha/Stability and Beta/Plasticity factors in a unique caregiver sample. The study also examines the potential mediating effects of coping patterns related to social support and social problem-solving styles on the relationship of higher-order personality factors of resilience and caregivers' well-being and general health. **Design/Setting:** The study analyzes data from an existing dataset. In a previous project, participants at the Arkansas Center for Respiratory Technology Dependent Children (ACRTDC) outpatient clinic completed the research questionnaire packet at home or at the clinic. Data will be analyzed through two-factor confirmatory factor analysis and structural equation modeling. **Participants:** Participants included 56 caregivers of children with severe neurodisabilities. Caregivers' age ranged from 24 to 60, with a mean age of 44.11. The majority of caregivers were female; only one male caregiver participated in this study. The number of years in the caregiver role ranged from 3 to 26, with a mean of 12.71 years. Among the 56 caregivers, 69.64% identified as Caucasian (n = 39), and 30.36% identified as African American (n = 17).

## DEDICATION

This dissertation is dedicated to my benevolent and compassionate husband, who consistently puts my needs and family needs before his own and supported and encouraged me throughout our marriage and my Ph.D. training.

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## CHAPTER I

### INTRODUCTION

Personality characteristics have been studied by psychologists in the past few decades, focusing on how it influences people's thoughts, feelings, and behaviors in various situations. Personality variables are also used to predict reactions to other people, problems, and stress (Krauskopf & Saunders, 1994; Winnie & Gittinger, 1973). Thus, personality characteristics are often associated with resilience under routine and stressful conditions.

Researchers have been devoted to discovering the protective factors that explain people's adaptation to adverse conditions among different populations. Early resilience studies focused on children and young adults who were at risk (Benard, 1995; Garmezy, 1971; Masten, Best, & Garmezy, 1990; Rutter 1979; Werner & Smith, 1982). More recently, the focus shifted to people who have experienced trauma, loss, and people with disabilities (Bonanno, 2004; Bonanno, Westphal, & Mancini, 2012; Elliott, Hsiao, Kimbrel, Meyer, DeBeer, Gulliver, Kwok, & Morissette, 2015). Researchers suggested that resilience should be studied as a process, in the context of human development, personality characteristics, surrounding environment, and specific circumstances (Higgins, 1994; Masten, 1994; Rutter, 2007). Thus, resilience has been studied from a comprehensive approach. As part of the comprehensive component, personality characteristics may be influential factors in determining resilience (Bonanno, Westphal, & Mancini, 2011), and the Big Five-factor personality theory is commonly used in resilience studies (Costa & McCrae, 1992).

Block and Block's (1980) ego-control and ego-resiliency theory explains how personality characteristics influence an individual's ability to handle stressful situations. They further developed the three personality prototypes to explore the relationships between the Big Five

personality factors and resilience (Block, 1993). As criticisms of the Big Five personality factor model increased (De Raad et al., 1998; De Raad, et al., 1997; Paunonen & Jackson, 2000), the idea of higher-order personality factors was proposed by Digman (1997) and others. Two well-accepted higher-order factors are Digman's (1997) Alpha-Beta factors and Stability-Plasticity, as described by DeYoung and his colleagues (2002). Established theories of resilience and personality characteristics can help researchers and health care professionals understand the mechanisms of how people react, adjust, and adapt when encountering stressful situations (Ong, et al., 2009; Walsh et al., 2016). However, studies of personality and resilience among caregivers of children with severe disabilities are lacking.

Having a child with a chronic illness can be a significant family stressor (Barakat & Alderfer, 2011; Knafl & Gilliss, 2002), especially a child with severe neurodisability. This group of children always suffer from chronic respiratory symptoms that lead to recurrent hospital admissions and decrease their quality of life. Since these children require substantive care, caregivers are likely to feel overwhelming and demanding (Baker et al., 2005; Phetrasuwan & Miles, 2009). Research shows that stress and caregiving burden have negative impacts on caregivers' morbidity and mortality (Schulz & Beach, 1999). Caregivers of children with complex chronic health conditions are more likely to experience depression symptoms and general health problems than caregivers of children with less complicated conditions (Brehaut et al., 2011). However, some family caregivers of children with chronic health conditions can still function positively and adapt to the problematic situation well (Knafl et al., 2007; McCubbin & McCubbin, 1996; Walsh, 2003).

Existing research suggests that resilient people report high mental and physical health, perceive sufficient social support, and cope well with stressful situations (Jonker & Greeff, 2009;

O'Rourke et al., 2010). Meanwhile, both social support and social problem-solving abilities are linked to resilience and they are seen as essential predictors of caregiver adjustment (Cohen & Mckay, 1984; Elliott & Shewchuk, 2003; Shurgot, & Knight, 2005; Thoits, 1982). Such findings contribute to our understanding of factors that might promote resilience, and they may have important clinical implications for developing interventions for caregivers (Tsuang, 2000).

The purpose of this study is to explore the relationships among higher-order personality factors, resilience, coping patterns, social problem-solving orientations, and caregivers' well-being and general health. The study will test the existence of Alpha/Stability and Beta/Plasticity factors in a unique clinical sample: caregivers of children with severe neurodisability.

Furthermore, structural equation modeling will be used to test the potential mediating effects of coping patterns related to social support and social problem-solving styles on the relationship of higher-order personality factors of resilience and caregivers' well-being and general health. The goal is to understand better critical factors that could promote resilience and facilitate better adjustment and use findings to guide our clinical practice and improve services delivered to caregivers.

## CHAPTER II

### LITERATURE REVIEW

The literature review focuses on the relationships among resilience, personality traits, and caregivers' physical and mental health. It discusses the concept and definition of resilience, studies of the higher-order factors of the "Big Five" factor personality model, and how they are relevant to each other. This chapter also explores challenges caregivers may face while raising children with complex and chronic health conditions, current studies on caregivers' mental and physical health conditions, and the influence of resiliency in this population. This section discusses current studies on how caregivers' coping, and problem-solving styles impact physical and mental health outcomes. In the end, the proposed study will be presented.

#### **Resilience**

Resilience has been described as a complex construct that involves traits, outcomes, and processes related to recovery. Therefore, it has different definitions in different contexts involving individuals, families, organizations, societies, and cultures (Southwick et al., 2014). Researchers point out the lack of a unifying definition and a well-developed comprehensive theoretical model of resilience, which has a negative impact on people's ability to fully understand the mechanisms and characteristics of resilience. It also limits professional's ability to develop strategic interventions to promote resilience (Davydov et al., 2010; Fletcher & Sarkar, 2013). A widely used standard definition of resilience is the capacity, processes, and outcomes of successful adaptation in the context of significant threats to functioning or development (Masten et al., 1990).

In 1971, the one of the early studies of resilience was conducted by Garnezy (1971). The study focused on the risks and protective factors among adult schizophrenic patients and children

at risk. In this study, Garmezy found that 90% of children who have a parent with schizophrenia did not develop the same disorder. He believed some existence of “protective factors” decreased the negative impact of stressors and supported positive development. These concepts helped to generate definitions of resilience, and encouraged him and the field to focus on “the forces that move such children to survival and to adaptation” (Garmezy, 1971, p. 114). Following this inspiration, other researchers conducted a series of studies on resilience that were devoted to exploring the protective factors that explain children’s adaptation to adverse conditions (Benard, 1995; Masten et al., 1990; Rutter 1979; Werner & Smith, 1982). In the past two decades, more researchers have focused their studies of resilience on adults, loss, trauma, grief, combat-related PTSD, veterans, and people with disabilities (Bonanno, 2004; Bonanno et al., 2012; Elliott et al., 2015).

From this research focus there has been a diversity in operationalization and conceptualization with the overarching emphasis on the ability to “bounce back.” Resilience is defined by Webster’s New Twentieth Century Dictionary of English Language (1979) as “the ability to bounce or spring back after being stretched or constrained or recovering strength or spirit.” Richardson et al. (1990) describe resilience as “the process of coping with disruptive, stressful, or challenging life events in a way that provides the individual with additional protective and coping skills than prior to the disruption that results from the event” (p. 34). Likewise and Wolines (1993) interpret resilience as “the capacity to bounce back, to withstand hardship, and to repair yourself” (p. 5), and Higgins (1994) define resilience as the “process of self-righting or growth” (p. 1). Bonanno’s (2004, p. 20) defines resilience as “...the ability of adults in otherwise normal circumstances who are exposed to an isolated and potentially highly disruptive event, such as the death of a close relation or a violent or life-threatening situation, to

maintain relatively stable, healthy levels of psychological functioning.” Resilience is also defined as “patterns of positive adaptation and development in the context of significant threats to an individual’s life or function” (Masten & Wright, 2009, p. 215).

From the definitions above, it is evident that resilience is commonly explained and studied in the context of exposure to adversity and positive adjustment outcomes of that adversity (Luther & Cicchetti, 2000), although adversity and positive adjustment outcomes are not clearly defined. Resilience is also commonly viewed as a process (Higgins, 1994; Masten, 1994; Richardson et al., 1990). Masten (1994) suggested that resilience should be interpreted as a dynamic and developmental process, interactions between personality characteristics and their surrounding environment, and balance between stress and an individual’s ability to cope. Recent research tries to study resilience from a more comprehensive approach, it summarized that resilience is a dynamic function of individual characteristics, developmental stage, environment, and specific adverse situations (Rutter, 2007). Researchers further pointed out that resilience should be understood across the lifespan (Bonanno, 2004) as a “protective trait” helping with the “maintenance of positive outcomes in the face of challenge” for children, adolescents, and adults (Ong et al., 2009; p. 1784).

Such perspectives emphasize individual differences and the role of personality characteristics in understanding resilience, which is to moderate the negative effects of stress and to promote adaptation. Meanwhile, also recognizing the importance of an individual’s supportive surrounding environment and other protective factors (Bonanno et al., 2012). The following paragraphs will further elaborate on personality characteristics and protective factors and their relationship to resilience.

## **The “Big Five” Personality Traits and Higher-Order Personality**

The Five-Factor Model, also known as the Big Five, was developed by Paul Costa and Rober McCrae (1992) to describe personality in terms of five broad dimensions. Specifically, the five factors -- Extraversion (E), Agreeableness (A), Conscientiousness (C), Emotional Stability (vs. Neuroticism) (ES or N), and Intellect or Openness to Experience (O) – are unique and stable personality traits (Costa & McCrae, 1992; Digman, 1990; Goldberg, 1990; Goldberg, 1993). Several measures of the Big Five traits have established excellent reliability and validity (Costa & McCrae, 1992; Digman, 1990; McCrae & John, 1992), and the model has proven its value in describing personality, predicting human functioning across areas of life, and providing insights about personality for other personality theories (Digman, 1990; John & Srivastava, 1999; McCrae & Costa, 2003; McCrae & John, 1992). It was believed that the Big Five model represents the highest level of organization of personality traits since the five factors were orthogonal (Goldberg, 1993). However, the Big Five model has received criticisms from different research perspectives.

