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Parent Stress Adaptation Among Caregivers of Youth with Autism Spectrum Disorder

Victoria M. Ambrus
Walden University

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Walden University

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Victoria Ambrus

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Walden University
2019

Abstract

Parent Stress Adaptation Among Caregivers of Youth with Autism Spectrum Disorder

by

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MA, Liberty University, 2009

BA, Gwynedd-Mercy College, 2001

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Psychology

Walden University

May 2019

Abstract

This study was a nonexperimental correlational study that took a strengths-based approach and utilized family systems theories to examine parenting stress, as measured by the Parenting Stress Index-Short Form, and posttraumatic growth (PTG), as measured by the Posttraumatic Growth Inventory, and the relationship between the two constructs. The study was conducted with a national sample of 136 maternal caregivers of transition-age youth on the autism spectrum (ASD), ages 14 to 22 years, recruited through social media, flyers, and referrals. Participants were primarily biological mothers (83.9%), White (87.5%), and resided in the South (68.4%); the mean age of the adolescent with ASD was 17.16 years. Descriptive statistical findings showed that caregivers had normal levels of parenting stress and high levels of PTG. Results from one-sample *t* tests showed that the sample parenting stress mean score ($M = 51$) was similar to the population mean score of 50 while the sample PTG mean score ($M = 56$) was significantly higher than the population PTG mean score of 52.5. The third research question examined if parenting stress was significantly associated with PTG, controlling for pertinent covariates. Hierarchical multiple linear regression findings indicated that, after controlling for the place of residence, parenting stress was significantly associated with PTG: as parenting stress increased, PTG decreased. Parenting stress explained 7% of the variance in PTG, a small effect size. Findings from this study denote the positive aspects of parenting an adolescent with ASD. Results can inform the development of parent interventions aimed at reducing parenting stress and enhancing PTG.

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Dedication

This dissertation is dedicated to the many individuals and their families living with Autism, especially to those families I have served and am yet to serve in my clinical work. Bearing witness to your love, courage and resilience for your families over the last twenty years has inspired me look at the world in with different glasses. May each of you find new meaning in your life journey.

Special memorandum to my grandfather— thank you for always seeing my potential and challenging me to go after anything I could dream. And to my faith in Jesus, who is the cornerstone of my knowledge that I had a higher purpose and calling for my life.

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Author

Victoria M. Ambrus

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Chapter 1: Introduction to the Study

Autism spectrum disorder (ASD) is a pervasive neurodevelopmental disorder characterized by social interaction and communication (verbal and nonverbal) impairments, sensory and motor disturbances, and atypical restricted interests and repetitive behaviors (American Psychiatric Association [APA], 2013; Centers for Disease Control and Prevention [CDC], 2018). Adolescence is a period where youth are preparing to transition from school and children's services to the adult world. This period is a particularly vulnerable time for those with ASD and their families (Hartley, DaWalt, & Schultz, 2017; McStay, Trembath, & Dissanayake, 2014; Mount & Dillon, 2014; Smith & Anderson, 2014). The emotional, behavioral, and functional issues associated with ASD persist and often increase in severity during adolescence (Smith & Anderson, 2014). The adolescent transition period also brings forth new educational, career/work, social, and independent living challenges, and meeting these challenges becomes increasingly more difficult as the youth ages out of the educational system of services (Hartley et al., 2017; Perry, 1989).

The unique challenges for adolescents with ASD make caregivers especially vulnerable to parenting stress, defined as "an adverse psychological reaction to the demands of being a parent" (Gong et al., 2015, p. 1037). While parenting stress levels in caregivers of children/adolescents with ASD are exceptionally high at all stages of their child's development, it is most pronounced during their child's adolescent years (Smith & Anderson, 2014). In contrast to the average parenting stress percentile score of 50 for

parents of neuro-typical children, the average parenting stress percentile score across studies conducted with parents of adolescents with ASD is 85, indicative of clinically significant levels of parenting stress (Dardas & Ahmad, 2013).

Parenting stress scholarly work is extensive, but there are gaps in the literature (Bonis, 2016; Hayes & Watson, 2013; Tint & Weiss, 2016). The parenting stress literature has overwhelmingly focused on caregivers of children with ASD (Bonis, 2016; Hayes & Watson, 2013; Whitmore, 2016). The studies that have utilized samples of caregivers of adolescents with ASD differ regarding literature type (i.e., commentary, review of literature, or empirical study), operational definitions of constructs, research design approaches (e.g., causal-comparative, correlational, experimental), and sample participant characteristics (Bonis, 2016; Hayes & Watson, 2013; Tint & Weiss, 2016). There is little documented knowledge about how parenting stress may affect parent outcomes among caregivers of adolescents with ASD (Bonis, 2016).

Studies on ASD and parenting stress have often taken a deficit-based approach (Bonis, 2016). Some studies have explored if and how intrapersonal caregiver factors relate to growth, well-being, and resilience among caregivers of children and to a much lesser extent, adolescents, with ASD (Neff & Faso, 2015; Prati & Pietrantonio, 2009; Whitehead, Dorstyn, & Ward, 2015; Zhang, Yan, Barriball, While, & Liu, 2015; Zhang, Yan, Du, & Liu, 2013). Research indicated that despite the challenges raising an adolescent with autism brings forth, some caregivers use their parenting experience as an opportunity for personal growth. Scholars have termed this recovery and growth process

as *posttraumatic growth* (PTG), also called *stress-related growth*, *adversarial growth*, and *thriving* (Janoff-Bulman, 2004; Zhang et al., 2015).

The purpose of this study was to examine levels of parenting stress and PTG and to assess the relationship between these two constructs in a national sample of 136 maternal caregivers of adolescents, ages 14 to 22 years, diagnosed as having ASD. A comprehensive summary of the research study is the topic of this chapter, with information provided in sections. The first section pertains to the research design and rationale. The second section concerns the study methodology. This section reviews the (a) study population, sample, and sampling procedure; (b) study recruitment and data collection procedures; (c) instrumentation and operationalization of study constructs; and (d) the data analysis plan. The third section of the chapter addresses threats to external, internal and statistical conclusion validity. The fourth section is a review of the ethical procedures and processes of the study. The fifth and last section is a summary of the chapter.

Background

ASD is a developmental disorder characterized by (a) deficits in social interaction and socioemotional reciprocity, (b) communication impairments, both verbal and nonverbal, (c) restricted, persistence and fixated interests and behavioral patterns, and (d) sensory processing and motor coordination disturbances (American Psychological Association [APA], 2013; CDC, 2018). To receive a diagnosis of ASD, the child must manifest the socioemotional and behavioral symptoms in early childhood and the signs

should be so severe as to cause significant distress (APA, 2013). Children with ASD may or may not have intellectual or language impairment, both of which are separate diagnoses (APA, 2013). Over 30% of children with ASD have received an additional diagnosis of depression, anxiety, and attention deficit hyperactivity disorder (ADHD) (CDC, 2018). Gastrointestinal, neuroinflammatory, and immunological disorders are often comorbid with ASD (CDC, 2018).

One of the most popular research topics in ASD literature is parenting stress, and there is considerable evidence that ASD caregivers of children with ASD experience high levels of parenting stress (Bonis, 2016; Whitmore, 2016). In contrast, parenting stress among caregivers of adolescents with ASD has been the topic of a few studies (Bonis, 2016; Hayes & Watson, 2013; Whitmore, 2016). In his systematic review of the parenting stress literature within the context of ASD, Bonis (2016) reported that just 39 (28%) of the 139 studies he reviewed were conducted with caregivers of adolescents with ASD. Of the 15 studies examined in Hayes and Watson's (2013) meta-analytical studies, only three (20%) had been conducted exclusively with parents of adolescents with ASD. Moreover, all the studies reviewed by Bonis and Hayes and Watson had been conducted with biological parents, most often mothers, identifying a gap in the literature concerning parenting stress experiences of nonbiological caregivers of children and adolescents with ASD.

It is difficult to draw conclusions from the existing studies on parenting stress in caregivers of adolescents with ASD due to differences with regard to literature type (i.e.,

commentary, review of literature, or empirical study), operational definitions of constructs, research design approaches (e.g., causal-comparative, correlational, experimental), and sample participant characteristics (Bonis, 2016). The works by Barker, Mailick, and Smith (2014) and Smith and Anderson (2014), which focused on parenting stress among caregivers of adolescents with ASD, at first glance appeared to be empirical studies but were simply commentaries advocating for such research. Blacher and Baker (2017) found that parents of adolescents with ASD reported significantly higher levels of parenting stress than did parents of adolescents with intellectual disabilities in their causal-comparative research study. The comparative nature of Blacher and Baker's study precluded the ability to examine the effects of parenting stress on the caregiver or adolescent outcomes, which is the intent of this study.

The small number of correlational research studies conducted with caregivers of adolescents with ASD (McStay et al., 2014; Taylor & Seltzer, 2011; Vogan et al., 2014) differed from this study, and each other, with regard to the samples used and the constructs and relationships examined. Taylor and Seltzer (2011) and Vogan et al. (2014) found a significant association between caregiver reports of the severity of ASD in their adolescent children and caregiver burden. While caregiver burden is similar to parenting stress, its distinctly different operational definition limits inferences of findings of these studies (Taylor & Seltzer, 2011; Vogan et al., 2014). McStay et al. (2014) examined the influence of child age (from age 6 to 18 years) on parenting stress and found that as the age of the child increased, so did the degree of caregivers' parenting

stress. Researchers of these studies did not examine parent outcomes resulting from parenting stress (Taylor & Seltzer, 2011; Vogan et al., 2014). Furthermore, McSwatay et al.'s (2014) study participants were Dutch and as such, study findings may not apply to American participants.

A final gap in the literature, which was addressed in this study, concerned the underutilization of strengths-based theoretical and empirical approaches in the research of parenting stress among caregivers of adolescents with ASD. Cridland, Jones, Magee, and Caputi (2014) argued that caregivers often experience emotional and spiritual growth as a result of their child being diagnosed with ASD and that they learn to adapt and cope effectively with their child. In other words, they have PTG (Cridland et al., 2014). PTG is a psychological transformation that results from experiencing trauma (Janoff-Bulman, 2004; Zhang et al., 2015). Janoff-Bulman (2004) defines PTG as the attainment of “strength through suffering” (p. 31).

Within the context of parenting a child or adolescent with ASD, PTG challenges the caregiver to the caregiver can develop abilities to negotiate challenges that occur when raising a child or adolescent with ASD (Whitehead et al., 2015). The positivity that this perspective brings forth is an opportunity for improved relationship connections within the family system and enhanced emotional wellness for the caregiver. Besides, a challenging child-rearing experience may improve caregivers' ability to understand and empathize with their child's experience (Prati & Pietrantonio, 2009; Zhang et al., 2015). Whitehead et al. (2015) proposed that some caregivers may grow in their view and

realize their life calling has been revealed through caring for their child with ASD. As this change in perspective takes place, the relationships within the family system are enriched (Whitehead et al., 2015).

Problem Statement

The problem addressed in this study was the high level of parenting stress experienced by maternal caregivers of adolescents with ASD. The lack of a reprieve of emotional and behavioral problems among adolescents with ASD is a contributory factor in the chronic parenting stress levels of parents of adolescents with autism (Mount & Dillon, 2014; Woodman, 2014). Researchers have shown that ASD manifests into numerous behavioral, emotional, and functional symptoms (Whitehead et al., 2015), and that these symptoms often intensify during the adolescent period (McStay, Dissanayake, Scheeren, Koot, & Begeer, 2013). In contrast to typically-developing adolescents, adolescents with ASD do not tend to show declines in emotional and behavioral problems; instead, their emotional and behavioral difficulties are maintained at the same levels as they were in childhood or even increase in severity (Smith & Anderson, 2014). Parents of adolescents with ASD often must reconcile with the fact that they will be their lifetime caretakers. Compounding parenting stress of caregivers of adolescents is external factors, lack of family finances and social support, and internal factors, such as caregiver coping mechanisms and attitudes (Smith & Anderson, 2014).

The transition from adolescence to adulthood brings forth new stressors for the parent concerning planning for their adolescent's future educational, career/work, and

social needs (Mount & Dillon, 2014; Smith & Anderson, 2014; Woodman, 2014). Smith and Anderson (2014) noted that adolescents and their parents frequently experience a significant decrease in the availability of community supports when their children leave high school. Parental stress is an adverse psychological reaction to the developmental changes undergone by both the adolescent and the caregiver (Mount & Dillon, 2014). Parenting stress is both more severe and qualitatively different in caregivers, especially maternal caregivers, of children and adolescents with ASD as compared to caregivers of typically-developing children and adolescents as well as caregivers of children and adolescents with other developmental disabilities (Hayes & Watson, 2013).

More than 40 years of empirical research has examined the detrimental and traumatic effects of the diagnosis of a child with ASD on parents and families (Bonis, 2016; Whitmore, 2016). The literature on ASD family systems, interactions, and dynamics most frequently take a deficits approach (Whitmore, 2016). It has for the most part not explicitly explored the areas that promote resilience in caregivers or their potential for growth that arises out of the trauma of a diagnosis of long-term illness such as ASD. Researchers who have examined resilience and associated factors, such as self-compassion, psychological well-being, and mindfulness, have most frequently conducted studies with parents of children, between the ages of 2 and 11 years (e.g., Halstead et al., 2018; Jones, Hastings, Totsika, Keane, & Rhule, 2014; Neff & Faso, 2014; Peer & Hilman, 2014; Wong, Mak, & Liao, 2016). Maternal caregivers of adolescents with ASD often have elevated levels of parenting stress, and yet little is empirically known about

strengths-based parenting attitudes that may help to ameliorate such stress (Zhang et al., 2013).

As the research on parents with children diagnosed with ASD attests, caregivers have been able to use their parenting experiences as an opportunity for personal growth (Halstead, Ekas, Hastings, & Griffith, 2018; Jones et al., 2014; Neff & Faso, 2014; Peer & Hilman, 2014; Wong et al., 2016). However, few studies have incorporated the resilience concept of PTG. PTG is not a new concept: philosophy and religious texts have, for many centuries, referred to aspects of PTG (Tedeschi & Calhoun, 1996; Ramos, 2013). Scholars have examined PTG as an operationalized construct over 20 years (Malhotra, 2016; Tedeschi & Calhoun, 1996). The body of literature on PTG, which initially focused on growth from personal trauma or loss, has grown in the past 10 years to explore how the trauma of having a child or adolescent with ASD can lead to caregivers' PTG (e.g., Phelps, McCammon, Wuensch, & Golden, 2009; Prati & Pietrantonio, 2009; Zhang et al., 2013, 2015). However, most of these studies have been conducted outside the United States, and few of these studies have focused on families of adolescents with ASD (Whitmore, 2016). There has yet to be a study that examines parenting stress and PTG among American caregivers. This study can increase an understanding of the attributes that are present in resilient caregivers of adolescents with ASD.