First, the Big Five model was initially based on lexical studies conducted in English (Goldberg, 1981; Norman, 1963; Tupes & Christal, 1992), and the five traits came from the psycholexical method. Although good results were obtained from two replicant studies in German and Dutch (Angleitner et al., 1990; Hofstee et al., 1997), researchers still point out the methodology of the Big Five model is problematic and could not be replicated in non-Germanic languages (De Raad et al., 2010; De Raad et al., 1998; De Raad et al., 1997).

Second, some psychologists do not agree that the Big Five can adequately explain all of the human personality and they feel some domains are left out, such as honesty, religiosity, humor, masculinity/femininity, among others (Paunonen et al., 2003; Paunonen & Jackson,

2000). Some studies suggest the existence of a sixth-factor model (Ashton et al., 2004; Lee & Ashton, 2008), and other proposed models of seven or eight factors (De Raad, 2009; Saucier, 2008). The HEXACO model is one example of the six-factor model proposed by Ashton et al. (2004). The six factors include Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O). Although this model uses similar methods as the Big Five, the additional factor H makes the HEXACO model unique and more complete.

On the other hand, one classic critique of the Big Five model is that the five factors are not entirely orthogonal to each other (Block, 1995; Digman, 1997). Digman (1997) discovered correlational relationships between the five factors, and he noticed a consistent pattern of intercorrelations that could be summarized in terms of two higher-order factors. More specifically, he found positive correlations among measures of Agreeableness (A), Conscientiousness (C), and Emotional Stability (low Neuroticism - N), and between measures of Openness to Experience (O) and Extraversion (E) across different datasets. Digman (1997) then proposed two higher-order factors of personality, called Alpha and Beta. Alpha is indicated by A, C, and low N, while E and O indicate Beta. The concept of Alpha and Beta are similar to Lewin's theory (1936) about psychological system functioning, and he introduced the concept of elasticity and permeability in his work. He suggested that elasticity enables individual's psychological system to change between different degrees of permeability.

Digman (1997) considered Alpha as a socialization factor, and Beta as personal growth. He explained that Alpha suggests the social desirability factor, which means people who have this personality factor are more likely to say socially acceptable things about themselves and others. Based on personality theorists from Freud (1930), Kohut (1977), Watson (1929), and



Skinner (1971), Digman believed Alpha represents the personality development process. This is the process by which children develop superego, learn to socialize, and restrain or redirect impulses and reduce aggression in a way that is socially approved. Meanwhile, the Beta factor is related to personal growth theories proposed by Rogers (1961) and Maslow (1950). Both these scholars mentioned the importance of “enhance the experiencing organism” (Rogers, 1961, p. 487) and “experience things fully, vividly” (Maslow, 1950, p. 11), which were consistent with the idea of being extroverted and open to new experiences. Thus, Digman (1997) summarized the Beta factor using this perspective and called it personal growth.

Another conceptualization of the Alpha and Beta factor was proposed by DeYoung, Peterson, and Higgins (2002) who suggest that Alpha and Beta factors could be better interpreted as stability and plasticity, and argued that neurobiological bases exist for them. They stated that the A, C, and N in Alpha mainly measure people’s ability to maintain stable relationships, motivation, and emotional states. This ability is related to the serotonergic system, which impacts emotion and motivation regulation (Meltzer, 1990). DeYoung et al. (2002) pointed out that reduction of serotonin can cause people to be aggressive and impulsive, and “Individuals who are disagreeable, unhappy, anxious and unreliable may well be less motivated or even less able to meet societal expectations.” (p. 538).

Consistent with Lewin’s conceptualization (1936), DeYoung et al. (2002) called the Beta factor plasticity, and also described it as cognitive flexibility. They argued plasticity represents people’s positive affects (E) and general openness to exploration and experience (O), and this ability links to the central dopaminergic (DA) system. Their hypothesis was based on the biological evidence that E and O were linked to latent inhibition reduction which was controlled by the DA system (Gray et al., 1997). These researchers’ conceptual arguments and supportive

biological evidence helped them form the foundation of the case that stability and plasticity were similar to Digman's (1997) Alpha and Beta factors, and could be seen as one interpretation of Alpha and Beta factors. These personality factors have also helped contribute and clarify components that address resilience.

### **Resilience and Personality**

Personality characteristics are an essential component in understanding resilience (Bonanno et al., 2011). Existing research has shown that the personality prototypes and resilience prototypes can be determined by the Big Five personality factors (Asendorpf et al., 2001; Block & Block, 1980; Block, 1993; Robins et al., 1996).

Block and Block's (1980, 1993) theory of ego-control and ego-resiliency is a classic example of how personality characteristics relate to one's ability to adjust to change. According to the theory, ego-control refers to an individual's characteristic response to attentive impulses and the ability to delay gratification. People with low ego-control tend to be attentive to and act on internal impulses (Block & Block, 1980; DeYoung, 2010). In contrast, ego-resiliency reflects an individual's ability to adapt to change, or to temporarily change his or her reactions and perceptions to meet different situational demands of life (Block & Block, 1980; DeYoung, 2010), by modifying their level of ego-control depending on the environmental context (Block & Block, 2006). Individuals with high ego-resiliency are resourceful and generally quick to adapt to changes, while those with low ego-resiliency tend to exhibit little adaptive flexibility when facing stressful or novel situations and fail to adapt to new conditions or recover from stress (Block & Block, 1980; DeYoung, 2010). Further, Block and Block (1980) explicitly construed these two constructs – ego control and ego resiliency – as embodiments of Lewin's (1936) concepts of *permeability* and *plasticity*, respectively. Block and Block (1980) reinterpreted

Lewin's concept and made them measurable. Permeability conveys a capacity to contain (or fail to contain) psychological needs, drives and tensions (ego control; Block & Block, 1980; p. 42); elasticity is the capacity to change to meet environmental demands, stressors and resolve intrapersonal concerns and motivations (ego resiliency; Block & Block, 1980; p. 47).

The ego-control and ego-resiliency theory was further developed into three personality prototypes that reflect people's propensity for impulse control and flexible adaptation depending on different levels of ego-resiliency and ego-control. The three prototypes are resilient, undercontrolled, and overcontrolled (Block, 1993). Resilient shows one's ability to adjust and change, which is similar to Lewin's idea of changing/adjusting between systems. A resilient prototype is high in ego-resiliency and has a moderate level of ego-control, the overcontrolled group is high in ego-control but low in ego resilience, and the undercontrolled individuals are low in both qualities (Block, 1993). These three prototypes also encompass the Big Five factors proposed by Costa and McCrae (1992). Regarding the Big Five factors, different research shows that across the lifespan the resilient prototype involves low score in N, and above-average scores on A, C, O, and E; the undercontrolled prototypes involves low C and A, moderate N, and average on O and E; the overcontrolled is associated with high N, low E, and average on the remaining domains (Caspi & Silva, 1995; Chapman & Goldberg, 2011; Dennissen et al., 2008; Letzring et al., 2005).

Researchers have used these three personality prototypes to understand the concept of resilience among different populations, such as children, young adults, female parents, and people with physical disabilities. A study found that resilient children report less distress and aggression than children with undercontrolled (reflecting problems with externalizing behaviors) and overcontrolled (reflecting problems with internalizing behaviors) prototypes (Caspi & Silva,

1995). As emerging adults, resilient individuals are more likely to take on normative adult social roles earlier than overcontrolled and undercontrolled young adults (Dennissen et al., 2008). Young working mothers who fit the overcontrolled prototype experience more significant distress and more work-family conflict than resilient mothers, while resilient mothers report higher levels of well-being (Braunstein-Bercovitz et al., 2012). Among people with an acquired traumatic physical disability, overcontrolled individuals report higher levels of depression following disability onset than resilient individuals, and resilient individuals have a more positive orientation toward problem solving than either overcontrolled and undercontrolled individuals (Berry et al., 2007). Resilient individuals are less likely to be socially isolated and engage in more recreational pursuits in older age than those with other personality profiles (Steca et al., 2010).

There are also studies of the relationship of the Big Five factors and Alpha and Beta factors introduced to resilience. Werner and Smith (2001) discovered that a high score on agreeableness indicates the person's ability to be authentic, empathic, and warm. Such positive qualities fit well with the conception of resilience as a positive social orientation. Neuroticism has a strong negative association with responses to a self-report measure of resilience (Furnham, Crump, & Whelan, 1997). People with high conscientiousness do not act on impulse and show their ability of planning and stability to achieve longer-term goals (McCrae & Costa, 1997), consistent with the description of resilient individuals as more achievement-oriented than those who are not resilient (Werner & Smith, 1992). Existing research shows that extraversion is positively related to resilience (Campbell-Sills et al., 2006; Riolli et al., 2002). In the context of higher-order personality factors, people who are high in qualities associated with Alpha/stability (high A and C, low N) and Beta/plasticity (high E and O) tend to show "social competence,

resourcefulness, and an active engagement with the environment under routine and stressful circumstances, and develop and maintain personally meaningful goals, activities and experiences that promote positive emotions and well-being, and alleviate distress” (Elliott et al., 2019, p. 145).

Resilience and personality have also been studied from a measurement perspective. Resilience has been defined by Wagnild and Young (1993) as a positive personality characteristic that enhances people’s adaptation ability. Researchers have conducted a series of studies focusing on trait orientation/personality characteristics of resilience (Connor & Davidson, 2003; Ong et al., 2006). To understand the concept of trait resilience, researchers developed the Resilience Scale (Wagnild & Young, 1993). The 25-item Resilience Scale was developed by identifying characteristics among most adults who had successfully adapted to a significant life event. Another popular self-report measure in this literature is the Connor-Davidson Resilience scale (CD-RISC; Connor & Davidson, 2003), which was developed to capture the aspect of ability and capacity to successfully cope with adversity. The measure provides a total score that is then used in research as an indicator of resilience. In contrast, other researchers consider resilience as a multidimensional concept. These concepts arguably include hardiness (Kobasa, 1979), protective factors for mental disorders, adaptability to change, self-efficacy, sense of humor, and support of other (Rutter, 1985), as well as positive adjustment following trauma (Lyons, 1991).

From the empirical evidence, it is apparent that personality characteristics and differences among individuals play an important role in the study of resilience, especially in studies that focus on individuals who are able to successfully adapt to, cope with, and recover from a stressful life event. However, as shown above, some studies based on the Block and Block’s

(1980) ego resiliency model may rely on self-report measures of resilience that lack detailed theoretical models (and testable propositions), and very few focus on the higher-factor personality theory that Digman (1997) and DeYoung et al. (2002) proposed. Since the theory of the higher-order factors is a more advanced approach in understanding personality characteristics and individual differences, it would be reasonable and potentially informative to see more research in this area in the future.

### **Caregivers of children with disability**

Masten (2001) suggested that a large number of early resilience research focused on children and adolescents exposed to disadvantage, trauma, and adversity. Most recent studies focus on resilience following trauma and people with disabilities or health conditions (e.g., Bonanno, 2004; Bonanno et al., 2012; Elliott et al., 2015). However, little is known about how resilience operates among caregivers of children with disability or chronic health conditions. The present study will focus on family caregivers of children with severe neurodisabilities. These children require 24-hour care since they cannot breathe without assistance, communicate, or have meaningful social interaction, or ambulate. Professionals suggested that home care is the best option for these families (Carnevale et al., 2006; Sarvey, 2008).

Additionally, children with severe neurodisabilities have significant respiratory morbidity (Seddon & Khan, 2003). They are the second most ordinary pediatric users of home oxygen, and respiratory complications are the leading cause of premature death (Primhak et al., 2011; Westbom et al., 2011). Children with severe neurodisabilities can also experience a wide range of secondary medical and physical complications and loss vital organ functioning, which may lead to dependence on medical technology and family members for primary care (Heaton et al., 2005).

Caregivers of children with such severe chronic illness need to adapt and cope with stress related to their children's health conditions and treatments before their children can accept and adjust to the disease and treatment (Kazak & Barakat, 1997). This might put extra stress on caregivers. Although the caregiver role can be fulfilling, stress and the burden of caregiving can negatively impact caregivers' morbidity and mortality (Haley et al., 2000; Schulz & Beach, 1999). Stress and burdens for caregivers may include time demands, assisting with basic and higher-order activities of daily living, responsibilities of providing medical care, limited availability to work, disruption in family routines, and irregular sleep (Heaton et al., 2005; Kirk, 1998). Physical, psychological, emotional, social, and financial stressors can also be associated with caregiver stress and burdens (Dumont et al., 2008). Research has found that 45% of mothers of ventilator-dependent children reported symptoms of depression while caring for them (Kuster & Radz, 2006). Other studies suggest that caregivers with depressive symptoms and older female caregivers are more likely to experience a higher level of caregiver burden (Hassan-Ohayon, et al., 2011; Jones et al., 2011; Magana et al., 2007).

It is critical to point out that caregivers for children with chronic conditions face different challenges than people who suffer from one specific stressful event. Caregivers might not be able to "bounce back" like others since they have to deal with continuous, everyday stressful situations assisting their children managing daily tasks and medical needs, and prepare to handle any sudden stress-provoking problems that may occur (Coon, 2012; Schulz et al., 2003). Additionally, the availability of social support, time spent with patients, patients' behavioral disturbances, and duration of caregiving may cause more stress on caregivers (Rodrigo et al., 2013; Zauszniewski et al., 2008).

Caregiving resilience reflects family caregivers' abilities to restore balance and harmony and enhance inherent adaptation when they encounter these stressful situations (Deist & Greeff, 2015; Gaugler et al., 2007). Research has shown that more resilient caregivers tend to be knowledgeable, resourceful, perceive sufficient social support, cope well with adversity, and report lower caregiver burden and better mental state and physical health (Donnellan et al., 2015; Jonker & Greeff, 2009; O'Rourke et al., 2010). Besides individual differences in personality characteristics, social cognitive characteristics, and coping styles can often predict caregiver adjustment (Elliott & Mullins, 2004; McCubbin & McCubbin, 1996), and are considered as resilience domains that have a protective effect on caregivers' health outcomes (Harmell et al. 2011).

#### **Protective factors: social support, coping styles, and social problem-solving abilities**

As mentioned above, social support and coping style are often seen as protective factors that promote resilience. According to research, protective factors can reduce the effects of the risk factors, minimize the negative reactions, contribute to the caregivers' positive outcomes, and enhance resilience (Bekhet et al., 2012; Zauszniewski et al., 2010). Hence, social support and coping styles are important components in understanding the concept of resilience.

Social support has been defined as "verbal and non-verbal information or advice, tangible aid, or action that is proffered by social intimates or inferred by their presence and has beneficial emotional or behavioral effects on the recipients" (Gottlieb, 1983, p. 28). There are different types of social support, such as instrumental, emotional, informational, tangible aid, positive social interaction, affection, and esteem (Cutrona & Suhr, 1992; Sherbourne & Stewart, 1991; Yu et al., 2004). Researchers have found that types of social support, along with the personality



characteristics of the recipient and the nature of the stressor, can influence how social support functions (Antonucci & Jackson, 1990; Bott, 1971; Lepore, 1997).

Extensive studies have verified and confirmed that social support can provide protections against stress and other negative psychological factors and buffer both physical and mental health (Cohen & McKay, 1984; Thoits, 1982). It was also shown that people with more significant social support could cope with major life changes better compared with those with less or no social support (Ho et al., 2003). The availability of support impacts caregiver burden, and caregivers who have access to a wide range of social support networks report experiencing less burden (Shurgot, & Knight, 2005; Yurtsever et al., 2013). Research also demonstrated that social support might moderate the association between negative caregiver outcomes and patient-related factors (Wilks & Croom, 2008).

In 1986, Dunst and Trivette studied the mediating influence of social support on families with children with intellectual disabilities, physical disabilities, and developmental risks. They discovered that parental satisfaction with support was the only main effect variable on parental well-being, and a supportive network mediated the degree of parents' protectiveness of their children and their perception of the difficulty of their children's behavior. Similar findings were found in families with children with severe physical disabilities (Sloper & Turner, 1993). The study reported a positive relationship between social support at times of crisis and current satisfaction with life. Recent studies also found coping and social support are associated with resilient prototypes. Among caregivers of a person with a traumatic spinal cord injury, those in the resilient group reported less anxiety, less health problems, but more positive affect and a greater supportive social network during the first year of the caregiver role (Elliott et al., 2014). Recently, Elliott et al. (2019) discovered that a resilient prototype was associated with lower

PTSD, depression, quality of life and functional disability among Iraq/Afghanistan war veterans. Previously, this team found that a resilient prototype among warzone veterans is positively related to adaptive health behaviors and social support that may likely promote their overall health and well-being (Elliott et al., 2017). Given the plethora of research focused on the interaction of these factors, it is reasonable to examine social support as a mediator between personality characteristics and health outcomes.

Coping is often described as a set of cognitive and behavioral strategies that help people manage the demands of stressful situations (Folkman & Moskowitz, 2004), which could be understood as solving problems caused by a stressful situation. Just like social support, there are different structures of coping, such as problem and emotion-focused coping, engagement and disengagement coping, and primary and secondary control coping (Compas et al., 2001; Skinner et al., 2003). The majority of coping research studied the differences between problem and emotion-focused coping, that problem-focused coping tends to act on the source of stress and emotion-focused coping tend to minimize negative emotions through strategies such as support seeking, emotional expression, or avoidance (Lazarus & Folkman, 1984).

Social problem-solving is the general coping strategy chosen by an individual when attempts to identify effective coping responses for specific problematic situations (D’Zurilla & Nezu, 1999). Social problem-solving abilities consist of two components, problem orientation (positive problem orientation and negative problem orientation) and problem-solving skills (D’Zurilla et al., 2002). Social problem-solving abilities are a strong prospective predictor of caregiver depressive symptomatology and health (Elliott et al., 2001). Effective problem-solving abilities are associated with caregiver well-being, caregivers with ineffective social problem-

solving abilities report more experiences of depressive symptomatology, anxiety, and poor health (Kurylo et al., 2004).

Studies show that personality traits could impact the effectiveness of coping strategies, some strategies might be beneficial for certain people but could be less effective or harmful for others with different personality traits (Bolger, & Zuckerman, 1995; De Longis, & Holtzman, 2005). For example, support seeking has an increased negative effect for people with high N but decreased negative effect for low N (Bolger, & Zuckerman, 1995; Gunthert et al., 1999). It will be interesting to see how higher-order factors impact caregivers' abilities to cope. Although many studies have focused on caregivers of different populations, little is known about how social problem-solving abilities impact caregivers for children with severe neurodisabilities. More knowledge about factors that affect caregivers' adjustment is needed to develop preventive and treatment interventions for the specific needs of people caring for children with severe neurodisabilities.

### **The proposed study**

The proposed study will first determine if the Alpha/Stability and Beta/Plasticity factors exist on a measure of Big Five traits among family caregivers of children with severe neurodisabilities (DeYoung et al., 2002; Digman, 1997). It is hypothesized that the prototypes will exist Caregivers with high A and C, and low N will be associated with Alpha, and caregivers with high E and O will be associated with Beta. Alpha and Beta will then serve as independent variables to explore the relationship between personality characteristics and caregivers' well-being and general health condition. Coping patterns and social problem-solving orientations will be included as mediator variables. It is expected that the Alpha and Beta factors will be associated with coping and social problem-solving styles in expected directions that will, in turn,

predict caregiver general physical health and well-being. Caregivers who report better well-being and general health would be more likely to use coping strategies that capitalize on social support, and more likely to have a more adaptive, constructive problem-solving style. This unique clinical sample will provide a rigorous test of the Alpha and Beta factors as indicators of resilience and subsequent associations with adjustment. This kind of clinic-based research is required to advance our current understanding of personality indicators of resilience (Bohane et al., 2017).

## CHAPTER III

### METHODS

This section will provide descriptions of data collection procedures, participants' information, measures used in the study, and the statistical analysis plan. This study utilizes data collected from the Arkansas Center for Respiratory Technology Dependent Children (ACRTDC) outpatient clinic. The study by Blucker, Elliott, Warren, and Warren (2011) utilized this dataset. The participants were family caregivers of children seen at the clinic. A two-factor confirmatory factor analysis (CFA) will be used on a measure of personality to reproduce the Alpha and Beta factors. Structural equation modeling (SEM) will be employed to test assumed relationships among the alpha and beta factors of resilience, coping patterns, problem-solving styles, physical health, and mental health outcomes.

#### **Procedures**

The original study was approved by the University of Arkansas for Medical Sciences Institutional Review Board. Potential caregiver participants for the study were identified from the outpatient clinic database of the Arkansas Center for Respiratory Technology Dependent Children (ACRTDC). Eligible participants self-identified as a primary caregiver of a patient in the ACRTDC program. Caregivers also had to be at least 18 years old and able to read and write in English. Some caregivers were contacted before the anticipated study date either by letter or by telephone. Other potential caregivers were presented with the opportunity to participate in the study during their children scheduled regular clinic visits.

Consenting participants were given a packet that contained all research questionnaires, which included demographic information, measures of personality, family coping style, social problem solving, physical and mental health. The entire packet took approximately forty-five

minutes to complete. All participants were also given the option to complete questionnaires in the clinic or take them home and return in a self-addressed stamped envelope upon completion. Patients' medical information was collected from their medical records.

## **Participants**

Children seen at the ACRTDC clinic range from three months to thirty-two years of age. Collectively, they have more than sixty different congenital neurological diagnoses and acquired neurodisabilities. Some of these are the results of birth trauma or traumatic onset disability, such as shaken baby syndrome, traumatic brain injury secondary to motor vehicle accidents, or other accidents resulting in physical brain trauma. All children at the clinic have chronic pulmonary symptoms and required a daily respiratory care plan with a respiratory therapy device (e.g., a ThAIRpy Vest, Emerson In-Exsufflator).

These patients share similar potential etiological factors that contribute to their pulmonary condition, including seizure disorders, nonambulatory states, hypotonia, spasticity, hyperpneic breathing patterns, ineffective cough, chronic bacterial contamination of the airway, and chronic airway secretions. The respiratory-care needs of these patients are comprehensive and complex. Because of their symptoms and the need for medication management, continuous bolus feeds, daily seizure control, and breathing treatments, which may be needed up to four times per day and last forty-five minutes to an hour each, ventilator-dependent children require twenty-four-hour care. The purpose of individualized respiratory care at the clinic is to obtain a degree of stability in order to prevent acute medical crises as well as reduce or eliminate emergency room visits and hospitalizations. It also guided care for acute respiratory events at home by providing ongoing caregiver education and support.