Purpose of the Study

This quantitative nonexperimental correlational study addressed the gap in the literature regarding strengths-based research with maternal caregivers of adolescents with ASD. The goals of this study, conducted with a national sample of 136 maternal caregivers of adolescents, ages 14 to 22 years, with ASD, were three-fold. The first and second goals were to determine the average level of parenting stress and PTG, respectively, among the sample of maternal caregivers of adolescents and young adults with ASD. These mean scores were compared to the population normed mean scores (μ s) for the Parenting Stress Index-Short Form-Fourth Edition, available in Spanish and English (PSI-4-SF; Abidin, 1990; Solis & Abidin, 1991) and the Posttraumatic Growth Inventory, also available in Spanish and English (PTGI; Tedeschi & Calhoun, 1996; Weiss & Berger, 2006). The third goal was to assess whether a significant relationship exists between parenting stress, measured using the PSI-4-SF, and PTG determined using the PTGI, in a national sample of maternal caregivers of adolescents, ages 14 to 22 years, with ASD.

Research Questions and Hypotheses

This quantitative study poses three research questions with associated null and alternative hypotheses. The first two research questions were descriptive. However, to enhance understanding of the level of parenting stress and PTG among maternal caregivers of adolescents and young adults (ages 14 to 22 years) with ASD, the sample means were statistically compared to the normed mean scores. The third research

question is inferential and concerns the relationship between parenting stress and PTG, controlling for key covariates, among maternal caregivers of adolescents with ASD.

Research Question 1: What is the degree of maternal caregiver stress, as measured by the Parenting Stress Index- 4th Edition Short Form (PSI-4-SF; Abidin, 1990), among maternal caregivers of adolescents with ASD?

*H*₀1: The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PSI-4-SF μ score.

*H*_a1. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is significantly different from the population PSI-4-SF μ score.

Research Question 2: What is the degree of maternal caregiver PTG, as measured by the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) for maternal caregivers of adolescents with autism spectrum disorder?

*H*₀2: The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

*H*_a2: The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

Research Question 3: Is there a significant relationship between maternal caregiver stress, as measured by the PSI-4-SF (Abidin, 1990), and maternal caregiver PTG, as measured by the PTGI (Tedeschi & Calhoun, 1996), controlling for covariates (i.e., relationship of caregiver to target child, number of children living in the household,

and number of children with an IEP residing in the home), among a sample of maternal caregivers of adolescents with autism spectrum disorder?

H_{03} : There is not a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with autism spectrum disorder.

H_{a3} ” There is a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with autism spectrum disorder?

Theoretical Framework

Cridland et al.’s (2014) family systems model for ASD (FSM-ASD) informs and guides this study. The foundation for Cridland et al.’s FSM-ASD is a family systems theory, a conceptual model first developed by Bowen (1966). The critical theoretical premise is that the family is its own "unique, interactive, and reactive" ecological system that influences family dynamics and shapes family’s macroscopic and microscopic perceptions and resultant family function/dysfunction (Cridland et al., 2014, p. 215).

The family system can be understood *macroscopically* – concerning other family and cultural systems – as well as *microscopically* – concerning family *subsystems*, such as those between parents and between siblings (Bowen, 1966; Cridland et al., 2014). A functional family unit can counterbalance an individual's need for togetherness and interdependence and his/her need for individuality and autonomy (Bowen, 1966; Cridland et al., 2014; Cridland, Jones, Stoyles, Caputi, & Magee, 2016). The creation of

clear boundaries is most conducive to family functioning: family relationships are neither so rigid as to create family member disengagement and isolation nor are they so enmeshed that a family member has difficulty separating his/her identity from that of another family member (Bowen, 1966; Cridland et al., 2014, 2016).

Acknowledging the critical family system dynamic elements, Cridland et al. (2014, 2016) elaborated upon the family systems theory by delineating how these elements differently influence family functioning in ASD family systems. One argument made by Cridland et al. (2014) is that parents of children and adolescents with ASD may struggle with boundary ambiguity and will have "difficulty viewing their own life as independent from their child's" (p. 217). Parents who struggle to accept their child's ASD diagnosis may be poorly differentiated or be unable to have a vision of their life outside their caregiving role. The reality for many parents is that they will be lifelong caretakers of their child with ASD. In contrast, parents may create boundaries and become disengaged from their child with ASD due to ambiguous loss, grief from the psychological absence yet the physical presence of their child with ASD (Cridland et al., 2014, 2016).

Cridland et al. (2014) further expand family systems theory – and ASD-related strengths-based theory – by introducing the concepts of resilience and traumatic growth, which she identifies as the two facets of family functioning. The authors further purport that families of children and adolescents with ASD can attain PTG through a realization that distress and growth can coexist and that resilience can be a product of adversity.

Resultantly, families living with ASD can develop healthy boundaries within the context of their unique life challenges (Cridland et al., 2014).

Nature of the Study

This was a quantitative non-experimental correlational study conducted with a national sample of 136 maternal caregivers of adolescents and young adults aged 14 to 22 with ASD. As it was quantitative, this study was informed by the positivist paradigm, which posits the existence of a single objective reality that can be observed and measured through the use of scientific inquiry methods (Babbie, 2015). The study was not structured as experimental design (i.e., it did not utilize random selection or random assignment to intervention and control conditions). It instead met the requirements of a nonexperimental design (e.g., participants were not randomly selected from the population, there was no manipulation of the independent variable, and there were no study conditions) (Babbie, 2015).

Nonexperimental studies most often utilize either a causal-comparative or correlational designs (Babbie, 2015; Morgan & Carcioppolo, 2014). Causal-comparative studies examine dependent variable differences across naturally-occurring independent variable groups (Babbie, 2015; Morgan & Carcioppolo, 2014). In contrast, correlational designs are used to determine the significance, direction, and strength of the relationship between the independent variable, which is called the predictor variable, and the dependent variable, which is called the criterion variable (Morgan & Carcioppolo, 2014). The type of nonexperimental research design used in this study was correlational, as the

study examined the relationship between parenting stress, the predictor variable, and PTG, the criterion variable. Correlational studies often test if key variables are covariates, that is, they are significantly associated with the criterion variable (Babbie, 2015; Morgan & Carcioppolo, 2014). In this study, the control variables tested were (a) type of maternal caregiver; (b) maternal race; (c) maternal age; (d) adolescent age; (e) number of children other than the target adolescent who resided in the household; (f) number of children other than the target adolescent with an IEP who lived in the home; (g) geographical location (i.e., West, Midwest, South, Northeast); and (h) geographic residence (i.e., rural area, small city/large town, suburb close to large city, large city).

The study utilized de Leeuw's (2005) mixed-mode method to recruit and survey study participants. Recruitment approaches included the use of social media, community advertising (through the use of flyers), professional referrals, and participant referrals. Informed consent and data collection were conducted online, using the Survey Monkey® platform. The study survey was available in English and Spanish on a study Facebook page, developed solely for the study. However, no participants completed the Spanish-language survey. Participants were able to access and answer the survey by going to the study Facebook page or ASD-related websites that posted the survey links. Data were analyzed using SPSS 25.0 statistical analysis software. One-sample *t*-tests were conducted to test the first and second research questions, while a hierarchical multiple linear regression (HMLR) model was conducted to address the third research question.

Definitions

Autism spectrum disorder (ASD): The DSM-V (APA, 2013) classifies ASD as a developmental disorder. For a child to receive a diagnosis of ASD, he/she must meet five criteria. The child must display social-emotional deficits for age, which can include poor verbal and nonverbal receptive, expressive, and interpersonal language skills and difficulties in developing and maintaining friendships and navigating the social milieu. The child must also present persistent, fixated, and repetitive behaviors, including ritualized behaviors and strict adherence to routines; weak fine and gross motor skills, stereotyped and pedantic speech; preoccupation/extreme interest in unique. The social-emotional and behavioral symptoms must present in early childhood (that may only become evident at later ages) and must be so severe as to impair social functioning. Children with ASD may or may not have intellectual or language impairments, which are separate diagnoses (APA, 2013).

Parenting stress: Parenting stress is defined as “an adverse psychological reaction to the demands of being a parent” (Gong et al. 2015, p. 1037). In this study, parenting stress was assessed using the Parenting Stress Index 4th Edition Short Form (PSI-4-SF; Abidin, 1990, 2012), both the English and Spanish (Solis & Abidin, 1991) versions. Abidin (1990) posited that parenting stress was an emotional response to three types of stressors: those that pertained to the attitudes and behaviors of the child, the obligations and demands of parenting, and those that surrounded parent-child interactions.

Posttraumatic growth (PTG): PTG is a beneficial “consequence” of the profound cognitive restructuring and shift of values and worldviews that occur as a result of trauma; it is “finding meaning in and experiencing growth from suffering” (Triplet et al., 2011, p. 1). The criterion variable of PTG was measured using 21-item Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) and its Spanish version, created by the authors and validated by Weiss and Berger (2006). Tedeschi and Calhoun (1996) developed the PTGI in response to the numerous studies that focused on the harmful effects of a stressor in an individual’s life, positing that traumatic events can also result in improvements of an individual’s self-perceptions, interpersonal relationships, and life philosophy. The use of this scale first requires the identification of a stressful or traumatic event (Tedeschi & Calhoun, 1996), which in this study was having an adolescent with ASD.

Assumptions

The positivist paradigm, which informs quantitative research, has three philosophical assumptions that concern the nature of reality (ontology), knowledge (epistemology), and values (axiology) (Barker & Pistrang, 2015; Barnham, 2015). The ontological assumption of quantitative research posits that a single reality exists eternal to the researcher and can be accurately measured through the use of valid and reliable instruments. The epistemological assumption of quantitative research posits that the use of deductive reasoning through the scientific method can provide results that are objective and true. The axiological assumptions asserts that statistical findings are value-

free and that sound research is ethical research founded on the concepts of beneficence, respect, and justice (Barker & Pistrang, 2015; Barnham, 2015). This study was based on all three philosophical assumptions.

Methodological assumptions in this study were driven by the positivist paradigm, which “translates ontological and epistemological principles into guidelines” (de Villiers & Fouché, 2015, p. 126). Methodological assumptions pertain to aspects of the research design, use of theory, study participants, variables and instruments, and analyses (Mertens, 2014). It was assumed that the nonexperimental correlational research design was appropriate for this study: the study met all criteria for the correlational research design. It was assumed that the guiding family system theories (i.e., Bowen, 1966, Cridland et al., 2014; Perry, 2004) were relevant, meaningful, and applicable to the study topics of parenting stress and PTG among maternal caregivers of adolescents with ASD. The study furthermore assumed that the research questions and hypotheses were correctly aligned with these family system theories (i.e., Bowen, 1966, Cridland et al., 2014; Perry, 2004) to allow for the appropriate testing of theory. Another assumption of the study was that the PSI-4-SF and PTGI were adequate valid and reliable measures of the study constructs of parenting stress and PTG, respectively.

This study had assumptions that pertained to the study sample. This study took the assumption that the study participants represented the population of maternal caregivers of adolescents, ages 14 to 22, with ASD who resided in the United States. One critical methodological assumption was that study participants understood the survey

questions. While participants were provided the option to complete either an English- or Spanish-language survey, only the English-language survey was utilized, increasing the likelihood that this assumption was met. Moreover, the consent forms and study instruments were written on a 5th-grade level, which also increased the likelihood that participants understood their role in the study and the meaning of the survey questions. Study procedures regarding confidentiality of data (e.g., participants must provide informed consent before answering the survey, the survey does not contain items that could be used to identify participants) increased the likelihood that participants provided accurate and honest survey responses.

The remaining methodological assumptions pertained to data and statistical analyses. HMLR has specific data assumptions: normality, linearity, homoscedasticity, and lack of multicollinearity between the predictor variable and covariates (Gorard, 2012; Nimon, 2012). Not only was it assumed in this study that these were assumptions specific to linear regression, but it was also understood that the testing of violations of these assumptions and the procedures used to adjust for any violations of these assumptions were conducted accurately, using stated statistical recommendations (Mertler & Reinhart, 2016; Nimon, 2012). Additional methodological assumptions were that (a) the covariates were theoretically valid and pertinent to the study topic; (b) covariate significance was determined through the use of appropriate statistical analyses have been conducted to assess covariate significance; and (c) the statistical analyses used

in hypothesis testing were correctly utilized, and analytical results were correctly interpreted (Mertler & Reinhart, 2016; Nimon, 2012).

Scope and Delimitations

This study was specific to the examination of parenting stress, PTG, and their associations in a national sample of maternal caregivers of adolescents with ASD. The study was limited to participants who were female caregivers living in the United States and who had at least one adolescent between the age of 14 and 22 years with ASD who currently lives in the home. This study did not include participants who were male caregivers nor did it include caregivers of children ages 0 to 10 years with ASD or adolescents with ASD who were between the ages of 11 and 13 years.

Limitations

This study had a few limitations, which can affect the internal and external validity of the survey (Patten, 2016; Woodman, 2014). The use of a nonexperimental correlational research design decreased the internal validity of the study and precluded the ability to determine cause-and-effect (Patten; 2016; Woodman, 2014). The inability to randomly select study participants introduced certain biases that could further reduce the internal validity of the study (Patten; 2016). One bias was *self-selection*: participants who volunteered for this study may have differed from those who chose not to participate. Researchers have indicated that parents who volunteer for studies tend to be White, mothers, married, of higher education level and income status, and have fewer children (He & dan de Vijver, 2012; Posserud, Lundervold, Lie, & Gilberg, 2010; Regber

et al., 2013). Another bias was *social desirability*, a concern for all types of quantitative studies that utilize self-report surveys (King & Bruner, 2000; Patten, 2016). This bias refers to participants' tendency to provide answers to survey questions that minimize their negative attributes and emphasize their favorable characteristics (King & Bruner, 2000; Patten, 2016). The self-selection and social desirability biases are comprehensively addressed in Chapter 3.

There were instrument and sample factors of a quantitative study that affects its external validity and limits the ability to generalize study findings (Patten, 2016). The operational definitions of the two constructs of parenting stress and PTG were specific to the measures used in this study. It could not be assumed that the same study results would have emerged in studies that utilized different instruments to assess the constructs of parenting stress and PTG. Another limitation was that the study was limited to maternal caregivers of adolescents with ASD. While limiting participants to those who were female may have minimized effects of the self-selection bias (as research has shown that study volunteers tend to be female; He & dan de Vijver, 2012; Posserud et al., 2010; Regber et al., 2013), it precluded the ability to generalize findings to paternal caregivers of adolescents with ASD. The study focus on adolescents with ASD who were between the ages of 14 and 22 also limited the ability to generalize findings to parents of children or adults with ASD and adolescents with ASD who were between the ages of 11 and 13. Threats to the external validity of the study are further discussed in chapter 3.

Significance

This study had both empirical and applied significance. This study focused on topics that scholars have noted as essential yet under-examined in the ASD literature (Bonis, 2016; Hayes & Watson, 2013; Zhang et al., 2013). Scholars have emphasized the need for studies that examine the unique developmental challenges and transitions experienced by the adolescent with ASD and how these may impact the family dynamic. While parenting stress has received extensive theoretical and empirical attention in the ASD literature, most studies have focused only on caregivers of children with ASD and little is known about parenting stress among parents of adolescents with ASD. There is also a need for studies that take a strengths-based perspective of parents of adolescents with ASD (Zhang et al., 2013, 2015). This study addressed these concerns by examining the relationship between parenting stress and PTG among maternal caregivers of adolescents with ASD. The inclusion and testing of covariates addressed the need for studies that examine the effects of family constellation variables (e.g., number of siblings) on stress and PTG among parents of adolescents with ASD. The inclusion of maternal caregivers and not just biological mothers also provided pertinent information that is currently lacking in the ASD literature (Bonis, 2016; Whitmore, 2016).

Results from this study had the potential to increase stakeholder awareness of the unique needs of parents of adolescents with ASD, which can lead to the development of interventions, services, and programs that incorporate and address developmental concerns for both the adolescent and parent. Findings from this study can be especially

informative for the development of initiatives that help parents and adolescents navigate the transition to adulthood. This study can also inform the development of actions that are aimed at reducing specific stressors that emerge during the adolescent period and promote adolescent and parent resilience and growth. Findings from this study may increase political stakeholder awareness of and following provision of resources and funding for services that address the specific needs of families with adolescents with ASD and may prompt continuation of services for the adults with ASD.

Summary

Gaps in the ASD literature exist as they concern the topics of parenting stress among maternal caregivers of adolescents with ASD and sequelae of parenting stress (Bonis, 2016; Pisula, 2011). ASD empirical literature has furthermore taken a deficits approach, which has a limited practical understanding of the potentially transformative effect of ASD on parenting attitudes and behavior (Cridland et al., 2014; Resch et al., 2012; Smith & Anderson, 2014). This study addressed these gaps in the literature.

This study examined parenting stress and PTG in a national sample of 136 maternal caregivers of adolescents, ages 14 to 22, with ASD. The mean parenting stress and PTG scores of the sample were examined and compared to the population (normed) mean scores (μ s). Covariate testing was conducted to determine if key demographic factors were significantly associated with PTG. Place of residence was found to be the only variable with significant PTG mean score differences, and it was included as a covariate in an HMLR for hypothesis testing. An HMLR was conducted to assess if there

was a significant relationship between parenting stress and PTG in this sample of maternal caregivers of adolescents with ASD.

The purpose of this chapter was to provide a cohesive and coherent review of the study by briefly presenting (a) background literature; (b) the problem addressed in the study; (c) the purpose of the study; (d) research questions and methodology; (e) guiding theory; (f) pertinent definitions; (g) study assumptions, scope of the study, and study delimitations and limitations; and (h) the significance of the study. The next chapter, Chapter 2, provides a comprehensive review of the guiding theory and pertinent literature.

Chapter 2: Literature Review

Introduction

The problem addressed in this study was parenting stress among maternal caregivers of adolescents, ages 14 to 22. The transition from adolescence to adulthood brings forth new stressors for the parent concerning planning for their adolescent's future educational, career/work, and social needs (Mount & Dillon, 2014; Smith & Anderson, 2014; Woodman, 2014). As noted by Smith and Anderson (2014), adolescents with ASD and their parents frequently experience a significant decrease in the available community supports when these children leave high school. This quantitative nonexperimental correlational study addressed specific gaps in the body of literature on parenting stress among caregivers: (a) the lack of understanding as to the degree of parenting stress among maternal caregivers of adolescents with ASD, (b) the under-utilization of study samples comprised of different types of maternal caregivers, and (c) the dearth of studies that examine strengths-based outcomes of parenting stress. The study had the aims of determining the average level of parenting stress and PTG, respectively, and to assess if a significant relationship exists between these constructs using a national sample of maternal caregivers of adolescents with ASD, ages 14 to 22.

This chapter has a two-fold purpose. The first purpose is to elaborate upon the guiding theories of the study, the family systems theory (Bowen, 1966) and Cridland et al.'s (2014) FSM-ASD, a family-systems model specific to families living with ASD. Included in the theoretical section is a review of pertinent studies that have utilized

family systems theory (Bowen, 1966) or Cridland et al.'s FSM-ASD. The second purpose of this chapter is to discuss pertinent empirical literature as it relates to parenting stress and PTG among caregivers of children and adolescents with ASD. The literature review sections will provide rationales for conducting this study.

Literature Search Strategy

The objective of the literature review strategy was to review and critically evaluate academic literature in relation to (a) families living with ASD; (b) family systems theory, including Cridland et al.'s (2014) FSM-ASD and empirical literature applying these theoretical models; (c) parenting stress among caregivers of children and adolescents with ASD; and (d) PTG and its associated construct of posttraumatic stress disorder (PTSD) among different caregiver groups (e.g., bereaved parents, parents of children and adolescents with health problems, developmental disabilities, or ASD). Searching the literature occurred between the summer of 2016 and late spring of 2018. I sought related academic resources published within the past five years. I initially, in 2016, limited my search to studies published no earlier than 2011. In 2017 and 2018, the searches were limited to studies published no earlier than 2012 or 2013, respectively.

The search for articles was initiated with the use of one web portal, *EbscoHost*, and the databases it contains. The primary *EbscoHost* databases utilized were *PsycARTICLES*, *PsycINFO*, and *SocINDEX*. I procured additional peer-reviewed journal articles using the *Google Scholar* search engine. The literature searches for this study primarily centered on peer-reviewed articles in psychology, counseling, education,

developmental disabilities, health care, and research methodology journals. The key search terms, used singly and in combination were: *theory, parents, parenting, children, adolescents, family systems, family adjustment, family impact, family functioning, quality of life, parent-adolescent relationship; disabilities, intellectual disabilities, developmental disabilities, ASD spectrum disorder, Asperger's syndrome; stress, distress, caregiver stress, caregiver burden, parenting stress, maternal stress, maternal depression, posttraumatic stress (disorder); resilience, hope, PTG; coping, caregiver well-being, parenting self-efficacy, family social supports.*

I retrieved approximately 1200 articles from the summer of 2016 to the spring of 2018. I was able to directly download the majority (>85%) of articles from the databases. I utilized Walden's document delivery service to retrieve approximately 15% of the articles that I could not download. I used Zotero software to collate, organize, and manage the study references saving all documents for continual review. The review of articles commenced once I completed the literature search in the late spring of 2018. I eliminated duplicate articles as well as articles that were, upon inspection, not relevant to the study. As studies published earlier than 2011 that were relevant in 2016 were, in 2018, considered obsolete, I reviewed articles that were released more previously than 2013. I eliminated items that became tangentially related to study topics or were more comprehensively addressed and elaborated upon in later research.

I culled the 1200 articles down to 130 scholarly works referenced in this study.

The majority (>75%) of works are empirical studies. Most of the empirical works are quantitative; a few are qualitative studies. Other types of academic literature included in this chapter are scholarly commentaries/opinion pieces (such as Smith and Anderson's [2014] perspective of parenting stress among parents of adolescents with ASD), reviews of the literature, and meta-analyses, all of which were published in peer-reviewed journals. The study also utilized books, book chapters, and web resources, with most of these references about general ASD topics (e.g., prevalence rates of ASD, the definition of ASD) or research methodology (e.g., research design). I also reviewed two dissertations, as their findings were pertinent to this study. The majority of studies and resources used in the literature review were published within the past five years (i.e., from 2013 to 2018). However, the chapter does include a small number of empirical studies (<8%) published in 2011 or 2012 as well as a few works published before 2013. These articles were either seminal works on research methods (e.g., Faul, Erdfelder, Lang, & Buchner, 2007; Gorard, 2012; Ponteretto & Ruckdeschel, 2007), family systems theory (e.g., Bowen, 1966), parenting stress (e.g., Pisula, 2011; Whiteside-Mansell et al., 2007) or PTG (e.g., Cann et al., 2010; Prati & Petrantoni, 2009; Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012); or psychometric studies on the PSI-4-SF (e.g., Abidin, 1990, 2012; Díaz-Herrero, Pérez-López, & Martínez-Fuentes, 2010) or the PTGI (e.g., Lee, Luxton, Reger, & Gahm, 2010; Tedeschi & Calhoun, 1996; Weiss & Berger, 2006).

Theoretical Framework

Three theoretical frameworks are pertinent to this study. The primary theoretical framework is Cridland et al.'s (2014) family systems theory as it applies to families with children and adolescents with ASD; the framework is denoted as FSM-ASD. Cridland et al.'s (2014) FSM-ASD is a type of family systems theory (FST), which was developed by Bowen (1966). As such, Bowen's (1966) family systems theory will provide relevant theoretical background information. A third theory, Perry's (2004) model of stress among parents of children with developmental disabilities, is related to this study. Perry's (2004) theory borrows from Bowen's (1966) family systems theory and, more importantly, emphasizes that growth and resilience can grow from parenting stress. These three theories are discussed in the following sections. Figure 1 first denotes Bowen's (1966) family system theory, which is then presented in the text. Discussions of Perry's (2004) stress model and Cridland et al.'s (2014) FSM-ASD follow. The theory section concludes with a review of the literature concerning these theories.

Societal Emotional Processes	<ul style="list-style-type: none"> • The interactions between the family unit and larger societal systems; family mirroring societal functioning
Nuclear Family Emotional Processes	<ul style="list-style-type: none"> • Relationship patterns within a family that are the key sources of dysfunction/function in a family member
Emotional Triangulation	<ul style="list-style-type: none"> • Three-person system, in which one person provides resources and support to a potentially dysfunctional dyad
Family Projection Processes	<ul style="list-style-type: none"> • Transmission of dysfunction/function from parent to child, driven by parental appraisals of child
Differentiation	<ul style="list-style-type: none"> • The level of a family member's independent and autonomous functioning while maintaining emotional connections to family unit
Multigenerational Transmission Process	<ul style="list-style-type: none"> • Replication of family dynamics , especially with regard to differentiation processes, across generations
Sibling Position	<ul style="list-style-type: none"> • The roles taken by siblings that result from family emotional processes and projection
Emotional Cutoff	<ul style="list-style-type: none"> • A family member's coping response to family stress through the use of emotional distancing from family unit

Figure 1. Bowen's (1966) eight family systems theory constructs.

Bowen's (1966) Family Systems Theory

Bowen's (1966) family systems theory is one of the earliest social, ecological approaches, a group of models that emphasize the dynamic process of interactions between an individual and the (family, peer, community, culture) systems that envelope him/her (Stokols, Lejano, & Hipp, 2013). Family systems theory emphasizes the role that family dynamics - patterns of interactions between a family member and the larger family unit – play in influencing human functioning, risk, and adaptation (Bowen, 1966). Framed as a family therapy theory, family systems theory posits that dysfunctional behavior of a family member "is seen as arising out of the interrelated behavior of all family members ... in the context of the family system" (Strong Bonds, 2018, p. 1). Bowen (1966) identified eight concepts that are the foundation of family systems theory. These concepts are presented and defined in Figure 1. Of the eight tenets of family systems theory, four are most relevant to family functioning among families living with ASD. These are: (a) nuclear family emotional and projection processes, (b) emotional triangulation, (c) emotional cutoff, and (d) differentiation.

Nuclear family emotional and projection processes. Bowen (1966) acknowledged that family members' emotional processes shape family dysfunction shapes and. These emotional processes in turn parental influence appraisals of the adolescent with ASD. When the caregiver identifies 'deficits' in a child - such as a diagnosis of ASD – she/he may unknowingly look for validation and confirmation of these deficits. Parent interactions with the child may reinforce parental perceptions of

child deficits, and these perceptions can become problematic and damaging if they are excessively negative or unrealistic. The negative perceptions held by parents can lead to the child's internalization of his/her self as 'bad' or unworthy. In the family transmission process, problems may be continued through the family system. The parents attempt to repair the issues, but it may instead foster problems of dependency and low self-esteem (Bowen, 1966).

Emotional triangulation. Emotional triangulation is essential to the parent-adolescent with ASD dyad, a relationship often fraught with the stress that can quickly disintegrate into dysfunction (Bowen, 1966). The functioning of this dyad is dependent upon the resources that the third person brings into the relationship (Bowen, 1966). Often among families living with ASD, the dyad is comprised of the adolescent with ASD and the primary caretaker. The provision of social support and emotional resources can enhance the functioning of this dyad (Bowen, 1966). In contrast, the closed parent-adolescent dyad system, with its own established rules, may isolate the parent who is not the primary caretaker and result in disharmony between the parents (Kerr, 2000).

Emotional cutoff. In emotional cutoff, family members regulate conflicts by being either physically or emotionally distant from the other (Bowen, 1966). These dynamics are an attempt to reduce friction, yet the family maintains *unfinished business* (stressful internal dynamics) that does not resolve the issues (Kerr, 2000). The parent's relationship with the adolescent with ASD may be so stressful that the parent distances him/herself from not only the adolescent with ASD but other family members. The lack

of resolution of interpersonal conflicts coupled with the loss of social supports can ultimately result in increased parental distress and anxiety (Bowen, 1966).

Differentiation. Bowen (1966) asserted that, in healthy families, each person has their own identity. However, he found that families where individuals have less differentiation they are more apt to follow along with the peer pressure within the family dynamic. In contrast, the person that is more 'differentiated' is more likely to honor that while they need others, they will stand up for their boundaries and be more assertive about their needs. These individuals are likely to engage in the family system with better emotionally regulated states and interact in a way that is based on compromise and mutual respect. Bowen (1966) posited that dysfunctional families display unhealthy subsystem patterns that contribute to (a) marital/spousal conflict, (b) problematic parent-child interactions, and (c) family members' emotional distancing and isolation from one another.

Perry's (2004) Model of Stress in Families of Children with Developmental Disabilities

Perry (2004) proposed evaluating the parenting stress from an existential perspective, or that that parenting stress could bring about a sense of higher purpose in the parent's life. He proposed that research should evaluate if it were the child's symptoms themselves or the underlying meaning that parents assign to their experience of raising a child with a developmental disability that influenced the stress level experienced by parents (Perry, 2004). Furthermore, Perry stated that it was not just the

child's symptoms that influenced stress but the parent's coping style that changed the parents' response to stressors and subsequent resiliency.