Sixty-eight families were provided with detailed information about the study and consented to participate. A total of 56 caregiver participants returned completed or mostly completed questionnaire packets, demonstrating a 90% completion rate. The age range of patients in these 56 families is 4 to 30 years old with a mean age of 14.18 years old. Of these, 60.71% were male ( $n = 34$ ). Caregivers' age ranged from 24 to 60 years old, with a mean age of 44.11. The majority of caregivers were female; only one male caregiver participated in this study. The number of years in the caregiver role ranged from 3 to 26 years, with a mean of 12.71 years and  $SD = 5.57$ . Among the 56 caregivers, 69.64% identified as Caucasian ( $n = 39$ ), and 30.36% identified as African American ( $n = 17$ ).

## Measures

**Demographic Information.** As shown above, demographic and medical information included patients' and caregivers' age, ethnicity, and gender. The number of years in the caregiver role was also recorded for participants. This information was obtained from the patients' clinical charts and reviewed with participants during the initial interview.

**Severity of Respiratory Condition.** Respiratory Management Score (RMS;  $M = 2.71$ ,  $SD = 1.09$ ) reflected information about the severity of children's conditions. The RMS was developed by the third author R. Warren and primary clinician at the clinic (Blucker et al., 2011). This scale was developed to obtain an indicator of the acuity of a child's pulmonary condition with implications for clinical management. The scale informed the clinicians of the progressive nature of the chronic lung disease that informs clinical case management.

The total score from the RMS was rated on a scale of 1 to 4:

1. Daily respiratory care plan includes aerosol medications including bronchodilators, steroid, and mucolytics. Antibiotics are used as needed for exacerbations of respiratory

infections. Care plan includes one or more respiratory therapy devices, such as the ThAIRpy Vest or Emerson In-Exsufflator. If patient has a hypopneic breathing pattern defined as a resting tidal volume of less than 7 ml/kg, then hyperinflation technique will be used to deliver aerosol medication using an Ambu bag.

2. Daily respiratory care plan as above plus presence of a tracheostomy tube which has been required because of upper airway dysfunction.

3. Daily respiratory care plan as above with the requirement of nighttime mechanical ventilatory support for chronic hypoventilation. Nighttime mechanical ventilatory support may utilize both an invasive interface – tracheostomy tube – or a non-invasive interface – nasal or face mask.

4. Daily respiratory care plan as above with the requirement of continuous mechanical ventilatory support 24 hours a day utilizing a tracheostomy tube as an invasive interface.

**Personality.** The Big Five Inventory (John & Srivastava, 1999) was developed to address the need for a short instrument to measure the Big Five personality traits: Conscientiousness (C;  $M = 4.29$ ,  $SD = .53$ , Cronbach's  $\alpha = .72$ ), Extraversion (E;  $M = 3.6$ ,  $SD = .84$ , Cronbach's  $\alpha = .84$ ), Agreeableness (A;  $M = 4.34$ ,  $SD = .50$ , Cronbach's  $\alpha = .68$ ), Openness (O;  $M = 3.63$ ,  $SD = .58$ , Cronbach's  $\alpha = .72$ ), and Neuroticism (N;  $M = 2.53$ ,  $SD = .81$ , Cronbach's  $\alpha = .81$ ). The shorter instrument helps to avoid participants' boredom and fatigue (Burisch, 1984) and allows an efficient and flexible assessment of the Big Five. The BFI is a self-reported scale with 44 items, and responses were scored on a five-point Likert scale, ranging from 1 (disagree strongly) to 5 (agree strongly). The alpha reliabilities of the BFI ranged from .75 to .90, with an average above .80 in the U.S. and Canadian samples the three-month test-retest reliabilities were also strong, ranging from .80 to .90 with a mean of .85 (John & Srivastava, 1999). Thus, the BFI is



considered a widely used, reliable, and valid measurement of the Big Five personality traits (John, Naumann, & Soto, 2008).

Higher-order personality factors will be generated from this scale. Caregivers with high A and C, and low N will be associated with Alpha ( $M = 2.03$ ,  $SD = .49$ , Cronbach's  $\alpha = .66$ ), and caregivers with high E and O will be associated with Beta ( $M = 3.61$ ,  $SD = .62$ , Cronbach's  $\alpha = .66$ ).

**Coping.** The Coping Health Inventory for Parents (CHIP; McCubbin, McCubbin, Nevin, & Cauble, 1981; McCubbin, McCubbin, Patterson, Cauble, Wilson, & Warwick, 1983) was used to examine caregivers' coping patterns. The CHIP is a 45-item self-report measure for caregivers of chronically ill children. Participants were asked to respond on a 4-point scale ranging from 0 (Not helpful), to 3 (Extremely helpful). The three-factor scores include 1) maintaining family integration, cooperation, and an optimistic definition of the situation (CHIPCO, 19 items;  $M = 45.89$ ,  $SD = 8.19$ , Cronbach's  $\alpha = .83$ ); 2) maintaining social support, self-esteem, and psychological stability (CHIPSES, 18 items;  $M = 29.76$ ,  $SD = 8.73$ , Cronbach's  $\alpha = .80$ ); and 3) understanding the medical situation through communication with other parents and consultation with the medical staff (CHIPMCC, 8 items;  $M = 16.98$ ,  $SD = 4.84$ , Cronbach's  $\alpha = .76$ ). CHIP scores are obtained by summing all items. Higher scores indicate a greater tendency on each scale.

**Social Problem-solving.** Caregiver participants' social problem-solving styles were assessed by the Social Problem-Solving Inventory-Revised: Short Form (SPSI-R:SF; D'Zurilla, Nezu, & Maydeu-Olivares, 2002). The SPSI-SF was designed to measure participants' orientations toward solving problems in routine and stressful situations, as well as their styles of problem solving. The short form of the SPSI-R contains 25 items, with responses ranging from 0

(Not at all true of me) to 4 (Extremely true of me). It also has five scales, including two scales to measure the problem orientation dimensions of the social problem-solving model and three scales to measure different problem-solving styles.

The two problem orientation dimensions include positive problem orientation (PPO;  $M = 45.89$ ,  $SD = 8.19$ , Cronbach's  $\alpha = .69$ ) and negative problem orientation (NPO;  $M = 45.89$ ,  $SD = 8.19$ , Cronbach's  $\alpha = .74$ ). The problem orientation component assists in regulating emotions, maintaining a positive attitude that is necessary for solving problems, and motivate a person toward solving problems in routine and stressful circumstances. The PPO scale, which focuses on cognitive functioning, includes the tendency to view problems in a positive light, to see them as challenges rather than threats, and to be optimistic about one's ability to find and implement solutions. The NPO scale measures the cognitive-emotional aspect, includes indicative of pessimism, lack of motivation with regard to problem-solving, and negative moods that hinder effective problem-solving.

The remaining three scales measure different problem-solving styles, including rational problem solving ( $M = 15.45$ ,  $SD = 3.94$ , Cronbach's  $\alpha = .87$ ), impulsivity/carelessness style ( $M = 2.91$ ,  $SD = 2.96$ , Cronbach's  $\alpha = .73$ ), and avoidance style ( $M = 2.14$ ,  $SD = 2.74$ , Cronbach's  $\alpha = .73$ ). Higher scores on each scale represent greater propensities for that facet of problem-solving. The total SPSIR score ( $M = 81.09$ ,  $SD = 10.59$ , Cronbach's  $\alpha = .65$ ) indicates effectiveness of social problem-solving abilities. The higher total scores reflect greater effective social problem-solving abilities.

**Physical Health.** Caregivers' physical health was assessed by the General Health (GH) subscale on the Short Form-12 Version 2, Health Survey (SF-12v2; Ware, Kosinski, Turner-Bowker, & Gandek, 2002;  $M = 68.57$ ,  $SD = 26.14$ ). The SF-12v2 is a self-report measure that

contains 12 items that provide an indication of the degree to which physical or mental health issues interfere with an individual's daily functioning across various domains. Participants rate their overall physical health conditions on a five-point scale (excellent, very good, good, fair, and poor). The raw scores are transposed to standardized scores ranging from 0 to 100. Higher scores on the GH scale represent a more optimal sense of personal physical health. The SF-12v2 has established very good psychometric properties. Thus, it is a widely used outcome measure for physical and mental health problems in clinical and research settings.

**Well-being.** The Mental Health (MH) subscale on the SF-12v2 (Ware et al. 2002;  $M = 74.55$ ,  $SD = 17.83$ ) was used to assess a caregiver's mental health conditions. The raw scores of the MH subscale are transposed to standardized  $T$ -scores, ranging from 0 to 100. The higher scores represent a greater sense of well-being and the happiness of participants.

### **Statistical Analysis**

STATA (StataCorp, 2019) will be used in this study. First, descriptive statistics of the sample will be gathered, such as the ages of patients and their caregivers, gender, and years in the caregiver role. Means and standard deviations will be calculated as well. Next, Two-factor Confirmatory Factor Analysis (CFA) will be used on The Big Five Inventory data to reproduce the alpha and beta factors in this sample. If the alpha and beta factors exist as predicted, factor loadings will be considered for each personality trait. If factor loadings are different for each trait, factor scores for alpha and beta might be employed in further analysis since they could better represent the alpha and beta factors.

Then, Structural Equation Modeling (SEM) will be employed to test the hypothesized mediating effects of coping patterns and problem-solving styles on the relationship of Alpha and Beta factors of resilience to caregivers' physical and mental health outcomes. Mueller (1996)

suggested that path modeling is the appropriate method to test potential relationships among variables guided by theoretical models. Direct and indirect effects can be tested in the path model. For this study, the Alpha and Beta factors of resilience will be the predictor variables, coping patterns and problem-solving styles will be the mediating variables, and caregivers' physical and mental health conditions will be the outcome variables.

## CHAPTER IV

### RESULTS

STATA software (StataCorp., 2019) was used to conduct all analyses. Sixty-eight families were provided with detailed information about the study and consented to participate. Fifty-six caregiver participants returned completed or mostly completed questionnaire packets, demonstrating a 90% completion rate. Descriptive statistics for demographic information reported in the Methods section are also listed in Table 1. Table 2 presents descriptive statistic information for the variables examined in this study.

#### **Respiratory Care Management Scores**

All fifty-six participants were assigned the Respiratory Care Management scores (RCM) by attending medical staff. The RCM scores ranged from 1 (daily aerosol medications, at least one respiratory therapy device, no mechanical ventilation) to 4 (requirement of continuous mechanical ventilatory support 24 hours a day utilizing a tracheostomy tube). Table 3 provides the summary of RCM scores for participants: 21.43% (n=12) received a score of 1; 12.5% (n=7) received a score of 2; 39.29% (n=22) received a score of 3; and 26.79% (n=15) received a score of 4.