A significant contribution of Perry's (2004) model is that the family system can act as a means to reduce caregiver stress and build parenting and family resiliency. Perry (2004) was able to evaluate the family unit as a whole by looking at the individual and daily life elements including their stress experiences, supportive resources, factors including their stress experiences and supportive resources, both within the family and beyond the family system. Perry stated that each family member individually and collectively has their resources that serve as protective factors and factors that when applied can promote resilience. Finally, according to Perry, growth and struggles of raising a child with DD are not mutually exclusive.

Cridland et al.'s (2014) Family Systems Model for ASD (FSM-ASD)

The theory of family systems provides the foundation for Cridland et al.'s (2014) family systems model for ASD (FSM-ASD), which significantly predicts parenting stress in maternal caregivers of adolescents with ASD, which were assessed in this research. The microscopic family system domain factors that fall under this domain are related to family demographics (Cridland et al., 2014). Combining the concepts of PTG, parent stress and family systems frameworks will likely improve understanding of the resiliency factors in positive coping in female caregivers.

In family systems approaches, there is an understanding that individuals function within their world and that their world informs their view of the key players and events

that occur within their world (Cridland, 2014). In short, this perspective helps us to understand that our lives are all intertwined and influenced by relationships (Smith et al., 2012). Cridland et al. (2014) proposed that family systems theory provide a framework in which to view and assist in the understanding of family dynamics within the family living with ASD and more specifically, in understanding caregiver adaptation.

Boundaries within the family were posited to be an essential part of caregiver and family adjustment (Cridland et al., 2014). Boundaries are the expectations within the family that regulate the adjustment through helping the family know how to respond to situations while members still meet their own and each other's needs (Cridland et al., 2014). The trend for healthy families is the adoption of both set and flexible boundaries that are well regulated within the family system (Cridland et al., 2014). Families of children with ASD frequently have to change circumstances that make it more challenging to negotiate and regulate family boundaries or structure (Cridland et al., 2014). This can influence the identity development within the individual members of caregivers; where enmeshment occurs, and the caregiver and child are one identity (Cridland et al., 2014).

Siblings of a child with ASD often become 'parentified' as they engage in caregiving tasks that are not developmentally appropriate for their age (Cridland et al., 2014). Poor boundaries and parental leadership frequently result in an increase in family conflict and less frequent ability to engage in problem-solving skills that mitigate stressors. Families that have difficulty negotiating boundaries and making adjustments are known to experience more emotional and psychiatric problems (Cridland et al.,

2014). Conversely, families that display healthy relationships and resilience have communication skills and can more effectively display empathy and compassion toward other members of the system (Cridland et al., 2014). The family has an overall ability to cultivate the display of patience and grace with each other in their caregiving style (Cridland et al., 2014). They can recognize that each person within the family unit offers different kinds of support and each member of the family knows how they are expected to operate (Cridland et al., 2014).

Cridland et al. (2014) recommended that research is done on families of adolescents with ASD during transition periods to provide a more specific time where family systems approaches might be the most beneficial. Cridland et al. (2014) proposed the use of a family systems approach to understanding parent stress for families living with ASD. The dynamics within the family are emphasized in family systems approaches and include the distribution of workload, family boundaries, and reactions of family members to the child's diagnosis (Cridland et al., 2014). The understanding of caregiver strengths and resiliency factors provide insight for caregivers, clinicians serving families, schools and in programmatic development. It is in these factors that we gain greater insight on how to best deliver the protective factors that help families maintain or regain a sense of stability in their lives (Smith et al., 2012).

Review of literature pertinent to guiding theories. Family systems theory has been applied in several other studies of families dealing with autistic children. Cridland et al. (2014) posited that family systems theory is based on the understanding that

families, or family systems, are fluid, and thus adaptable. As such, negative dynamics in a family system can adapt and change to harbor more positive dynamics (Cridland et al., 2014). Furthermore, determining common patterns in positively functioning families with an ASD child might guide clinical interventions to help families to become positively a functioning (Cridland et al., 2014). In another study conducted by Cridland et al. (2016), the researchers used family systems theory to explore how having a younger brother with ASD affects typically-developing adolescent sisters concerning their sibling responsibilities and roles. The researchers included the perspectives of 11 family members and found that the sisters took on a variety of caregiving responsibilities and functions, which influenced the family positively and negatively (Cridland et al., 2016). This study indicates the successful use of family systems theory in a family with an ASD member.

Goepfert, Mule, von Hahn, Visco and Siegel (2015) described how to utilize several family therapy modalities with families living with ASD. Goepfert et al. (2015) reminded clinicians that the presence of ASD symptoms in the child should not be attributed to family functioning. Psychodynamic approaches may help facilitate attachment within the mother and child as well as helping the parent to identify things going on in their own lives (Goepfert et al., 2015). Children with ASD will likely experience symptoms on an ongoing basis. Families can learn to rather their experiences in a new way through the use of narrative therapy approaches (Goepfert et al., 2015). Families engaged in this approach are encouraged to look at the strengths within

themselves, and within the family (Goepfert et al., 2015), as this may remove the focus off all the negative behaviors, their child may exhibit. Caregivers need a supportive place where they can renew and grow, become healthier, stronger parents that can face the challenges of parenting a child with ASD (Goepfert, 2015).

Researchers have validated Cridland et al.'s (2013) FSM-ASD. Gauntlett (2014) incorporated theoretical perspectives of the FSM-ASD into a 12-week early start Denver Model (ESDM) pilot intervention conducted with 16 families living with ASD. The researcher applied family systems theory to understand the impact of this intervention on the entire family system (Gauntlett, 2014). The findings indicated that a child's participation in the intervention did affect the family system (Gauntlett, 2014). The results showed an overall positive impact; however, there were negative impacts, stressful impacts, and an expression of unmet needs as well (Gauntlett, 2014). Sullivan (2017) aimed to understand the challenges faced by low-income parents with an ASD child. The researcher applied family systems theory in conjunction with biopsychosocial theory and found that there was a negative impact on parents' social, marital, as well as professional relationships (Sullivan, 2017). The parents also had higher levels of depression and stress, lower levels of social interaction, decreased professional and personal satisfaction, as well as decreased marital satisfaction (Sullivan, 2017). Lajeunesse (2017) applied family systems theory, ecological systems theory, as well as social supports theory to gain a deeper understanding of how parents with autistic children navigated early childhood special education. The researcher posited that the

theories provided an enhanced understanding of the significance of systemic support to family systems and their autistic child (Lajeunesse, 2017). These studies all had various aims regarding family dynamics, and the findings indicated that family systems theory would be an appropriate fit to understand the average level of parenting stress and PTG in the caregivers of adolescents with ASD.

Review of the Literature

This study will focus on maternal caregivers of adolescents with ASD who are transitioning to adulthood. The “behavioral, functional, and emotional symptoms” seen in individuals with ASD often intensifies when they reach adolescence (McStay, Dissanayake, Scheeren, Koot, & Begeer, 2013, p.1). Parents of adolescents with ASD regularly reconcile with the fact that they will be their lifetime caretakers (McStay et al., 2013). Compounding parenting stress of caregivers of adolescents is external factors, lack of family finances and social support, and internal factors, such as caregiver coping mechanisms and attitudes (Smith & Anderson, 2014; Hayes & Watson, 2013).

The Review of Literature provides a review and discussion of pertinent empirical articles. The first section of the Review pertains to studies conducted with parents of children and adolescents with ASD that examined the parent-child dynamic and its influence on child and parent outcomes. The second section provides a review of studies on parenting stress among families living with ASD. The third section focuses on PTG.

Parent-Child/Adolescent with ASD Dynamics and Relevant Outcomes

Maternal caregivers of children with ASD often experience a lower quality of life in all domain areas and reported higher rates of physical and emotional problems than mothers of typically developing children or mothers of other disabilities (Manee, Ateya, Rassafiani, 2016). Galphin et al. (2017) reported that parenting a child with ASD was both rewarding and stressful. Wayment and Brookshire (2017) focused their research on mothers because mothers of children with ASD were shown to experience the highest levels of stress. Previous research as reported that mother's stress responses were strongly correlated with a grief response. The mother may feel that she was in some way responsible for the diagnosis, and this response can be understood in the context of child factors, parent factors and in the external support factors (Galpin et al., 2017), all of which may be understood within a family systems framework.

As parents of children and adolescents with ASD often have excessive stress, as such a disorder has an enormous impact on a family unit. Parent stress can be reduced or intensified depending on the caregiver's coping response. Benson (2014) conducted a cohort study of 113 mothers and their child with ASD, aged 7-14 years. Benson (2014) examined how four types of coping (i.e., engagement, disengagement, distraction, and cognitive reframing) affected parenting stress and resultant maternal functioning for seven years. Findings from multilevel regression modeling indicated that (a) the increased use of distraction and disengagement were linked with increased maternal maladjustment; (b) the increased use of cognitive reframing was related to better maternal outcomes; (c) the use of various coping strategies moderated the influence of child

behaviors on maternal adjustment (Benson, 2014). As such, the path to parenting a child with ASD has numerous challenges, and further research is needed to assist the parents and caretakers of these children in equipping them with possible solutions.

The severity of ASD in a child may influence their behavior and inherently the entire family. Dieleman et al. (2018) indicated that problem behaviors of children and adolescents with ASD are related to their symptom severity, which is in turn related to more dysfunctional parenting behaviors (Dieleman et al., 2018). This is concerning, as ASD children especially need a positive functioning family. The researchers examined parental need frustration as a mediator of the relationship between child maladjustment and parenting behavior (Dieleman et al., 2018). Ninety-five parents of adolescents with ASD were included in this study (Dieleman et al., 2018). The participants completed questionnaires to assess their parenting strategies, their psychological need frustration, and the ASD severity and problem behaviors of their child (Dieleman et al., 2018).

Dieleman et al.'s (2018) findings from regression models indicated that the adolescents' externalizing problems influenced controlling parenting directly and indirectly, by increasing parental need frustration. Specifically, higher levels of externalizing behaviors among adolescents with ASD resulted in reduced support from parents regarding their autonomy. Moreover, externalizing behavior seen in the adolescents with ASD contributed to a lowered degree of parent-child closeness, feelings of parental competence, as well as volitional functioning, which in turn lead parents to engage in more controlling behavior (Dieleman et al., 2018). These findings indicated

the full range of variables that may influence the positive functioning of a family unit that includes a child with ASD.

Dieleman, De Pauw, Soenens, and Prinzie (2016) recognized the cyclical nature of problem behaviors among adolescents with ASD and parenting behaviors of their caregivers. Dieleman et al. (2016) conducted a nine-year longitudinal study with 139 parents of children with ASD, as the child aged into adolescence (Dieleman et al., 2016). Dieleman et al. (2016) collected data from parents at three time-points over these nine years, focusing on measures of parents' perceptions of the child's behavioral issues and psychosocial strengths and their parenting behaviors.

Statistical findings from longitudinal regression models indicated numerous associations between parent perceptions of child behaviors, parenting behaviors, and child (mal)adjustment (Dieleman et al., 2016). Increased use of parent's psychological control was linked to increased behavioral problems in the adolescent (Dieleman et al., 2016). In contrast, increased use of autonomy support was linked to increased psychosocial strengths in the adolescent (Dieleman et al., 2016). The researchers further found that psychological need frustration had a partial mediating effect on adolescents' externalizing problems, as the externalizing of problems were linked to the parent's psychological control through their need frustration (Dieleman et al., 2016). The findings of this study reiterated the importance of the dynamics between the parent and their child.

Alternatively, research has also been conducted in other countries regarding the experiences of parents with ASD children. Lin (2015) examined the effects of coping

strategies and the caregiving burden on the symptoms of depression on 60 Taiwanese mothers with adolescent ASD children between the ages of 10 and 19. Data were collected through self-report questionnaires.

Findings from regression models indicated that more usage of problem-focused coping was linked to decreased levels of caregiver burden as well as fewer symptoms of depression (Lin, 2015). They are using a problem-focused approach to coping provided a buffer in times when caregiving burdens were elevated (Lin, 2015). More specifically, when mothers actively confronted and suppressed competing activities as a coping strategy, the influence of the caregiving burden on symptoms of depression was moderated (Lin, 2015). The findings indicated that the parent could adapt to the caregiving burden (Lin, 2015). The results of this study are significant, as it provides a possible solution to caregivers of ASD adolescents to circumvent depressive symptoms.

Karst, Vaught Van Hecke, Stevens, Schohl, and Dolan (2014) demonstrated the importance of involving caregivers in therapeutic interventions to enhance the functioning of adolescents with ASD. Karst et al. (2014) based their response on the premise that caregivers of children with ASD lack confidence in their parenting ability (Karst et al., 2014). Their study was conducted with a group of 28 intervention and 30 waitlist control families. The intervention lasted for 14 weeks for the intervention families. Karst and colleagues found that while they taught social skills across settings to the adolescents, that involving the family was a part of a relapse prevention plan that was aimed at helping the adolescent maintain skill acquisition that occurred during therapy.

Parents were taught how to cope with the adverse events in their child's life and improve the internal structure of the family (Karst et al., 2014). They were given rote rules for peer relationships and taught parents how to be good problem solvers (Karst et al., 2014). They had a definite plan on how to help their child deal with challenging situations, bullying, stigma and ostracizing (Karst et al., 2014). These authors found that the most impact was observed in parent self-efficacy (Karst et al., 2014).

In contrast to most studies that utilized self-report measures, Karst et al. (2014) assessed different family functioning and child behavior constructs using trained observer reports. Results from the mixed-model analysis of variances (ANOVAs) denoted that parents in the intervention displayed significantly higher levels of parenting functioning, especially in related to perceptions of child functioning and parenting confidence. Karst et al. (2014) interpreted these findings to mean that caregivers who are confident in their parenting report less behavioral problems in their children and are more confident can be more decisive and consistent in their parenting decisions (Karst et al., 2014).

Prior research has concluded that, regardless of the severity of ASD symptoms, parents are affected to some degree concerning their parenting stress or quality of life (Ekas et al., 2010 as cited in Karst et al., 2014). In a study conducted with 297 caregivers of adolescents and adults (ages 12 to 30) with ASD, Vogan et al. (2014) examined the relationships among caregiver age, caregiver perceptions of the degree of ASD severity, externalizing and internalizing behaviors, and medical comorbidities of their adolescent/adult child and caregiver burden. Vogan et al., in conducting a linear

regression model found support for the argument that perceptions of ASD severity, behavioral problems, and medical issues were significantly linked to caregiver burden. The age of parents during their child's diagnosis also predicted the level of caregiver burden: as parents ages increased, so did their levels of caregiver burden (Vogan et al., 2014).