#### **Correlational Analyses**

Preliminary analyses were performed on the self-report data and a  $p$  value  $< .05$  was selected to examine significance values. As presented in Table 4, the Big Five personality traits correlated significantly ( $p$ 's  $< .05$ ) with one another in expected directions with the exception of the correlation between Extraversion and Agreeableness. Neuroticism was significantly and inversely correlated with all other variables ( $p$ 's  $< .05$ ): Agreeableness ( $r = -0.53$ ); Conscientiousness ( $r = -0.33$ ); Extraversion ( $r = -0.37$ ); and Openness ( $r = -0.42$ ). Agreeableness

and Extraversion were significantly and positively associated with Conscientiousness ( $r_{AC} = 0.29$ ,  $r_{EC} = 0.3$ ), and Openness ( $r_{AO} = 0.27$ ,  $r_{EO} = 0.53$ ). A significant positive association was also found between Conscientiousness and Openness ( $r = 0.33$ ).

Table 5 displayed the correlations among all the variables of interest, including higher-order personality factors, self-report coping and problem-solving variables, and health outcome variables. The higher-order personality factors, Alpha and Beta, demonstrated significant relationships with multiple measured variables, including coping, problem-solving, and health outcome variables. Significant and positive associations were observed between Alpha and mental health (SF12MH,  $r = 0.61$ ) and between Beta and physical health (SF12GH,  $r = 0.32$ ). Higher Alpha scores were associated with higher caregiver mental health, and higher Beta scores were associated with higher caregiver physical health.

The coping scales of the CHIP showed strong correlations with the personality factors and health outcome variables. However, only the Social Support, Self-esteem, and Psychological Stability subscale (CHIPSES) demonstrated significant relationships with both higher-order personality factors (Alpha,  $r = 0.35$ ; Beta,  $r = 0.51$ ) and the problem orientation variables (PPO,  $r = 0.42$ ; NPO,  $r = -.28$ ; Total,  $r = 0.35$ ). CHIPSES also demonstrated significant relationships with both of caregivers' mental and physical health outcomes (SF12MH,  $r = 0.41$ ; SF12GH,  $r = 0.42$ ). These correlations revealed that greater use of coping efforts involving developing social relationships, engaging in activities that promote individual identity and self-worth, and behaviors to manage psychological tensions and pressures was correlated with better physical and mental health outcomes.

Among all the subscales of Social Problem-Solving Inventory-Revised (SPSIR), only the positive problem orientation (PPO) and the total score (SPSIRTotal) demonstrated significant

relationships with other variables. The SPSIRTtotal score reflects strong relationships with personality factors (Alpha,  $r_{TA} = 0.65$ ; Beta,  $r_{TB} = 0.56$ ) and health outcomes (SF12MH,  $r_{TM} = 0.40$ ; SF12GH,  $r_{TG} = 0.31$ ) than the PPO ( $r_{PA} = 0.40$ ,  $r_{PB} = 0.52$ ,  $r_{PM} = 0.39$ ,  $r_{PG} = 0.30$ ).

Based on the correlations discussed above, appropriate variables for the confirmatory factor analysis (CFA) and the path model were determined. The CFA would include the Big Five personality traits and two higher-order personality factors. The higher-order personality factors served as the exogenous variables. The Social Support, Self-esteem, and Psychological Stability subscale of the CHIP (CHIPSES), and the total score from the Social Problem-Solving Inventory-Revised scale (SPSIRTtotal) met the criteria expected of variables that might mediate the relationship of a predictor variable to an outcome (Baron & Kenny, 1986); therefore, these two were included as potential mediators in the path model.

### **Confirmatory Factor Analysis**

Confirmatory Factor Analysis (CFA) was used to obtain factor loadings indices for the latent variables, Alpha and Beta, in this sample. Based on Digman's (1997) theory of higher-order personality factors, composite scores of the Big Five Inventory were used to reproduce the Alpha and Beta factors. The theoretical model is presented in Figure 1. Conscientiousness, Agreeableness, and reversed Neuroticism were loaded on Alpha; Extraversion and Openness were loaded on Beta.

The standardized parameter estimates and standard errors from the CFA are reported in Table 7. A variety of fit indices were used in this study. The calculated chi-square  $\chi^2$  was equal to 1.31 and  $p = 0.86$  ( $p > .05$ ), indicating good model fit. The comparative fit index (CFI) = 1.00 (CFI  $\geq .90$ ), the Tucker-Lewis fit index (TLI) = 1.127 (TLI  $\geq .95$ ), and the root mean square error of approximation (RMSEA) = 0.00 (RMSEA  $< .08$ ). These values indicate a good fit

between the model and the observed data. The hypothesized two higher-order personality factors were confirmed in the CFA.

### **Path Analysis**

Path analysis is recommended for exploring relationships among variables (Mueller, 1996), and it was used to test the hypothesized model presented in Figure 2. The social support, self-esteem, and psychological stability scale (CHIPSES; also described as the “Coping Pattern II” by McCubbin et al., 1983), and the total score from the Social Problem-Solving Inventory (SPSIRTot) were tested as potential mediators of the relationships between higher-order personality factors and two quality of life outcomes. The results include both direct and indirect effects.

The chi-square test indicated good model fit,  $\chi^2 = .01, p < .05$ . The comparative fit index (CFI) = 1.00 (CFI  $\geq .90$ ), the Tucker-Lewis fit index (TLI) = 1.16 (TLI  $\geq .95$ ), and the root mean square error of approximation (RMSEA) = 0.00 (RMSEA  $< .08$ ) also indicated that the path model had an overall good fit, and all path coefficients were interpretable.

The higher-order personality factor Alpha accounted for 2% of the variance in Social Support, Self-esteem, and Psychological Stability coping scale on the CHIPS ( $R^2 = .02$ ) and 24% of the variance in social problem-solving total score ( $R^2 = .24$ ). Alpha and the two mediator variables combined accounted for 39% of the variance in physical health ( $R^2 = .39$ ) and 69% of the variance in mental health ( $R^2 = .69$ ). The higher-order personality factor Beta accounted for 19% of variance in the parental coping style to maintain social support, self-esteem, and psychological stability ( $R^2 = .19$ ), and 10% of the variance in the social problem-solving total score ( $R^2 = .10$ ). Beta and the two mediator variables combined accounted for 43% of the variance in physical health ( $R^2 = .43$ ) and 44% of the variance in mental health ( $R^2 = .44$ ).



Tables 8 and 9 demonstrate the path coefficients for the tested path model. Figure 4 shows the analyzed path model with only significant paths.

### *Direct Effects*

Multiple significant direct paths were found in the model. Both higher-order personality factors were positively and significantly associated with SPSIRTotal ( $p < .05$ ). Path coefficients from these factors to SPSIRTotal were .49 (Alpha) and .32 (Beta). These associations indicate that higher scores on the Alpha and Beta personality factors are associated with greater effective social problem-solving abilities.

Beta was also positively and significantly associated with CHIPSES ( $p < .05$ ), and the path coefficient was .44. This indicates that higher scores on the Beta personality factor are related to parental coping strategies that maintain social support, self-esteem, and psychological stability. The largest coefficient was found for the path between Alpha and caregivers' mental health outcomes (.58). Alpha significantly predicted mental health ( $p < .05$ ), suggesting stability is related to more positive mental health outcomes. The CHIPSES variable was also directly and significantly associated with both physical (.33) and mental (.31) health outcomes. Coping strategies that focus on maintaining social support, self-esteem, and psychological stability predicted more positive physical ( $p < .05$ ) and mental health ( $p < .05$ ) outcomes.

However, Beta had no significant direct effect on caregivers' physical and mental health outcomes. The mediator, SPSIRTotal, also did not directly affect either quality-of-life outcome variables in this sample.

### *Indirect Effects*

Table 9 contains all eight indirect effects between the two higher-order personality factors (Alpha and Beta) and the two health outcome measures (physical and mental health) via

the two mediators (CHIPSES and SPSIRTtotal). Only two of the eight indirect effects were significant. Beta had significant indirect effects through social support, self-esteem, and psychological stability (CHIPSES) to both physical ( $p < .05$ ) and mental health ( $p < .05$ ) outcomes. These results indicate that better maintaining social support, self-esteem, and psychological stability significantly mediated the relationship between Beta (plasticity) and physical and mental health outcomes. These indirect effects were consistent with the theoretical model. Further, no significant indirect effects were observed for the Alpha personality factor through either mediator in predicting the quality-of-life outcome variables.

### **Summary**

Both significant direct and indirect effects were observed in the path model from the higher-order personality factors to the health outcomes. The coping and the problem-solving variable did not mediate the beneficial effect of Alpha to caregiver mental. The Alpha factor directly and significantly predicted mental health, indicating the stability meta-trait is related to better mental health outcomes. Of the two variables positioned as mediators in the model, only the CHIPSES significantly predicted caregivers' physical and mental health outcomes. The total social problem-solving score did not have a direct effect on either caregivers' mental health or physical health outcomes. However, both Alpha and Beta personality factors were associated with greater effective social problem-solving abilities.

Beta did not have a direct effect on either caregivers' quality-of-life outcome. However, significant indirect paths were found between Beta and both caregivers' quality of life outcomes through the mediator CHIPSES. Beta exerted beneficial influences on caregivers' physical and mental health outcomes through its relationship with CHIPSES, a coping style indicative of behaviors that maintain social support, self-esteem, and psychological stability.

## CHAPTER V

### DISCUSSION

This study examined the existence, correlates and predictive properties of the higher-order personality factors Alpha and Beta among caregivers of children with severe neurodisabilities. Reasoning from a theoretical understanding of these meta-traits and their presumed properties (DeYoung, 2002; Digman, 1997), it was expected that (a) the two meta-traits could be identified in this clinical sample, (b) these meta-traits would be associated with caregiver coping behaviors and problem-solving abilities that would, in turn, (c) predict two important aspects of caregiver quality of life: self-reported mental health and general physical health.

In this chapter, the theoretical and clinical significance and implications of the study will be discussed. Limitations of the study will also be noted, and possible directions for future research will be offered.

#### **Alpha and Beta: Overview of the Results**

Results of a confirmatory factor analysis determined that Alpha and Beta factors exist among the caregivers in this sample. Consistent with past research, Alpha was characterized by high Agreeableness and Conscientiousness, and high Emotional Stability (i.e., low neuroticism). Beta was characterized by high Extraversion and greater Open to Experience. Correlational analyses revealed interesting associations between the two meta-traits and the two variables that served as mediators in subsequent analyses. Higher Alpha and Beta scores were significantly correlated with effective social problem-solving ability (indicated by SPSIRTtotal score) and with a greater tendency to establish and utilize coping patterns related to social support, self-esteem, and psychological stability (indicated by the CHIPSES). This preliminary analysis implied both

meta-traits facilitated emotional regulation, motivation and practical approaches to solving problems under routine and stressful conditions, and with the effective utilization of social support and maintaining self-esteem under duress. These relationships gave an initial impression that both meta-traits might operate through these mediators.

We know from the extant literature that the “Big Five” personality traits are correlated with coping behaviors and social problem-solving abilities. For example, in a series of studies of the properties of the problem orientation and the problem-solving skills components of the Social Problem-Solving Inventory-Revised (D’Zurilla et al., 2002), Elliott et al. (1994) found negative problem orientation was associated with deficiencies in emotion regulation and positive affectivity associated with confidence in problem solving abilities. The relationship between neuroticism and emotion-focused coping has also been observed among family caregivers (Chappell & Dujela, 2009). In general, the literature concerning personality characteristics and coping is vast, and periodically reviews of this work are updated (e.g., Carver & Smith, 2010; Conner-Smith & Flachsbart, 2007).

The initial correlational analyses were relatively consistent with prior research, implying that Alpha and Beta might operate through coping and problem-solving abilities to predict the two quality of life outcome variables. However, these preliminary analyses also indicated this pattern was more complicated than originally assumed: Higher Alpha was significantly correlated with caregiver mental health, but not with their general physical health. In contrast, the opposite pattern was found with Beta, which was significantly and positively correlated with caregiver physical health but not with their mental health. The final path model then provided greater insight into the nature of these relationships in context. Alpha had a significant and direct effect on caregiver mental health, but not on caregiver physical health. Despite significant

associations with the mediators, there were no indirect effects were found from Alpha to caregiver outcomes. Beta had no direct effect on either caregiver outcome variable. It's beneficial effects on both outcomes, however, occurred through its relationship with coping variable that assessed the effective use of social support to promote adjustment.

It was also important to note that we found no results where we would have expected to find a significant relationship (e.g., social-problem-solving skills to caregivers' mental and physical health outcomes). It is possible that the other variables in the model, especially personality, accounted for the available variance. Also, perhaps accounted for variance that may have been associated with problem. Personality obviated the relationship we saw in correlations between problem solving and outcomes.

### **Theoretical Implications**

For some time now the Big Five personality factors have been examined as reliable predictors of physical health and wellness (Booth-Kewley & Vickers, 1994), and of psychological adjustment and coping, generally (McCrae, 1991; McCrae & Costa, 1986). However, minimal research focuses on how the higher-order "meta-trait" personality factors predict adjustment and of the available research to date, very little has occurred with clinical samples. The pronounced and direct effect of Alpha on caregiver mental health may be attributed, in part, to the known relationship of neuroticism to distress, negative cognitions, and stress, generally (Suls & Martin, 2005). But as a meta-trait, conscientiousness and agreeableness contribute to the unique functions associated with Alpha.

In their discussion of the meta-traits in their circumplex model of personality, Strus and Cieciuch (2017) describe Alpha as the component of personality that provides stability in emotional, motivational and social functioning, and it accomplishes this, in part, by imbuing an

individual with perseverance, intrinsic motivations, and abilities to delay gratification. Several of these characteristics typify qualities that constitute agreeableness and conscientiousness. In tandem, this meta-trait appears to facilitate caregiver mental health, independent of the mediating variables in the path model.

Beta is described by Strus and Ciecuch (2017) in terms that capture the plasticity, elasticity and fluidity originally conceptualized by Lewin (1936). Beta, as summarized by Strus and Ciecuch, captures the behavioral “openness” to change, engagement in new experiences and to explore, and a responsiveness to environmental demands; it also conveys a sense of initiative and a willingness to be innovative in personal relationships, and in doing so, may reflect a predisposition for personal growth.

Alpha and Beta, according to Farkas and Orosz (2015), seem to embody the two primary components of resilience, as conceptualized by Block (Block & Block, 1980) and in the two personality components conceptualized by Lewin (1936). Through this lens, high Alpha scores among caregivers facilitated a sense of emotional resilience with their qualities that accompanying high emotional stability, and high agreeableness and conscientiousness. Caregivers with higher Alpha scores likely had a better ability to maintain stable relationships, motivation, and emotional states (DeYoung et al., 2002). Digman (1997) also maintains that people with higher Alpha scores are more socialized, more likely to make socially acceptable comments, and display socially acceptable behaviors. Nevertheless, previous research found Alpha directly predictive of psychological distress among 1151 emerging adults with chronic health conditions, independent of its significant associations with positive affect, social support, and intentions to participate in desired activities (Barron, 2019). Alpha clearly has the capacity to exert a strong, independent influence on emotional adjustment.

It may be informative to consider previous studies of the traits that constitute Alpha. For example, Hajek and König's (2018) found that of the five traits, only agreeableness significantly moderated the relationship between caregiving and life satisfaction. Other studies confirm that individuals high in agreeableness were cooperative, good-natured, forgiving, and helpful (Melo, Maroco, & Mendonça, 2011), but there is also evidence that they may have unique tendencies to be authentic, empathic, and warm (Werner & Smith, 2001).

Individuals high in conscientiousness have better self-control, which assisted them to be more socially competent and confident (Eisenberg, Champion, & Vaughan, 2007; Jerram & Coleman, 1999), and more likely to engage in behaviors that promote better health outcome since they are self-disciplined and organized (Bogg & Roberts, 2004). Conscientiousness has been positively associated with physical and mental health (Löckenhoff et al., 2011). These studies informed our *a priori* expectations about Alpha and its possible effects on both mental and physical health. However, our findings implicated Beta as the meta-trait with beneficial influence on both caregiver outcomes.

Importantly, Beta did not have a direct effect on caregiver outcomes. Its positive effects were mediated through a coping mechanism that merits particular attention. In the original conceptualization of their Family Resilience model, and the corresponding development of the Coping Health Inventory for Parents (CHIPs), McCubbin and colleagues (1983) describe "coping pattern II" as the effort a parent makes to "...maintain a sense of their own well-being through social relationships, involvement in activities that have the potential of enhancing one's self-esteem, and doing things to manage psychological tensions and strains" (p. 363).

Ostensibly, parental coping strategies serve to protect their personal health and well-being, and contribute to the health and well-being of the child, according to their model. To achieve this,

family resiliency depends on flexibility, social support (including emotional, esteem and network support), an observance of family routines, shared strength and purpose, and effective problem-solving communication (among other factors; McCubbin et al., 1997).

The Social Support, Self-Esteem and Psychological Stability subscale on the CHIIPs (abbreviated in this study as CHIPSES) was selected as a potential mediator in the path model because it was significantly correlated with the predictor and outcomes variables in the model, meeting the basic requirements for a potential mediating variable (Baron & Kenny, 1986). Occasionally labeled as “maintaining social support” by some (e.g., Boettcher et al., 2020), this subscale has emerged in several studies as a significant predictor of caregiver adjustment. The Boettcher et al. (2020) paper is particularly relevant to the present study, as they administered the CHIIPs instrument to parents of children with severe disabilities that necessitated long-term mechanical ventilation. The CHIPSES was significantly associated with the mother’s mental health and quality of life, but not for the fathers. A study of parents of children with neurological disorders found the CHIPSES (described as “maintaining social support”) was the only CHIIPs subscale that mediated the relationships of four distinct illness perceptions – personal control, perceived consequences of the child’s illness, treatment control and perceived longevity of the illness – to caregiver depression (Kelada et al., 2020). In each case, as these maladaptive beliefs increased, the ability to maintain social support critical to self-esteem and emotional stability (assessed by the CHIPSES) decreased, contributing to more symptoms of depression.

Tests of mediation in path models serve to provide some “...explanation for the mechanism that drive the relationship” (Hoyt et al., 2008; p. 323) between a predictor variable and indicators of adjustment. Results of the present study reveal that the Beta meta-trait is instrumental in caregiver emotional and physical quality of life by exerting a positive influence



on the caregiver's ability to maintain social support and personal relationships, presumably by endowing the caregiver with the cognitive and behavioral skill set to be inventive, flexible, and in being open to new experiences and changes. These characteristics may be critical factors in facilitating caregiver emotional and physical health, as the caregiver adapts to address the issues and regimens necessary to promote and protect a child's health.

The flexibility associated with the Beta meta-trait is evident in studies of the correlates of extraversion and openness to experience. Higher levels of extraversion are associated with greater sociability, high activity levels, and a greater chance to experience positive emotions (Costa & McCrae, 1992; McCrae & Costa, 2003) that are conducive to personal relationships. Extraversion is also associated with mental health status (Steel et al., 2008). Individuals with higher openness scores demonstrate greater mental flexibility that promotes cognitive, emotional, and physical well-being (Duberstein et al., 2003; Jerram & Coleman, 1999; Steel et al. 2008). Caregivers in the present study with higher Beta scores were likely able to make changes as needed depending on situations, to the benefit of their quality of life.

### **Clinical Implications**

Although the present study relied on a theoretical conceptualization of personality meta-traits and their associations with coping and problem-solving abilities, this work has several clinical implications. First, it is important to remember the everyday, lived experience of these caregivers. Children seen at the clinic where these caregivers were recruited have a need for a respiratory therapy device, and some of them depended on a ventilator. Ventilator-dependent children may require 24-hour comprehensive and complex care, such as medication management, continuous bolus feeds, and control of daily seizures and breathing treatments. These children are at high risk for secondary medical and physical complications. Individualized

respiratory care at home is often the best option for these families (Carnevale et al., 2006; Sarvey, 2008). However, long hours of home care led to a greater possibility of experiencing burnout and other negative consequences for caregivers, including depressive symptoms (Heaton et al., 2005; Kirk, 1998; Kuster & Radz, 2006). In general, family caregivers of children with chronic and complex health problems have a higher risk for depression and ill health than caregivers of children with less complex problems (Brehaut et al., 2011).

Reviews of the literature confirm that coping is associated with the quality of life reported by family caregivers of children with disabilities and chronic illness (Fairfax et al., 2019), and cognitive-behavioral factors may be important than specific coping behaviors (even those measured by the CHIPs; Guillaman et al., 2013). The coping mechanisms assessed by the CHIPs have been construed in some research as “stress management” strategies that, in turn, contribute to a larger, contextual understanding of caregiver adjustment (Raina et al., 2005). Findings from this study offer professionals insight into the complex relationships among higher-order personality factors, social interaction/support, social problem-solving ability, and health outcome for the caregiver population. It was evident that personality influences caregivers’ perceptions of coping patterns related to social support, self-esteem, and psychological stability and social problem-solving ability. Clinicians need to consider, gather, and incorporate this information into treatment for chronic disability and health conditions and provide and facilitate increased access to support for caregivers.

Against this backdrop, studies like this present one is needed to identify factors that may be associated with positive outcomes that provide important information about the mechanisms that affect positive adjustment. This, in turn, could potentially inform interventions to assist caregivers who may be at risk for distress. In the present study, the two meta-traits – Alpha and

Beta – represent elements we can associate with the Block model of trait resilience, and as such, they can provide insight into characteristics that might “...account for stress resistance or the maintenance of positive outcomes in the face of challenge” (Ong et al., 2009; p. 1784).

One of the contributions of this study is that the findings add more information to current literature about how low neuroticism as part of the Alpha personality factor operates in the context of conscientiousness and agreeableness. It was evident that emotional regulation, self-regulation, and self-discipline contribute to Alpha’s stability. Research showed that caregivers with higher neuroticism (emotional instability) had a greater likelihood to take on the caregiver role (Rohr et al., 2013). That means stepping into the caregiver role puts individuals who are more likely to experience mental health issues at further risk. It appeared that among this sample, high Alpha scores assist caregivers in staying emotionally stable even when they are in the caregiver role, which puts them at higher risk for experiencing stress and other negative emotions. It is possible that low neuroticism helped to regulate caregivers’ feelings and allowed them to have a greater ability to be conscientious about having better self-control and engaging in behaviors that promote better health outcomes. For example, caregivers might be less likely to experience substance abuse and more likely to engage in self-care activities.