Woodman, Smith, Greenberg, and Mailick (2016) examined the effects of the family environment on outcomes of adolescents and adults with ASD in 10-year longitudinal study conduct with 406 families with ASD. Woodman et al. (2016), by conducting linear regression models found that social support within the family was a protective factor in reducing the frequency of depressive symptoms among adolescents and young adults with ASD (Woodman et al., 2014). Young adults who were raised by their mothers and had positive relationships with their mothers demonstrated higher levels of social reciprocity, were more likely to understand social cues and were perceived to have had reductions in externalizing behaviors (Woodman et al., 2016). These findings denote the importance of support provided to the adolescents with ASD as well as the family as a whole. That is, social support has not only been found to be helpful for caregivers, but adolescents also have improved functioning when their family environment provides them with the social support necessary for individual growth and improvement (Woodman et al., 2016). It appears that social support is given to the mother, interventions on family dynamics and individual symptoms helps to promote the

development of a family environment that can produce PTG among not just parents but adolescents as well (Woodman et al., 2014).

Smith et al. (2010) compared levels of stress and depression between mothers of young adults with ASD and without an ASD diagnosis. This study showed that, in comparison to mothers of young adults without ASD, mothers of young adults with ASD had significantly higher levels of parent-child relationship stress, family stress, work stress, interpersonal stress, and depression (Smith et al., 2010, Acri & Hoagwood, 2015). Taylor and Seltzer (2011) conducted a six-year longitudinal analysis of changes in perceived caregiver burden as well as changes in the relationships between adolescent and parent factors and caregiver burden in mothers of youth with ASD. Amiri, Ranjabar, Hatami, Barzegar, Abdi, and Baharigharehogz (2016) reported in their finding that the trauma related to the child's diagnosis and behaviors were strongly correlated with anxiety, depression and caregiver burden. The increased prevalence of co-occurring personality disorders with other mental health conditions were also found to occur in parents of children with ASD (Amiri et al., 2016). Mothers' sense of caregiving burden continually increased with the age of their child, and caregiver burden was highest after the youth's exit from high school (Taylor & Seltzer, 2011).

Caregiver (Parental) Stress

Family systems theory reminds us that as humans we are interdependent upon one another. Each of us is strongly influenced by one another, particularly in the family context. Parenting stress is defined as “an adverse psychological reaction to the demands

of being a parent” (Gong et al., 2015, p. 1037). Abidin (1990) posited that parenting stress was an emotional response to three types of stressors: those that pertained to the attitudes and behaviors of the child, the obligations and demands of parenting, and those that surrounded parent-child interactions. Mothers have been shown to experience increased medical and psychiatric problems and decreased the quality of life across the life domains when they have a child diagnosed with ASD (Manee et al., 2016). The impact on the mother is more significant in mothers of a child with ASD than with any other disability or in rearing the neurotypical child. Therefore, understanding parent stress in caring for individuals with ASD should be understood among the family system and neuropsychological research that understands how trauma is expressed among and within family systems in a neuropsychological and relational context.

Caregivers of children with ASD experience trauma at the time of diagnosis and trauma related to the ongoing care of the child, particularly when the child experiences high levels of challenging behaviors. For a parent, their child’s transition to adolescence brings forth new stressors for the parent, especially when it comes to planning for their adolescent’s future educational, career/work, and social needs (Smith & Anderson, 2014). Parental stress is an adverse psychological reaction to demanding parenting situations, especially new ones that are associated with the child’s growth and development. Parenting stress is manifested as distress to the demands of parenting (Barker, Mailick, & Smith, 2014).

Bowen (1966) understood that families transmit mental health concerns through their interactions, but the modern brain research indicates that trauma changes the brain in ways that are also transmitted from generation to generation. Continued caregiver stress and burden have shown to increase the incidence in the development of physical health problems, and mental health concerns including depression, dysthymia, bipolar (especially mania), personality disorders and thought disorders. The occurrence of these problems strongly influences the parent-child relationship (Manee et al., 2016). Results from empirical literature have found that parenting stress is both more severe and qualitatively different in caregivers, especially maternal caregivers, of children and adolescents with ASD as compared to caregivers of typically developing children and adolescents as well as caregivers of children and adolescents with other developmental disabilities (Bluth, Roberson, Billen, & Sams, 2013; McStay, Dissanyake, Scheeren, Koot, & Begeer, 2013; Smith, Mailick Seltzer, & Greenberg, 2012; Wong, Mailick, Greenberg, Hong, & Coe, 2014; Woodman, 2014).

There are several barriers to treatment for caregivers. Female caregivers and minorities are less likely to receive their mental health care due to having difficulty accessing transportation, childcare and insurance coverage for mental health care (Kennedy-Hendricks et al., 2017). Caregivers may fear that their transparency in therapy could lead them to have a child welfare report or loss of their parental rights. Access to counseling for the client with ASD themselves may also be difficult as many counselors may feel uncomfortable providing counseling to those on the spectrum, due to the

behavioral health and ASD services being offered in separate departments (Brockman, Hussain, Sanchez, & Turns, 2016). Since families are interdependent and disorders do co-occur, the access to both counseling for mental health concerns with collaborative behavioral supports can move the family toward stabilization (Brockman et al., 2016). Behavior is communication and as such an individual with ASD that has experienced trauma themselves may develop an increase in symptoms that may need to be addressed by professionals with different perspectives (Brockman et al., 2016). The family may need family therapy to treat the family dynamics, while the child needs sand tray therapy to process trauma and the behavioral supports can help the parent develop a behavioral plan on how to respond to specific problem behaviors.

Amiri et al. (2016) asserted that mothers displayed agreeableness and neuroticism and that this alongside their child's behaviors was shown to increase the stress reaction in the mother. The entire family system and each of its members and their functioning can be impacted by having a child with ASD as a part of the family constellation (Karst et al., 2014). Parents are affected as they learn to navigate higher stress levels than parents of children with other illnesses or neuro-typical children. All the children in the household are affected by the family functioning and level of routines and boundaries set forth by parents (Karst et al., 2014).

Family functioning is a cyclic issue as families are more likely to have maladaptive coping styles during a crisis. This cycle of maladaptive family functioning creates a cycle which in turn increases the conduct problems in the child and increases

the parent conflict and marital difficulties within the family unit. Karst et al. (2014) found that families living with ASD are affected by the child's routines and demands that require them to adapt their child. In addition, caregivers experienced financial requirements of the children requiring additional support services such as multiple therapies, cost to travel to treatment, special education needs, and limitations on employment due to needing to be available for appointments and additional requirements of the child (Acri & Hoagwood, 2015; Karst et al., 2014). Parents experienced stressors from needing to advocate for their child continually. They may need to speak for their child when they are unable to assert themselves or because they require additional services (Karst et al., 2014). Acri and Hoagwood (2015) reported that family stress is compounded when the family interacts with many community and social systems when they experience domestic violence, child welfare, and poverty.

In family systems where there is high conflict, it is challenging for children to learn healthy social skills and develop problem-solving abilities. During these periods families may have less social support and be less involved in community events (Karst et al., 2014). The Vulnerability stress adaptation model describes the problem-solving ability of parents or their ability to look for solutions to the parenting situations they were experiencing (Hartley, Papp, Blumenstock, Floyd, & Goetz, 2016). They found that parents engaged in problem-solving over their child 25% of the time (Hartley et al., 2016). Parents whom problem solved over their couple relationship issues were more likely to experience an adverse effect at the individual level, yet problems solving over

the child was not associated with adverse effects (Hartley et al., 2016). Couples were more likely to discuss child-related concerns at times when the child presented with more symptoms (Hartley et al., 2016). Parents were often able to move on the next day and did not report negative experiences following a behavioral incident (Hartley et al., 2016).

Parents showing ASD characteristics, parents of low socioeconomic status, and parents who had more than one child with special needs were also found to report more negative behavioral symptoms of their child with ASD (Hartley et al., 2016).

Cadell et al. (2014) found that twenty percent of parents experience moderate to severe posttraumatic stress syndrome (PTSS) after their child is diagnosed with ASD. Acri and Hoagwood (2015) asserted that parents were most likely to be evaluated for symptoms of anxiety and depression, but they also experienced stress reactions related to their child having experienced trauma. Parents need early diagnosis, parent support, and assistance in selecting treatment options to help them to manage better the demands and stress responses of parenting their child with ASD (Acri & Hoagwood, 2015). Treatment teams working with parents should assess parents for their own mental health needs as this may be essential in changing the focus from a child-centric to family-focused intervention (Manee et al., 2016). Parents experiencing PTSS may have trouble getting and holding employment, display poor money management, experience hostile or violent behaviors, depressive symptoms, suicidal ideations and self-conscious. The approach taken by the diagnostician when discussing a child's diagnosis with the parents is vital: the diagnostician should deliver this diagnosis with empathy and understanding, providing

time to listen to the parent's concerns, assistance in adjusting to the news of this new diagnosis and provide an opportunity for questions and answers (Forinder & Norberg, 2014; Howard Sharp et al., 2017; Murphy et al., 2016). Mental health treatment is also necessary for caregivers to improve therapeutic outcomes as parents that are more supported may be better able to interact and learn from their child's treatment team (Acri & Hoagwood, 2015).

Previous literature has had a strong focus on parenting stress of parents of primary school aged children with ASD, but few have individually evaluated parents of adolescents. The majority of studies assessing parenting stress among caregivers with children with ASD have been conducted with mothers only (Barker et al., 2011). Understanding the caregiver within the context of the family system has given way to a small growing body of research on understanding caregiver stress within the context of families and their functioning (Rao & Beidel, 2009).

Hartley, Seltzer, Floyd, Greenberg, Osmond (2011) specifically addressed the "well-being" of mothers of adolescents diagnosed with ASD. McStay, Dissanayake, Scheeren, Koot, Begeer, (2013) sought to bring an understanding of the role of symptom severity on parent stress. Smith and Anderson (2014) found that parenting stress is unusually high, especially among maternal caregivers, of adolescents with ASD. Parents of adolescents with ASD have experienced a trajectory of chronic stress that initiated early in the child's development and has been maintained throughout the child's life

(Barker, Mailick, & Smith, 2014; Smith & Anderson, 2014; Woodman, Smith, Greenberg, & Mailick, 2014).

During adolescence, parenting stress worsens as a result of changes across the domains of the adolescent with ASD, the parent/mother, and the family systems as a whole (McStay, Dissanayake, Scheeren, Koot, & Begeer, 2013). Cridland, Jones, Magee, and Caputi (2014) proposed the use of a family systems approach to understanding parent stress for families "living with ASD." The dynamics within the family are emphasized in family systems approaches and include the distribution of workload, family boundaries, and reactions of family members to the child's diagnosis (Cridland et al., 2014). As mentioned previously, past studies often focused on mothers or both caregivers and did not account for the responses of other female caregivers, such as grandmothers, aunts, foster parents, or extended relatives caring for children with ASD (McStay, Trembath, Dissanayake, 2014; May, Fletcher, Dempsey & Newman, 2014). This study ventures to explore the perspectives of maternal caregiver to create a greater understanding of the perceived caregiver burden and individual growth that may be present in caregivers at a time when individuals with ASD begin to make the transition to adulthood.

Caregivers benefit from having both the internal resiliency and social support involved with the family caring for the adolescent with ASD (Smith, Greenburg, & Seltzer, 2012). A positive outlook and supportive relationships within the family allow the caregiver the opportunity to process their emotional experience, evaluate expectations, celebrate significant milestones and achievements. Social supports provide

the maternal caregiver practical resources including respite to give a reprieve from caregiving and financial supports (Smith et al., 2012). The current body of research frequently evaluated the external supports available to families, but few studies give insight into the inner strengths within the family system. The understanding of caregiver strengths and resiliency factors provide insight for caregivers, clinicians serving families, schools and in programmatic development. It is in these factors that we gain greater insight on how to best ensure the protective factors that help families maintain or regain a sense of stability in their lives (Smith et al., 2012). Combining the concepts of PTG, parent stress and family systems frameworks will likely improve understanding of the resiliency factors in positive coping in female caregivers. In family systems approach there is an understanding that individuals function within their world and that their world informs their view of the key players and events that occur within their world (Cridland, 2014). In short, this perspective helps us to understand that our lives are all intertwined and influenced by relationships (Smith et al., 2012). Inspired by positive psychology, it is the hope that looking into potential strengths within the family and support networks that we will discover what moves families to a greater sense of stability.

Posttraumatic Growth (PTG)

Posttraumatic stress often occurs as a result of a traumatic experience, while PTG is not always present. Several researchers have examined the maladaptive responses of individuals like burnout and compassion fatigue, yet little research has been conducted to examine PTG and compassion satisfaction, and the factors contributing to these positive

experiences (Smith, 2016). PTG is a beneficial consequence of the profound cognitive restructuring and shift of values and worldviews that occur as a result of trauma (Triplet et al., 2011). Tedeschi and Calhoun (1996) posited that traumatic events could also result in improvements to an individual's self-perceptions, interpersonal relationships, and life philosophy.

There is a need for greater understanding of how to address the needs of the child, mother, family and in community services from a holistic approach. There is an opportunity to explore the aspects that cause the mother to move from the place of grief or despair to that of PTG. Ekas, Timmons, Pruitt, Ghilain, and Alessandri (2015) found that a parent's specific strengths indicated better relationship satisfaction, with their ability to recover benefits, perceived partner support, and use of emotional support being part of individual strengths. Similarly, Zhang et al. (2015) found that the perceived social support, practical coping strategies, peer example, as well as increased self-efficacy were factors that facilitated PTG, with the PTG domains of renewed life philosophy, life appreciation, personal strength, relating to others, as well as spiritual change in mothers with autistic children. The concept of PTG provides us with an understanding of how we as humans grow through trials and circumstances that initially seem traumatic or insurmountable.

Despite the challenges that accompany raising an adolescent with ASD, some caregivers have been able to use their parenting experience as an opportunity for personal growth (Whitehead et al., 2015). This recovery and growth process is called PTG (Zhang

et al., 2015). Within the context of ASD, PTG refers to the transformational process caregivers may undergo once their child is diagnosed as having ASD. They turn away from suffering and embrace the new persons, and parents, they have become as they gain a new perspective on their lives and realize their inner 'strength' (Zhang et al., 2013). While parent stress refers to a deficit or loss, the process of altering perspectives to the positive creates a paradigm shift where caregiving for an individual with ASD is not a negative or traumatic experience, but rather an opportunity for personal enrichment (Zhang et al., 2013). Furthermore, the concept of PTG is one of recovery for the caregiver (Zhang et al., 2015).

The PTG allows the caregiver the ability to negotiate challenges of raising their child with their child's unique behavioral, emotional and need for lifelong care (Whitehead et al., 2015). The positivity that this perspective brings forth is an opportunity for improved relationship connections within the family system and improved emotional wellness for the caregiver. Besides, a challenging child-rearing experience provides an opportunity for improvement in the caregivers' ability to understand and empathize with their child's experience even in the most challenging of circumstances (Zhang et al., 2013). Whitehead et al. (2015) proposed that some caregivers may grow in their view and realize their life calling has been revealed through caring for their child with ASD. As this change in perspective takes place, the relationships within the family system are enriched (Zhang et al., 2013).