This study aligns with existing research that only coping strategies that emphasize social support, self-esteem, and psychological stability showed a solid correlation to caregiver health outcomes. Coping strategies that center on problem-solving tactics and seeking social support were more likely to lead to positive adjustment outcomes (Essex et al., 1999; Gavidia-Payne & Stoneman, 2006; Hastings et al., 2005; Judge 1998; Kim et al., 2003; Sloper et al., 1991).

Thinking from the resilience perspective, Block’s theory that focus on self-regulation could be used to guide interventions (Block & Kremen, 1996). The agreeableness and

conscientiousness components to Alpha may facilitate emotional regulation and self-regulation (DeYoung et al., 2002). Psychoeducational interventions that emphasize on self-regulation skills might help to promote psychological stability in caregivers and help to foster emotion regulation and overall resilience. These would be beneficial for caregivers to manage the chronic stress and negative emotions associated routine ongoing daily demands of caring for child with complex health care needs.

Empirically-supported mindfulness practices and Acceptance and Commitment Therapy (ACT) use clinical techniques that focus on increasing positive affect, proactive coping, and self-regulation (Hayes et al., 2004). Deep breathing exercises, meditation, and other grounding techniques are some common examples of mindfulness practices that could help individuals to re-center themselves during a stressful day and focus on the present moment. ACT also focuses on increase psychological flexibility. Psychological flexibility was found to be effective in reducing depressive symptoms for caregivers with dementia (Márquez-González et al., 2014). This mode of treatment would be especially beneficial for caregivers who are caring for individuals with more sever health conditions and have poor or terminal health prognoses.

The other hypothesized mediator, social problem-solving ability, did not significantly impact the current path model. However, the present study still shows that social problem-solving ability was significantly correlated with caregivers' physical health ( $r = .31$ ) and mental health ( $r = .4$ ) outcome variables in the expected directions. These correlations clearly indicate that social problem-solving ability is associated with better health outcomes among these caregivers. There is considerable evidence that social problem-solving abilities have beneficial effects among caregivers of family members with chronic disabilities (Elliott et al., 2001; Kurylo

et al., 2004), and these beneficial associations have been observed with quality of life measures similar to the ones used in the current study (Elliott & Shewchuk, 2003; Grant et al., 2001).

Problem-solving therapy (PST) was used to treat depression among individuals with chronic disease (Nezu et al., 2003) and to promote social and interpersonal skills crucial for community reintegration for people with traumatic brain injury (Rath et al., 2003). Clinical evidence showed that PST could effectively lower caregivers' distress levels (Sahler et al., 2005). Rivera et al. (2008) found family caregivers of individuals with traumatic brain injuries reported a significant reduction in depression and physical health complaints after receiving PST. They also reported that PST could be effectively delivered in telehealth applications to overcome the barriers that limit access to health care services. Caregivers who have limited time and availability are restricted in their ability to leave the home as they need to provide ongoing home care.

Depending on different personality factors, coping strategies look different for each caregiver. Coping strategies and social problem-solving skills are learned cognitive behaviors according to individuals' personal style. It is essential for professionals to keep in mind that before teaching the same coping skills to everyone, understanding individual personality differences are more important and will impact their abilities to utilize the same skill sets. Psychological assessment was identified as fundamental component for comprehensive case conceptualization that informs treatment directly (Finn & Tonsager, 1997; Meyer et al., 2001). Personality assessments based on the Five-Factor Model, such as NEO-PI-3 (Costa & McCrae, 1992), could be added as part of psychological treatment for caregivers. Assessment results would help clinicians to understand caregivers' personalities, how plasticity and stability operate, and impacting their adjustments.

However, study indicated that consider only one specific personality trait provide limited information and guidance for understanding caregivers' problem from a holistic perspective (Elliott et al., 2019). For example, we know an significant association between high neuroticism and depression is not a novel finding. We need to consider that some caregiver problems reflect skill deficits that may be long-standing, entrenched, and affiliated, in part, to their own personality characteristics. The current study implies that personality meta-traits might inform the need for specific behavioral interventions to promote coping, family and interpersonal support, and goal-directed planning. For example, stability is associated with the motivation and intent to resolve or adapt to a situation successfully; plasticity is associated with an individual's energy and creativity available for coping (Connor-Smith & Flachsbart, 2007). Appropriate and effective psychological interventions and ongoing supports to caregivers may be informed by these personality characteristics and corresponding needs.

### **Limitations and Future Research**

Due to the unique nature of this sample, this study has several limitations. The small sample size posed several problems. It limited the power sufficient to detect significant relationships that might exist among variables. Structural Equation Modeling (SEM) was used to test the theory-driven conceptualization of mediating effects among variables; path modeling was the most appropriate method (Mueller, 1996). Although there are no firm guidelines for sample size requirements, the size of the sample in this study should be sufficient to have stable estimates and adequate power in SEM analyses (MacCallum et al., 1999). Research indicates that the sample size recommendations for SEM analyses can range from 30 to over 450, and not more is not always "better" (Wolf et al., 2013). In addition, when interpreting the CFA goodness of fit results for the path model, the Chi-square statistic is very sensitive to sample size. However, in

the current study, other indicators of goodness of fit that were less sensitive to sample size also showed similar results and indicated good fit.

The cross-sectional nature of data limits our interpretation of the results, our understanding of the directions of the relationship, and keeps us from making firm interpretations about mediating effects. Cross-sectional data are not ideal for testing temporal relationships or causal hypotheses. Winer et al. (2016) argue that the absence of longitudinal data undermines any attempt to infer causation from mediation of cross-sectional data. Consequently, we can only imply atemporal associations within our results. Although the current path model makes theoretical sense, we cannot dismiss issues about directionality. There are some concerns in the literature about the validity of testing mediation effects in a cross-sectional design, and the preferred way to test mediation effects would be with longitudinal designs (Heller et al., 2009; Pek & Hoyle, 2016).

In this study, we know from the observed correlations there were potential significant relationships between personality and caregiver health outcomes that were theoretically consistent with existing longitudinal research (Jang et al., 2004; Nijboer et al., 2001; Rabins et al., 1990; Reis et al., 1994). However, other psychological issues, such as depression and anxiety, could also impact caregivers' ability to engage in social support relationships, reflect different coping strategies, and compromise health-related quality of life. These were not studied in the present work.

Another limitation of this study concerns the reliance on self-report measures. Based on existing research and the theoretical model that guided the study, we assumed specific directions among different variables. It was possible that distressed people give more negative self-reports on instruments due to their depressive symptoms and negatively-valenced cognitions and mood.

Depression might impact problem-solving, and depression might cause caregivers to report worse mental health. It is also possible that caregivers provided biased responses on the self-report measures. Perhaps they felt some pressure to respond to items in a favorable and socially appropriate manner. The results might also be influenced by the fact that these caregivers had self-selected to commit to their caregiver role. We have no information about any parent or partner who may have been a caregiver and left that role, or who left the family prior to this study.

Only one male caregiver participated. This is not surprising because traditional gender role expectations for women assume the primary caregiver roles (Patterson et al., 2004). Research showed that mothers of chronically ill children report significantly higher overall psychological distress than fathers. They also reported significantly greater use of social support and other coping mechanisms (Boettcher et al. 2020). Gender differences merit further study in the context of higher-order personality factors and psychological adjustment, generally, and caregiver well-being, specifically.

This is a challenging group to recruit due to the severity level of each case, the relatively low-frequency of the health problems experienced by these children, and the difficulty in gaining access to recruit these caregivers for study. Nevertheless, the present findings provide important insights into the relationship among caregivers' personality characteristics, coping behaviors that enact social relationships, support and networks, and caregiver physical and mental health outcomes. It also provides some ideas and directions for future studies related to caregivers.

Future research should aspire for larger sample sizes and strive for greater diversity in the demographic composition of the sample to increase generalizability. For example, to recruit more male caregivers, caregivers in different racial and cultural groups. Future research could



also consider including caregivers at different ages and with varying years of caregiving experiences. Caregivers might experience variety of developmental challenges with younger and older care recipients, and it would be interesting to study how this impact the caregiver adjustment. Due to the complexity of different disabilities and health conditions, recruitment might be challenging but could better understand individual differences.

Caregivers in the current study may have been under constraints or expectations to present favorably and were motivated to present themselves in a favorable view. So that they would be perceived as good parents. In order to assess more accurate caregiver health outcomes and quality of life, future research could use more standardized assessments to add more variables that measure psychological distress to explore potential indicators and mediators of caregiver adjustments and quality of life. Stress related to illness and disability, environmental factors, and coping are significant factors in the psychological adjustment for caregivers of chronically ill children (Wallander & Varni, 1992). Therefore, other factors to consider are the severities of the patients' conditions and specific disability/condition-related stressors and explore how these impact caregivers' adjustment and the role of personality in these processes.

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APPENDIX  
TABLES AND FIGURES

Table 1.

*Descriptive Statistics for Demographics*

Variable	n	% of Sample	Range	Mean	SD
Patient Gender					
Male	34	60.71			
Female	22	39.29			
Patient Age			4 – 30	14.18	6.26
Parent Gender					
Male	1	1.79			
Female	55	98.21			
Parent Age			24 – 60	44.11	8.94
Parent Ethnicity					
Caucasian	39	69.64			
African-American	17	30.36			
Years Caregiving			3 – 26	12.71	5.57
Respiratory Care Management Score			1 – 4	2.71	1.09

Table 2.

*Descriptive Statistics of all variables under consideration*

Variable	Possible Range	Observed Range	Mean	SD
<b>Personality Factors</b>				
Conscientiousness	1 - 5	3 - 5	4.29	0.53
Agreeableness	1 - 5	3.11 - 5	4.34	0.50
Neuroticism	1 - 5	1 - 4.63	2.53	0.81
Extraversion	1 - 5	1.63 - 5	3.60	0.84
Openness	1 - 5	2.30 - 4.7	3.63	0.58
Alpha		.74 - 2.81	2.03	0.49
Beta		1.96 - 4.85	3.61	0.62
<b>Family Coping</b>				
<b>CHIP</b>				
CHIPCO	0 - 48	26 - 57	45.89	8.19
CHIPSES	0 - 54	12 - 46	29.76	8.73
CHIPMCC	0 - 24	5 - 24	16.98	4.84
<b>Social Problem Solving</b>				
PPO	0 - 20	6 - 20	15.34	3.41
NPO	0 - 20	0 - 14	4.64	3.25
AS	0 - 20	0 - 10	2.14	2.74
RPS	0 - 20	5 - 20	15.45	3.94
ICS	0 - 20	0 - 13	2.91	2.96
Total	0 - 100	53 - 100	81.09	10.59
<b>Caregiver Health Outcome</b>				
SF12MH	0 - 100	12.5 - 100	74.55	17.83
SF12GH	0 - 100	0 - 100	68.57	26.14

Table 3.

*Descriptive Statistics of the Respiratory Care Management Score*

Respiratory Care Management Score	Freq.	Percent	Cum.
1	12	21.43	21.43
2	7	12.50	33.93
3	22	39.29	73.21
4	15	26.79	100.00
Total	56	100.00	

Table 4.

*Correlations among Five-Factor Model Factors*

	E	A	C	N	O
E	1.00				
A	0.23	1.00			
C	0.30*	0.29*	1.00		
N	-0.37*	-0.53*	-0.40*	1.00	
O	0.53*	0.27*	0.33*	-0.42*	1.00

\*  $p < .05$

Table 5.

*Correlations among Predictor, Mediator, & Outcome Variables*


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	1	2	3	4	5	6	7	8	9	10	11	12	13
1. ALPHA	1.00												
2. BETA	.48*	1.00											
3. CHIPCO	.31*	.24	1.00										
4. CHIPSES	.35*	.51*	.61*	1.00									
5. CHIPMCC	.06	.06	.57*	.42*	1.00								
6. PPO	.40*	.52*	.33*	.42*	.09	1.00							
7. NPO	-.70*	-.39*	-.16	-.28*	.10	-.29*	1.00						
8. AS	-.54*	-.36*	-.10	-.12	.00	-.35*	.55	1.00					
9. RPS	.15	.31*	.11	.24	.12	.56*	-.13	-.02	1.00				
10. ICS	-.37*	-.22	-.01	-.03	-.13	.07	.34*	.34*	-.24	1.00			
11. SPSIRTtotal	.65*	.56*	.23	.35*	.08	.69*	-.69*	-.64*	.67*	-.54*	1.00		
12. SF12GH	.25	.32*	.15	.42*	.07	.30*	-.38*	.09	.13	-.09	.31*	1.00	
13. SF12MH	.61*	.24	.30*	.41*	.24	.39*	-.41*	-.41*	.03	-.12	.40*	.21	1.00

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\*  $p < .05$



Table 6.

*Standardized Coefficients for CFA Analysis*

Observed Variable	Latent construct	$\beta$	SE	$p <$
Conscientiousness	Alpha	.61	.11	.01
Agreeableness	Alpha	.50	.13	.01
Neuroticism (Reversed)	Alpha	.83	.10	.01
Extraversion	Beta	.69	.12	.01
Openness	Beta	.77	.12	.01

LR test of model vs. saturated:  $\chi^2 (4) = 1.31$ , Prob  $> \chi^2 = 0.8600$

Table 7.

*Standardized Coefficients of the Path Model*

Dependent Variable	Independent Variable	Standardized Estimate	Standard Error	CR	<i>p</i>
CHIPSES	Alpha	.14	.13	-.11	.27
	Beta*	.44	.12	.21	.00
SPSIRTotal	Alpha*	.49	.10	.30	.00
	Beta*	.32	.10	.12	.00
SF12MH	Alpha*	.58	.12	.34	.00
	Beta	-.22	.13	-.48	.09
	CHIPSES*	.31	.11	.08	.01
	SPSIRTotal	.05	.14	-.23	.72
SF12GH	Alpha	.01	.16	-.31	.97
	Beta	.06	.16	-.25	.71
	CHIPSES*	.33	.13	.06	.02
	SPSIRTotal	.16	.17	-.17	.35

LR test of model vs. saturated:  $\chi^2 (1) = 0.01$ , Prob  $> \chi^2 = 0.9081$  \*  $p < .05$

Table 8.

*Indirect Effect Estimates from Predictors to Outcomes through the Mediators in Path Model*

Effect	Unstandardized Coefficient	Unstandardized 95% CI	<i>p</i>
Alpha → CHIPSES → SF12MH	1.61	-1.49, 4.71	0.31
Alpha → SPSIRTotal → SF12MH	0.90	-4.08, 5.88	0.72
Beta → CHIPSES → SF12MH*	3.89	0.23, 7.55	0.04
Beta → SPSIRTotal → SF12MH	0.46	-2.11, 3.03	0.72
Alpha → CHIPSES → SF12GH	2.52	-2.43, 7.48	0.32
Alpha → SPSIRTotal → SF12GH	4.17	-4.73, 13.08	0.36
Beta → CHIPSES → SF12GH*	6.10	-.08, 12.28	0.05
Beta → SPSIRTotal → SF12GH	2.15	-2.55, 6.84	0.37

\*  $p < .05$

Figure 1. A priori CFA Model

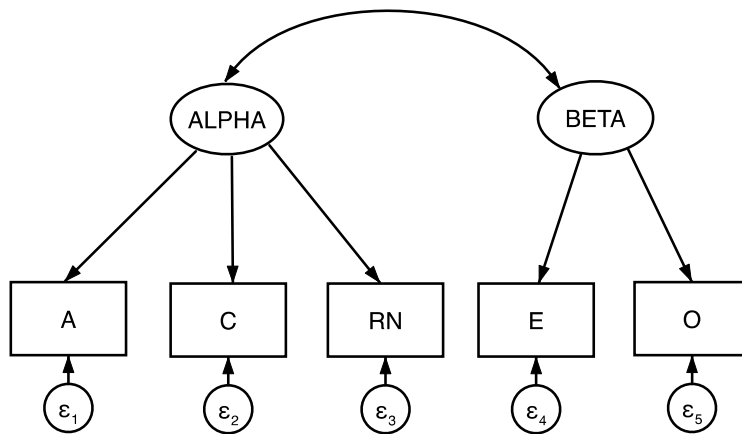


Figure 1. A= Agreeableness C= Conscientiousness RN= Neuroticism (reversed) E= Extraversion O= Openness

Figure 2. A priori Path Model Including Predictor, Mediator, and Outcome Relationships

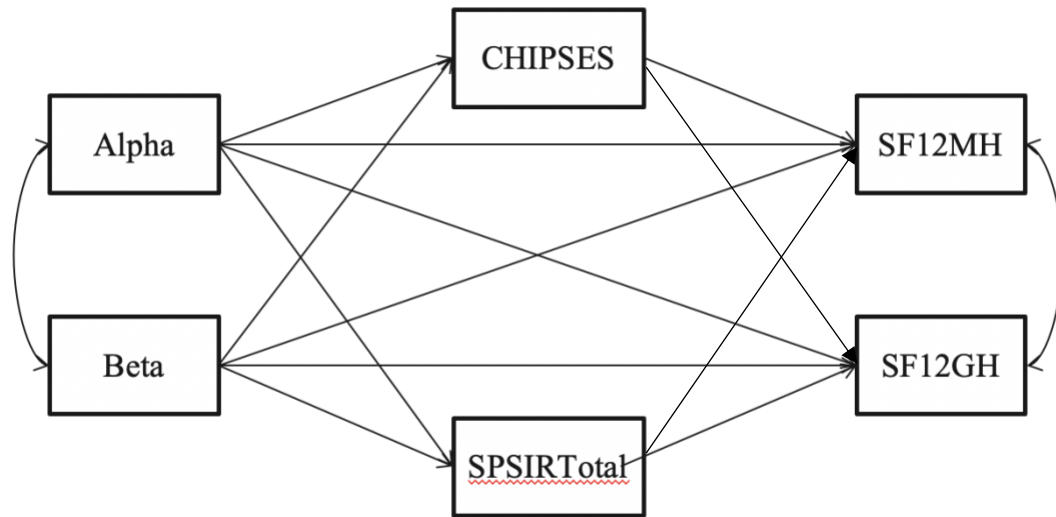


Figure 2. CHIPSES: Coping by maintaining social support, self-esteem, and psychological stability; SPSIRTtotal: Effectiveness of social problem-solving abilities; SF12MH: Mental Health; SF12GH: Physical Health.

Figure 3. Analyzed CFA Model

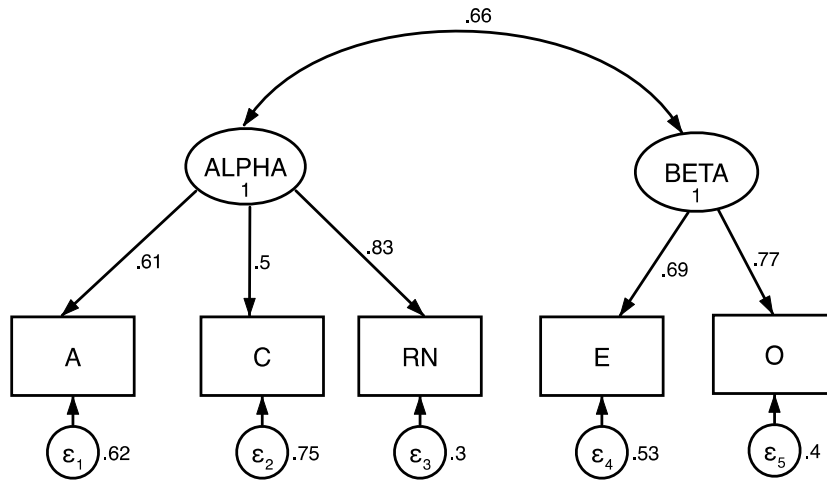


Figure 3. A= Agreeableness C= Conscientiousness RN= Neuroticism (reversed) E= Extraversion O= Openness

Figure 4. Analyzed Path Model with Significant Paths

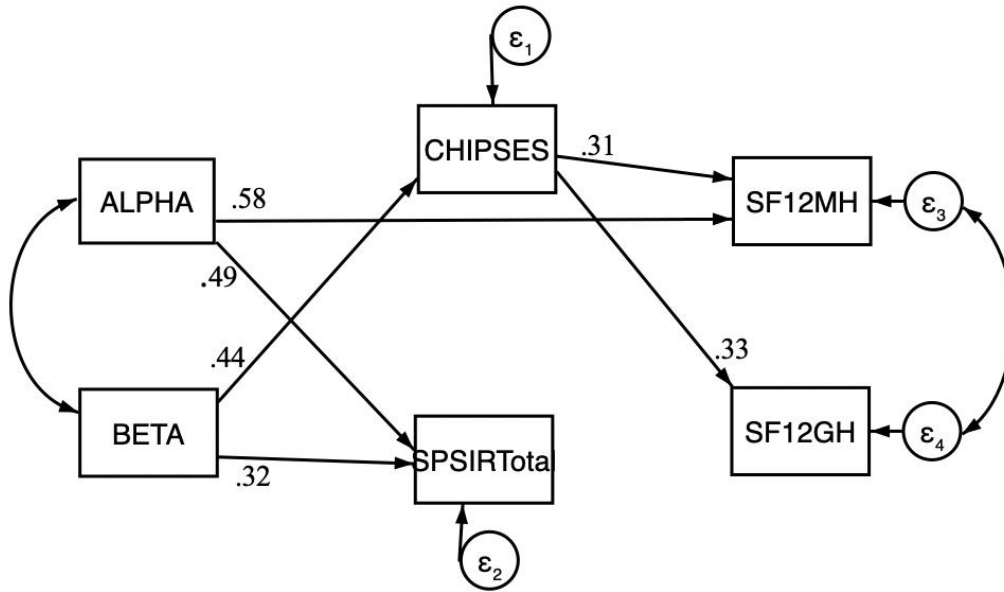


Figure 4. CHIPSES: Coping focus on maintaining social support, self-esteem, and psychological stability  
SPSIRTota: Effectiveness of social problem-solving abilities SF12MH: Mental Health SF12GH:  
Physical health