There are a variety of factors that can hinder the manifestation of PTG in mothers with ASD children. Wayment, Al-Kire, and Brookshire (2018) utilized mixed-methodology to examine the factors influencing the parenting experiences of mothers with ASD children. The researchers used a quantitative approach, collecting data from self-reported questionnaires about the mothers' PTG, and analyzed the data through hierarchical regression analysis (Wayment et al., 2018). The findings indicated that the most challenging experiences regarding child behavior were communication, aggression, as well as social issues (Wayment et al., 2018). The psychosocial impacts were the perceived judgment of others, not enough social support, perceived loss, as well as personal distress (Wayment et al., 2018). According to PTG theory, when circumstances are perceived to be stressful, subsequent appraisal processes could facilitate personal growth and coping efforts (Wayment et al., 2018). The most rewarding experiences reported were constructive perceptions about life, themselves, as well as their relationships and indications of illusory types of PTG (Wayment et al., 2018). Furthermore, PTG was positively correlated with the social support received from the mothers' most significant network member (Wayment et al., 2018). However, interestingly, PTG was not correlated with ASD-related rumination or the time passed since diagnosis (Wayment et al., 2018).

Other researchers also explored aggression as a factor that influences PTG. Swaab, McCormack, and Campbell (2017) examined the experiences of parents with ASD adolescents who had experienced intermittent outbursts of aggression from the

adolescents, which might expose family members to possible physical harm and psychological distress. The researchers utilized a qualitative phenomenological study to explore the negative and positive interpretations of parents with adolescent sons with ASD (aged 20 to 30) who display unpredictable, aggressive behavior (Swaab et al., 2017). Data were collected from semi-structured interviews with three parents (Swaab et al., 2017). The central theme that emerged pertained to complicated parental distress and growth with six subthemes that described the constant emotional and psychological unpredictability of these parents (Swaab et al., 2017). The participants recorded the anticipation of possible traumatic events as a consistent stressor (Swaab et al., 2017).

Furthermore, in contrast to perceived stigma as well as societal criticism, the parents experienced the overwhelming emotions of empathy, frustration, pity, as well as an intense instinct to protect their child (Swaab et al., 2017). Over time the parents had developed practical survival strategies to function as a family, to accommodate the needs of each family member (Swaab et al., 2017). For the parents, psychological well-being had become a balance of striving for psychological growth despite the constant of anticipatory traumatic events (Swaab et al., 2017).

While growth through personal struggle has frequently been discussed in philosophical and religious contexts, growth through trials has begun to be of interest in the scientific literature using the term PTG. PTG is inspired by existential psychology which celebrates the individual's unique identity, ability to cultivate self-awareness and they must continually evolve as people because the world is forever changing (Wong,

2010). PTG occurs as the view of the self, interpersonal relationships and the person's philosophical worldview evolves during and after their recovery from stressful or traumatic circumstances (Cadell et al., 2014; Duran, 2013; Tedeschi & Calhoun, 1996). PTG is an evolution of one's appreciation of and gratitude for a life that affects perspectives of personal strength, spirituality, and the importance of relationships (Duran, 2013; Wilson et al., 2016).

Parenting may be one of the most significant character building exercises of one's life as it frequently provides many challenges to overcome and may lay the foundation for personal growth. The caregiver journey has the potential to help the caregiver realize their power through the development of improved self-esteem and self-efficacy (Aftyka, Rozalska-Walaszek, Rosa, Rybojad, & Karakula-Juchnowicz, 2016). Growth within the person and their ability to extend compassion to others impacts their relationships, mainly affecting the relationships within the family dynamic. The caregiver has the opportunity to evolve in their overall existential outlook on life as they develop an ability to live life more intentionally by appreciating small events that they may have previously overlooked (Aftyka et al., 2016; Tedeschi & Calhoun, 1996). Ultimately PTG occurs after someone has an experience that is, so earth-shattering that it causes them to re-evaluate their entire life, their deepest inner workings and their overall relationship with the world (Albuquerque, Narciso & Pereira, 2017; Tedeschi & Calhoun, 1996).

Summary

The relationship between posttraumatic stress symptoms and PTG in parents has been explored with a variety of parenting experiences. Parents of children who experience a range of illnesses and disabilities may experience symptoms of posttraumatic stress disorder and experience subsequent PTG as a part of their resiliency or recovery. Research has explored the relationship between posttraumatic stress and PTG in parents of children born prematurely and required treatment in the neonatal intensive care (Aftyka et al., 2016), children needing stem-cell implantation (Forinder et al., 2014; Riva et al., 2015), cancer (Duran, 2013; Texeria & Pereira, 2013), intensive care treatment (Rodriguez-Rey & Alonso-Tapia, 2017), or life-threatening illness (Rayner et al., 2016), and death of a child (Albuquerque et al., 2017). PTG within the caregiver or family can also develop in response to experience traumatic life events such as a fire or natural disaster (Cadamuro et al., 2016; Felix et al., 2015; Self-Brown et al., 2014). The PTG literature that has focused solely on mothers has primarily explored PTG after natural disasters (Lowe et al., 2013) and neonatal intensive care (Aftyka et al., 2016).

The focus on female caregivers in this study expanded upon the previous findings that women experience higher levels of benefit finding, or PTG, out of life-altering events than men (Tedeschi & Calhoun, 1996). Women are believed to be more reflective in understanding their internal experiences and their relationship with the world, and as

such, this thoughtful response helps to promote PTG responses out of life events (Albuquerque et al., 2017).

Chapter 3: Research Method

Introduction

The transition from adolescence to adulthood can be a problematic developmental period for both the adolescent and the parent (McStay et al., 2013; Smith & Anderson, 2014). The adolescent developmental period can be especially stressful for families with an adolescent diagnosed with ASD (Barker et al., 2014; Hayes & Watson, 2013). There exists a large body of literature that has assessed parent outcomes among caregivers who have adolescents with ASD, with many studies focusing on the antecedents and consequences of parenting stress (e.g., Bluth et al., 2013; Hayes & Watson, 2013). Most ASD studies have taken a deficits approach, and much of the empirical work has been conducted with parents of young children with ASD (Bonis, 2016). Few studies have explored if and how intrapersonal caregiver factors relate to growth, well-being, and resilience among caregivers of adolescents with ASD (Neff & Faso, 2015; Tint & Weiss, 2016).

In this study I addressed the identified gaps in the literature and utilized a strengths-based approach in which to examine parenting stress and PTG in a sample of maternal caregivers of adolescents with ASD. The study had three overarching goals. The first and second goals were to determine the average level of parenting stress and PTG, respectively, among the participants. These mean scores were then compared to the population-normed mean scores (μ s) for the PSI-4-SF and the PTGI. The third goal was

to assess whether a significant relationship existed between parenting stress, measured using the PSI-4-SF, and PTG, assessed using the PTGI.

The purpose of this chapter is to elucidate the research methodology of the study. The chapter is divided into sections. The first section pertains to the research design and rationale. The second section concerns the study methodology. This section reviews the (a) study population, sample, and sampling procedure; (b) study recruitment and data collection procedures; (c) instrumentation and operationalization of study constructs; and (d) the data analysis plan. The third section of the chapter addresses threats to external, internal and statistical conclusion validity. The fourth section is a review of the ethical procedures and processes of the study. The fifth and last section is a summary of the chapter.

Research Design and Rationale

Research studies can be qualitative or quantitative (Barnham, 2015; de Villers & Fouché, 2015). The qualitative methodology is rooted in the interpretivist paradigm, which posits the existence of multiple realities that are subjectively experienced. The goal of qualitative research is not deductive, but instead is inductive: it is not to test study hypotheses but instead to reach conclusions and arrive at themes regarding the phenomenon under study. The qualitative researcher conducts the research in natural (as opposed to laboratory) settings, and qualitative data are commonly gathered through focus groups or interviews or observing behavior. Some common qualitative approaches

are grounded theory, phenomenology, single and multiple case studies, narrative biographies, and ethnography (Barnham, 2015; de Villiers & Fouché, 2015).

The quantitative method is rooted in the positivist paradigm, which posits the existence of a single, known, and measurable reality (Barker & Pistrang, 2015). The goal of quantitative research is deductive, that is, to test the theory by developing theoretically-aligned research questions and associated null and alternative hypotheses. The foundation of quantitative research is the scientific method. The quantitative research gathers numerically-based data from participants, most commonly through self-report or observational techniques, and conducts statistical analyses on these data. Results from the statistical analyses determine whether or not to fail to reject or reject the null hypotheses (Barker & Pistrang, 2015).

There are different types of quantitative approaches, which are most often delineated into three categories: (a) experimental, (b) quasiexperimental, and (c) nonexperimental (Moring, 2014). The only approach in which causality can be determined is a true experimental research design, where study participants are randomly selected from the population and randomly assigned to conditions (i.e., an intervention or control condition) (Moring, 2014). Quasiexperimental research is similar in design to a true experiment, except that study participants are not randomly selected or randomly assigned to conditions (thus precluding the ability to determine causality) (Moring, 2014).

Random selection and assignment are not utilized in nonexperimental studies (Moring, 2014). Nonexperimental designs can be *causal-comparative*, which are used to examine *naturally occurring* dependent variable differences between *naturally occurring* groups (Mertler & Reinhart, 2016), or *correlational*, also known as *associational*, where the researcher assesses the nature of the relationship between *naturally occurring* independent and dependent variables (Asamoah, 2014; Gorard, 2012). In correlational studies, the independent variables are denoted as *predictor* variables, and the dependent variables are indicated as *criterion* variables (Asamoah, 2014; Gorard, 2012).

This study was quantitative. This study was conducted using the scientific method. In this study, there was a guiding theoretical framework that informed the creation of null and alternative hypotheses. The null and alternative hypotheses indicate the lack of relationship and the existence of a connection between the independent and dependent variables, respectively. The predictor and criterion variables were operationally defined and measured using validated instruments, and the data collected were numerically coded. The research questions were addressed through the use of descriptive and inferential statistics. The determination as to whether to fail to reject or reject the null hypotheses was based on the significance of the findings.

This study, which was conducted with a sample of maternal caregivers of adolescents with ASD, utilized a correlational research design. The correlational research design is employed when the researcher wants to investigate if a significant linear relationship exists between the predictor and criterion variables; it also determines

the direction and strength of that relationship (Asamoah, 2014; Gorard, 2012). The purpose of this study was to determine whether there was a significant association between parenting stress, the predictor variable, and PTG, the criterion variable. This study also examined whether critical covariates were significantly associated with the criterion variable of PTG.

The correlational research design should not be confused with correlational statistics (Asamoah, 2014; Gorard, 2012). While inferential statistics that test relationships are used in correlational studies, basic correlational statistics, such as Pearson bivariate correlations, are too rudimentary for the testing of hypotheses (Asamoah, 2014). Instead, correlational research studies employ advanced statistical analyses, such as multiple linear regression, logistic regression, path analysis, and structural equation modeling (SEM), for hypothesis testing (Asamoah, 2014, Nau, 2015). This study utilized a hierarchical multiple linear regression (HMLR) model.

Methodology

Population

The sample represented the population of American maternal caregivers of adolescents with ASD, ages 14 to 22 years of age, residing in the United States. According to the Autism Society (2017), as of 2015, about 1% of the world population has received a diagnosis of ASD, and approximately 3.5 million Americans live with ASD. Approximately 1.5 million American families have a child or adolescent with ASD (Autism Society, 2017). The prevalence rate of ASD among American children and

adolescents has increased by almost 120% since 2000, and in 2015, the prevalence rate among American children and adolescents was 1 in 68, with prevalence rates being higher for boys (1 out of 42) than girls (1 out of 189) (Autism Society, 2017).

Sampling and Sampling Procedures

This study used nonprobability convenience sampling, wherein study participants were selected purposively (not randomly), based on their accessibility and proximity to the researcher (Patten, 2016). Participants had to be maternal caregivers (including biological mothers, foster mothers, adoptive mothers, grandmothers, and female family members) who resided in the United States and who had legal guardianship of an adolescent between the ages 14 to 22 diagnosed as having ASD. Paternal caregivers, maternal caregivers of children ages 0 to 13, with ASD and maternal caregivers of adolescents, ages 14 to 22, who have a developmental disability other than ASD were excluded from the study. While a Spanish-language survey was provided to participants, all participants completed the English-language survey.

A power analysis of multiple linear regression was conducted using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). The number of tested predictors was set to 13, which include the one predictor variable of parenting stress and 12 total potential covariates (i.e., maternal caregiver type, recorded into three dummy variables; the number of children in the household; the number of children with an IEP in the home; survey language [one dummy variable]; geographical region, recorded into three dummy variables; and geographic residence, recoded into three dummy variables). Power was set

to .80, and the significance level was set to $p < .05$. Based on meta-analysis findings (Hayes & Watson, 2013), the effect size was set to medium, $f^2 = 0.15$. As seen in Figure 2, the sample size needed for the study was $N = 131$. The actual sample size attained was $N = 136$.

F tests - Multiple linear regression		
Analysis:	<i>A priori</i> : Compute required sample size	
Input:	Effect size f^2	= 0.15
	α err prob	= 0.05
	Power (1- β err prob)	= 0.80
	Number of tested predictors	= 13
	Total number of predictors	= 13
Output:	Noncentrality parameter λ	= 19.65
	Critical F	= 1.80
	Numerator df	= 13
	Denominator df	= 117
	Total sample size	= 131
	Actual power	= 0.80

Figure 2. G*Power power analysis output for multiple linear regression (MLR).

Procedures for Recruitment, Participation, and Data Collection

This study utilized the mixed-mode method, defined by The Pew Research Center as the use of multiple sample recruitment and data collection approaches. The mixed-mode method is an effective recruitment and data collection process for research with hard-to-reach participants, and its use often reduces sampling biases and increases response rates (de Leeuw, 2005; de Leeuw & Berzelak, 2016). The mixed-mode survey strategy has two key phases: the *contact*, or recruitment, phase; and the *response*, or data

collection phase (de Leeuw, 2005). Figure 3 presents the differing recruitment and data collection modes I employed in this study.

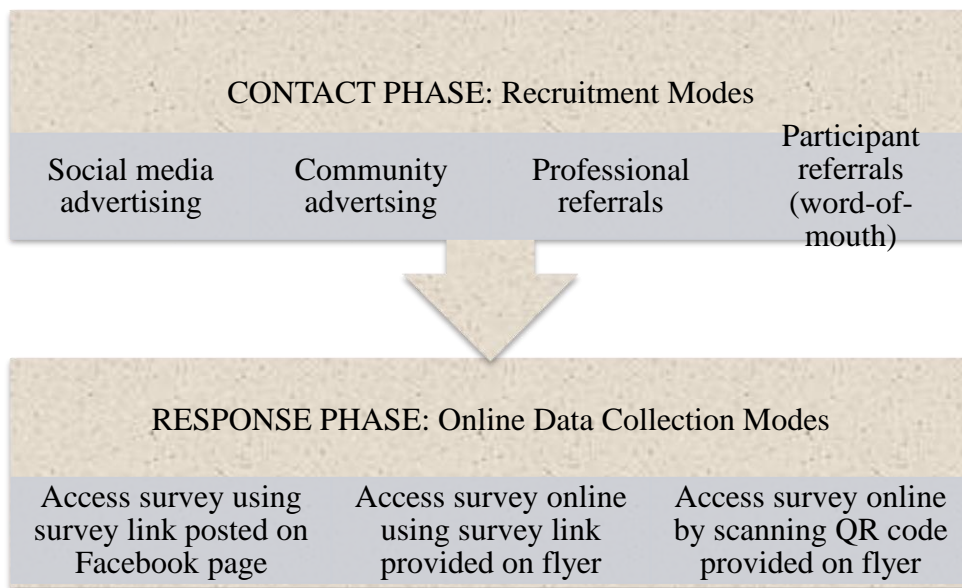


Figure 3. Mixed-mode contact and response phase study strategies.

Contact phase: Recruitment modes. Two central elements of the contact phase were the study Facebook page and study flyers. The study flyers served as the primary recruitment materials, and the Facebook page was the primary study survey site. The study flyers and Facebook page both included (a) an overview and purpose of the study; (b) information regarding my role as investigator and email contact information; (c) the study responsibilities (i.e., completing an online survey) of the participant; and (d) informed consent form information, including Walden IRB contacts. The flyer referenced the Facebook page, and both included Survey Monkey® survey links (i.e., one link for the Spanish-language version and one link for the English-language version).

Recruitment entailed the use of four different modes: (a) social media advertising; (b) community advertising (i.e., dissemination of study flyer); (c) professional referrals, in which ASD professional colleagues promoted the study to caregivers who met study criteria; and (c) participant referrals, that is, word-of-mouth, with participants acting on behalf of the study investigator to enlist caregivers who meet study criteria (Gledhill, Abbey, & Schweizer, 2008). I spoke with numerous representatives of national ASD organizations to request permission to post the study Facebook page and study survey links on their social media sites. The national organizations that posted the study flyers and survey links on their website were the Autism Speaks and Social Psychology Network. The study was also approved for the Walden Participant Pool. I contacted and received approval to publish the study Facebook page and survey links on several online ASD communities and parenting groups on Facebook, Yahoo Groups and Texas Parent2Parent. Survey flyers were shared via e-mail to professional contacts and to professionals listed in the autism resource guides so they could choose to make flyers available in their waiting areas or distribute to their parenting groups.

Participant data collection procedures. Participants could complete the study by going to the study Facebook page and clicking on the survey link, copying and pasting the survey link into a search engine, or scanning the study QR code using an iPhone. The link opened to an encrypted password-protected study site on the Survey Monkey® platform. The first page of the survey contained an informed consent statement. In accordance with Walden IRB requirements, the informed consent statement included (a)

a summary of the overview, purpose, and intent of the study; (b) the role of the interested participant (i.e., to complete an online survey) and expected duration of participation (i.e., approximately 20 minutes); (c) the study participant criteria; (d) the identity and role of the researcher; (e) a statement that participation is voluntary and that participants have the right to refuse to answer any or all survey question without penalty; (f) any foreseeable risks or benefits; (g) a statement that participants will not receive an incentive or compensation for their participation; (h) statements on maintain participant confidentiality and anonymity; (i) contact information of the investigator and of the Walden IRB board; and (j) a statement that the participant may print out and keep the copy of the informed consent form . The participants had to provide informed consent by selecting *Yes* to the statements that they understood the informed consent form and agreed to participate in the study. They also had to confirm that they met study criteria by selecting *Yes* to the question that they were a female legal guardian of an adolescent with ASD who currently resided with them. The participants who provided informed consent and met study criteria were directed to pages that contain the survey questions. The participants who did not provide consent or did not meet study criteria were redirected out of the survey webpage.

Participant and data security protocols. Survey Monkey® has numerous survey security protocols (see <https://www.surveymonkey.com/mp/legal/security/>), and their survey websites are SSL-encrypted and password-protected. I was the only individual who could access the survey site, and I had to enter my username and

password each time I accessed the survey sites. To ensure participant anonymity, I selected the *Anonymous Response* option and deselected the *Save IP Address* option provided on the Survey Monkey® site platform. To ensure that participants did not answer the survey more than once, I selected the *Single Sign-On (SSO)* option provided by Survey Monkey®. The SSO option requires participants to log on through the Survey Monkey® SSO portal, which then directs them to the survey site (Survey Monkey®, 2018). I deleted the Survey Monkey® study site once I downloaded the data. I will keep the data as SPSS data files stored on an encrypted and password-protected jump drive, place in a locked file cabinet in my home office and destroyed after five years. Survey Monkey® maintains the frame of the survey but not data for up to 13 months, after which it is removed from the platform (Survey Monkey®, 2018).

Instrumentation and Operationalization of Constructs

The study survey included the PSI-4-SF survey and the PTGI survey as well as single questions regarding (a) the participant's relationship to the adolescent (i.e., biological mother, adoptive/foster mother, grandmother, another female guardian); (b) the number of children (ages 0-18) who reside in the household; (c) the number of children (ages 0-18) with an IEP who live in the house; (d) participant geographical location in the United States (i.e., West, Midwest, South, and Northeast); and (e) geographic residence (i.e., rural area, small city/large town, suburb near a large city, large city). These five variables mentioned above were treated as covariates. Participants were asked to provide

their age and ethnicity for descriptive purposes. The study survey was relatively short and took participants about 20 minutes to complete.

Predictor variable: Parenting stress. Parenting stress, the predictor variable, was assessed using the 6-item Parenting Stress Index 4th Edition Short Form (PSI-4-SF; Abidin, 1990, 2012), both the English and Spanish (Solis & Abidin, 1991) versions. The PSI-4-SF, derived from the 101-item full Parenting Stress Index, is an extensively utilized instrument of parenting stress (Abidin, 1990, 2012; Solis & Abidin, 1991). Dysfunctional parenting theory informed Abidin's (1990) development of the PSI and PSI-4SF. Both scales assess parenting stress in three domains: (a) stress as related to the attitudes and behaviors of the child, for example, "My child seems to cry or fuss more often than most children;" (b) stress in relation to the demands of parenting, for example, "Since having a child I feel that I am almost never able to do things I like to do;" and (c) stress surrounding dysfunctional parent-child interactions, for example, "Most times I feel that my child does not like me and does not want to be close to me" (Abidin, 1990, p. 27). The items on the PSI-4-SF are answered using a 5-point Likert-type scale format, from 1=*strongly disagree* to 5=*strongly agree*. The total scale score of the PSI-4-SF can range from 36 to 180 points, with a higher score denoting a higher degree of parenting stress (Abidin, 1990, 2012; Solis & Abidin, 1991). Abidin (1990, 2012) and Solis and Abidin (1991) recommended the use of percentile scores due to better interpretation of findings. The PSI-4-SF population mean percentile score is $\mu=50$ (Abidin, 1990, 2012; Solis & Abidin, 1991). PSI-4-SF scores between the 15th and 80th percentiles indicate

‘normal’ levels of parenting stress. PSI-4-SF scores between the 81st and 89th percentiles are considered to reflect high and thus concerning levels of parenting stress, and 90th or higher percentile scores denote clinically elevated levels of parenting stress (Abidin, 1990, 2012; Solis & Abidin, 1991).

The PSI-4-SF has received extensive psychometric attention (Abidin, 1990; Abidin, Austin, & Flens, 2013; Dardas & Ahmad, 2014; Haskett, Ahern, Ward, & Allaire, 2006; Hayes & Watson, 2013; Whiteside-Mansell, Ayoub, McKelvey, Faldowski, Hart, & Shears, 2007; Zaidman-Zait et al., 2014) as has the PSI-4-SF Spanish version (Barroso, Hungerford, Garcia, Graziano, & Bagner, 2016; Díaz-Herrero, Pérez-López, & Martínez-Fuentes, 2010; Pérez-Padilla, Menéndez, & Lozano, 2015; Solis & Abidin, 1991). The 36 items on this measure were derived through a principal components analysis of the 101 original PSI items (Abidin, 1990). Results from confirmatory factor analyses (CFAs) on the 36 items have confirmed both versions of the index as measuring a single factor (Abidin, 1990, 2012; Díaz-Herrero et al., 2010; Haskett et al., 2006; Whiteside-Mansell et al., 2007). Discriminant validity of the PSI-4-SF and the PSI-4-SF Spanish version has been confirmed in studies denoting significant differences between types of parents (e.g., parents of children without and without ASD: Hartley et al., 2017; Hayes & Watson, 2013; parents at-risk and not at-risk for child abuse: Barroso et al., 2016; Pérez-Padilla et al., 2015; mothers with and without depression: Ardoino, Queirolo, Barg, Ciccariello, & Kordas, 2015). Evidence exists for the criterion-related concurrent validity of the PSI-4-SF and the PSI-4-SF Spanish

version (Abidin, 1990; Abidin et al., 2013; Ardoino et al., 2015; Pérez-Padilla et al., 2015; Zaidman-Zait et al., 2014). Zaidman-Zait et al. (2014), in a study conducted with parents of children with ASD, found that higher levels of parenting stress were significantly associated with increased perceptions of child behavior problems, $\beta = .61, p < .001$, and that this relationship remained significant at three-time points. Pérez-Padilla et al. (2015) found significant associations between parenting stress, as measured by the PSI-4-SF Spanish version, and external parenting locus of control, $r = .48, p < .01$; decreases in parenting satisfaction, $r = -.34, p < .01$; and increases in general malaise, $r = .28, p < .01$, anxiety, $r = .37, p < .01$, and depression, $r = .36, p < .01$. Cronbach's alphas that range from .77 to .92 have provided support for the inter-item reliability of both versions of the scale (Ardoino et al., 2015; Abidin, 1990, 2012; Abidin et al., 2013; Barroso et al., 2016; Dardas & Ahmad, 2014; Díaz-Herrero et al., 2010; Solis & Abidin, 1991; Whiteside-Mansell et al., 2007). Two-week test-retest reliabilities have been in the high .60s to low .80s, $ps < .001$ for both versions of the measure (Abidin, 1990; Díaz-Herrero et al., 2010; Hayes & Watson, 2013; Pérez-Padilla et al., 2015; Solis & Abidin, 1991).

Criterion variable: PTG. The criterion variable of PTG was measured using 21-item Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) and its Spanish version, created by the authors and validated by Weiss and Berger (2006). Tedeschi and Calhoun (1996) developed the PTGI (English and Spanish versions) in response to the numerous studies that focused on the harmful effects of a stressor in an individual's life,

positing that traumatic events can also result in improvements of an individual's self-perceptions, interpersonal relationships, and life philosophy. The use of this scale first requires the identification of a stressful or traumatic event, which in this study was having an adolescent with ASD. Participants in this study were asked to "indicate for each of the statements [i.e., items that comprise the PTGI] the degree to which this change occurred in your life as a result of [having your adolescent child be diagnosed with ASD]" using a 6-point Likert-type response format (i.e., 0=not at all, 1=a very small degree, 2=a small degree, 3=a moderate degree, 4 =great degree, and 5=very great degree; Tedeschi & Calhoun, 1996, p. 459). Example items from the PTGI include "being able to accept the way things work out," "having compassion for others," "being more likely to change things that need changing," and "appreciating each day." Scale scores can range from 0 to 105 points, with a higher score denoting a higher degree of PTG. The mean population PTGI score is $\mu=52.5$ (Tedeschi & Calhoun, 1996; Weiss & Berger, 2006). PTGI scores 57 and higher indicate a high degree of PTG, while a PTGI score of 62 or higher indicates high PTG (Tedeschi & Calhoun, 1996; Weiss & Berger, 2006).

There exists psychometric evidence of the construct validity of the PTGI (Tedeschi & Calhoun, 1996; Weiss & Berger, 2006). The one-factor construct has been confirmed in studies conducted by Alex Linley, Andrews, and Joseph (2007), Taku, Cann, Calhoun, and Tedeschi, 2008, and Morgan, Desmarais, Mitchell, and Simons-Rudolph (2017), who used the English-language version of the PTGI; Lee, Luxton,

Reger, and Gahm (2010), who used the Spanish-language version of the PTGI; and Sheikh and Marotta (2005), who used both versions of the PTGI. Studies examining differences between groups (e.g., females versus males: Vishnevsky, Cann, Calhoun, Tedeschi, & Demakis, 2010; caretakers of children with and without disabilities: Findler, 2014; young adults with low versus moderate-to-high levels of depression: Bianchini et al., 2017; older adults with low versus high levels of religiosity: Calhoun, Cann, Tedeschi, & Mcmillan, 2000), have provided support for the criterion-related discriminant validity of both the English- and Spanish-language versions of the PTGI. There is empirical evidence that supports the criterion-related concurrent validity of both the English-language (Prati & Pietrantonio, 2009; Tedeschi & Calhoun, 1996; Triplett, Tedeschi, Cann, Calhoun, & Reeves, 2012) and the Spanish-language versions of the PTGI (Bianchini et al., 2017; Lee et al., 2010; Las Hayas, López de Arroyabe, & Calvete, 2014), especially with regard to measures of optimism, resilience, hardiness, and positive aspects of caretaking. Tedeschi and Calhoun (1996) found significant associations between PTGI scores and instruments that measured positive affect, $r=.24, p<.01$, positive emotions, $r=.34, p<.001$, and openness to feelings, $r=.28, p<.01$. Triplett et al. (2012) found significant associations between PTG as measured by the PTGI and measures of life meaning, $r=.27, p<.01$, and life satisfaction, $r=.34, p<.001$. The inter-item reliability of the 21-item PTGI has ranged from .89 to .92 (Alex Linley et al., 2007; Tedeschi & Calhoun, 1996; Triplett et al., 2012; Vishnevsky et al., 2010); the internal consistency has ranged from .80 to .92 for the Spanish-language PTGI (Bianchini et al.,

2017; Las Hayas et al., 2014; Weiss & Berger, 2006). The two-week test-retest reliability of the PTGI has ranged from $r=.65$ to $r=.75$, $p<.001$ (Tedeschi & Calhoun, 1996; Weiss & Berger, 2006).

Potential covariate: Relationship of maternal caregiver to target adolescent.

The potential covariate of maternal caregiver's relationship to target adolescent was a categorical variable. Participants were asked, "What is your relationship to your adolescent with ASD?" Participants selected from five categories where 1=*biological mother*, 2=*adoptive/foster mother*, 3=*grandmother*, 4=*other female guardian*.

Potential covariate: Participant age. Participants were asked to provide their age by responding to the interval-coded question, "How old are you?"

Potential covariate: Adolescent age. Participants were asked to provide the age of their adolescent with ASD. As the age could range from 14 to 22, this variable was considered to be interval-coded.

Potential covariate: Participant ethnicity. Participants were asked to provide their ethnicity. Responses were coded as 1=*American Indian/Native Alaskan*, 2=*Asian/Asian American*, 3=*Black/African American*, 4=*Mexican, Mexican American, or Chicano*, 5=*Native Hawaiian/Other Pacific Islander*, 6=*Puerto Rican*, 7=*Other Hispanic, Latino, or Latin American*, 8=*White non-Hispanic*, and 9=*Other*

Potential covariate: Geographical region of the United States. The fifth possible variable was the geographical region in which the participants reside, a categorical variable. The participant was asked, "In what region of the United States do

you reside?" The U.S. Census designates the four regions (please refer to https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf). The response codes are 1 = *West* (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming); 2 = *Midwest* (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin); 3 = *South* (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington, DC, West Virginia), and 4 = *Northeast* (Connecticut, Maine, Massachusetts, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont).

Potential covariate: Geographical residence. The sixth potential covariate was the geographical residence, addressed using a question from the Pew Research Center (2012) that inquires, "Which of the following best describes the place where you live now?" This is a categorical variable coded where 1 = *rural area*, 2 = *small city/large town*, 3 = *suburb near a large city*, and 4 = *large city*.

Potential covariate: Number of children (ages 0-18) in the household. The second potential covariate was the ratio-coded number of children (ages 0-18) in the household other than the targeted adolescent with ASD. Participants were asked to provide a number in response to the question, "Other than you adolescent with ASD, how many children between the ages of 0 and 18 currently reside in your household?"

Potential covariate: Number of children (ages 0-18) in the household. The

third potential covariate was the ratio-coded number of children (ages 0-18) with an IEP in the household other than the targeted adolescent with ASD. Participants were asked to provide a number in response to the question, “Other than you adolescent with ASD, how many children between the ages of 0 and 18 have an IEP who currently reside in your household?”

Data Analysis Plan

Upon completion of the data collection, which concluded on January 10, 2019, I downloaded the data from the Survey Monkey® English-language survey into an SPSS 25.0 data set. No participant completed the Spanish-language survey. This study had three research questions with associated null and alternative hypotheses. The proposed statistical analysis is presented after each research question and hypotheses. These analyses are discussed in detail in the following sections.

Research Question 1. What is the degree of maternal caregiver stress, as measured by the Parenting Stress Index- 4th Edition Short Form (PSI-4-SF; Abidin, 1990), among maternal caregivers of adolescents with ASD?

H₀₁. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PSI-4-SF μ score.

H_{a1}. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is significantly different from the population PSI-4-SF μ score.

Proposed analysis. One-sample *t*-test.

Research Question 2. What is the degree of maternal caregiver PTG, as

measured by the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) for maternal caregivers of adolescents with autism spectrum disorder?

Ho2. The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

Ha2. The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

Proposed analysis. One-sample *t*-test.

RQ3. Is there a significant relationship between maternal caregiver stress, as measured by the PSI-4-SF (Abidin, 1990), and maternal caregiver PTG, as measured by the PTGI (Tedeschi & Calhoun, 1996), controlling for covariates (i.e., relationship of caregiver to target child, number of children living in the household, and number of children with an IEP residing in the household), among a sample of maternal caregivers of adolescents with autism spectrum disorder?

Ho3. There is not a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with an autism spectrum disorder.

Ha3. There is a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with autism spectrum disorder?

Proposed analysis. One HMLR. The three dummy-coded place of residence covariates were entered on the first step on the HMLR, followed by the PSI-4-SF

variable, entered as a predictor of the PTGI variable, the criterion variable, on the second step of the HMLR.

Data cleaning and organization. Data were reviewed and if relevant, adjusted, for missing data and outliers. I removed those cases absent of any survey data. I also removed the three cases that had 75% or more missing data. There were no cases that had missing not at random data. Only five cases had one to two missing PSI-4-SF, and two cases had one missing PTGI response, all of which were missing completely at random. I replaced these few missing data points with the respective median score.

Categorical covariates were recoded according to participant responses (e.g., participants may only reside in the Midwest and South regions of the United States; participants may just be biological mothers and foster/adoptive mothers) and, if relevant, for dummy coding. Data organization also entailed the computation of Cronbach's alphas for the PSI-4-SF and PTGI to determine scale internal consistency. The inter-item reliability of an instrument is determined by calculating the Cronbach's alpha (Mertler & Reinhart, 2016; Nimon, 2012). The absolute lowest acceptable Cronbach's alpha is .60; scales should ideally have Cronbach's alphas that are .70 or higher (Mertler & Reinhart, 2016; Nimon, 2012). The PSI-4-SF and PTGI full-scale variables were computed by summing the respective scale items.

Descriptive statistics. Descriptive statistics were computed and reported for the predictor and criterion variables, potential covariates, and descriptive variables. The descriptive statistics calculated for the PSI-4-SF predictor variable, the PTGI criterion

variable, the covariates of the number of children and number of children with an IEP in the household, and the descriptive variable of maternal caregiver age were the mean, median, mode, standard deviation, and minimum and maximum scores. The descriptive statistics for the potential covariates of survey language, geographical location, geographical residence, and the descriptive variable of ethnicity were percentages and frequencies.

Testing of covariates. An initial set of analyses were conducted to determine covariate significance regarding PTGI scores. Due to the small and unequal sample sizes for maternal caregiver type and ethnicity, the categories were collapsed into two groups, and independent samples *t*-test were conducted to determine any PTGI differences across caregiver type and ethnicity. Two one-way analyses of variance (ANOVAs) using a Tukey *post hoc* test were conducted to determine if there are significant PTGI mean score differences across geographical regions and geographical residences. Pearson bivariate correlations were performed between maternal age, adolescent age, number of children in the household and the number of children with IEPs in the household, and PTGI scores.

The only covariate found to be significant was the place of residence. This variable was recoded into three dummy variables so it could be appropriately used in the HMLR. A categorical variable with two or more groups, conditions, or levels must be recorded into separate dummy-coded variables, where 0=*reference group* and 1=*comparison group*, for use in linear regression analysis (Alkharusi, 2012; Darlington & Hayes, 2016). The number of new dummy-coded variables is determined by $k-1$, where k

is the number of categories that comprise the variable (Alkharusi, 2012; Darlington & Hayes, 2016). As stated by Alkharusi (2012), “any categorical variable with k categories can be represented by creating $k - 1$ dummy variables” (p. 203). The newly-created dummy variables were entered collectively into the HMLR model to determine if the referent or comparison category is significantly associated with the criterion variable, respectively (Alkharusi, 2012; Darlington & Hayes, 2016). Table 1 provides information on the recoding of the place of residence categorical variable into dummy variables.

Table 1.

Dummy Coding of Categorical Covariates

<i>Variable</i>	<i>Variable Dummy Coding ($k - 1$ groups)</i>		
<i>Geographical Residence</i>	<i>Large City compared to Suburb</i>	<i>Large City compared to Small City/Town</i>	<i>Large City compared to Rural Area</i>
Large city	0	0	0
Suburb near large city	1	0	0
Small city/Large town	0	1	0
Rural area	0	0	1

Testing of assumptions. This study entailed the computation of one-sample t -tests to address the first and second research questions and an HMLR to address the third research question. The independent samples t test and linear regression analyses share one assumption: variable normality (Kim, 2013; Nau, 2015). In this study, statistical tests were conducted to determine if the scores on the PSI-4-SF and the PTGI are normally distributed. I first computed Mahalanobis distances to assess if the data set included multivariate outliers (at the item level). To test for univariate normality, I calculated and reported $Z_{skewness}$ values (i.e., skewness divided by the skewness standard error; Kim, 2013). For medium-sized studies, $Z_{skewness}$ values less than 3.29 indicate acceptable univariate normality (Kim, 2013). I also conducted Kolmogorov-Smirnov tests for the assumption of normality.

HMLR models have additional data assumptions (Ernst & Albers, 2017; Nau, 2015; Williams, Grajales, & Kurkiewicz, 2013). These are: (a) linearity between the predictor and criterion variables; (b) homoscedasticity, that is, the variance of criterion variable data points are equivalent for all predictor variable values; and (c) lack of multicollinearity among predictors and covariates (Ernst & Albers, 2017; Nau, 2015; Williams et al., 2013). The testing of these assumptions is discussed in the following sections.

Linearity is between the predictor and criterion variable. Linear regression models require a linear relationship between the predictor and criterion variables (Ernst & Albers, 2017; Nau, 2015; Williams et al., 2013). A P-P (probability) plot of standardized

predicted versus actual residuals for the parenting stress-PTG relationship was computed to test the assumption of linearity. If the residuals align along a diagonal, the assumption of linearity is met (Ernst & Albers, 2017; Nau, 2015). A violation of the linearity assumption is serious, as it can bias statistical findings and increase the chance of committing a Type I error, or rejecting the null hypothesis when in fact it should be retained (Nau, 2015; Williams et al., 2013). One means to address the violation of the linearity assumption is to transform the variable (Nau, 2015) log-linearly.

Homoscedasticity. The variance of criterion variable data points must be homoscedastic - equivalent - for all predictor variable values (Ernst & Albers, 2017; Nau, 2015; Williams et al., 2013). A scatterplot of standardized predicted versus actual residuals was computed for the parenting stress-PTG relationship to test for the assumption of homoscedasticity. The assumption of homoscedasticity is met if the residuals are equally dispersed above and below a horizontal zero value on the scatterplot (Ernst & Albers, 2017). As stated by Ernst and Albers (2017), a violation of the homoscedasticity assumption is "not necessarily problematic," and does not adversely affect linear regression estimates (p. 5).

Lack of multicollinearity. Linear regression models have the assumption of lack of multicollinearity between predictor variables and covariates (Nau, 2015; Williams et al., 2013). Variance inflation factors (VIF) were computed for the predictor-covariate and covariate-covariate relationships to test the assumption of lack of multicollinearity. A VIF greater than 10.00 indicates the presence of multicollinearity (Nau, 2015;

Williams et al., 2013). It is unlikely that the predictor variable of parenting stress is collinear with the covariates, as they measure conceptually distinct constructs; however, if VIFs indicate that this is indeed the case, the predictor and not the covariate was to be used in the HMLR.

Hypothesis testing. This study posed three research questions. The first two research questions concerned the mean PSI-4-SF and PTGI scores and whether they significantly differed from the population μ scores. The third research question inquired as to whether there was a significant relationship between PSI-4-SF and PTGI scores, controlling for covariates. The following sections present the analyses conducted for hypothesis testing.

Hypothesis testing: Research questions 1 and 2. One-sample *t*-tests are conducted to determine if a sample mean is or is not significantly different from its population mean (μ) (Mertler & Reinhart, 2016). To specifically address the first research question, a one-sample *t*-test was conducted to determine if the PSI-4-SF mean percentile score significantly differs from the population PSI-4-SF μ score of 50, as reported by Abidin (2012). To specifically address the second research question, a one-sample *t*-test was conducted to determine if the PTGI mean scale score significantly differs from the population PTGI μ score of 52.5, as reported by Tedeschi and Calhoun (1996) and Weiss and Berger (2006). The reported results included the *t*-test values, the respective mean scores from the sample and the population, and the significance (*p*)

level. The sample and population mean scores were significantly different if significance was $p < .05$.

Hypothesis testing: Research question 3. The third research question was addressed by conducting an HMLR. In this study, the three dummy-coded place of residence variables were entered on the first model (step) of the HMLR, followed by the PSI-4-SF predictor variable on the second model (step) of the HMLR. The statistics reported for the overall model(s) were the model F -value and associated p -value (with $p < .05$ indicating significance) as well as the model R^2 as an indicator of effect size. As the PSI-4-SF was the only variable entered on the respective linear regression model (step), the R^2 value denoted how much of the variance in PTG is explained by parenting stress. The statistics reported for each predictor variable-criterion variable relationship results included the unstandardized beta weight (B), the standardized beta weight (β), and the associated p -value (with $p < .05$ indicating significance).

Threats to Validity

The merits of quantitative study findings are contingent upon the study's internal validity, external validity, and statistical conclusion validity (Moring, 2014). Internal validity pertains to the adequacy of the study in determining valid results and is driven by precise procedures in the (a) recruitment of participants and the data collection protocol; (b) the psychometric soundness of the instruments used to measure study; and (c) the organization and analysis of data (Woodman, 2014). External validity pertains to the generalizability of study findings concerning other participants, settings, and times

(Krupnikov & Levine, 2014). García-Pérez (2012) defined statistical conclusion validity pertains to the degree to which results confirm “a link ...between independent and dependent variables as far as statistical issues are concerned” (p. 1). Threats to validity are aspects of the study methodology, including the sample of participants, that reduce the internal, external, and construct validity of a study (Barnham, 2015).

Threats to Internal Validity

Many of the threats to internal validity are only applicable to experimental or quasi-experimental studies that utilize pretest-posttest designs (Barnham, 2015; Woodman, 2014). These threats include *history*, that is, a historical event that occurs between the pretest and posttest data collection periods influences how participants answer the posttest survey; and *maturation* or *mortality (attrition)*, both of which are participant effects related to developmental changes of the participant over time and the participant dropping out of the study, respectively. Other threats to internal validity relevant to experimental or quasi-experimental pretest-posttest studies include *testing effects*, changes in participants' posttest survey responses due to their exposure to the pretest, and *statistical regression to the mean*, the tendency for participants to have posttest survey responses lower than the pretest response that are closer to the mean score (Barnham, 2015; Woodman, 2014).

Studies using correlational research designs do have a few potential threats to internal validity (Moring, 2014). These threats include the *self-selection* and *social desirability biases*, which are participant factors, and *causal ambiguity*, which is a

consequence of a *cross-sectional* correlational research design, where data are only collected at one point in time (Moring, 2014). The self-selection bias – avoided when participants are randomly selected – refers to selective study participation based on specific attributes of the participant (Moring, 2014). Applied and intervention evaluation studies conducted with parents of children and adults have documented concern about the self-selection bias, specific factors have been shown to correlate with the likelihood of the parent participating in the study. Parents who do participate tend to be White, mothers, married, of higher education level and income status, and have fewer children and their child or adolescent with ASD has less severe cognitive and/or behavioral impairments (He & dan de Vijver, 2012; Posserud, Lundervold, Lie, & Gilberg, 2010; Regber et al., 2013).

This study only recruited maternal caregivers due to the likelihood that female caregivers would comprise the majority of respondents. Posserud et al. (2010) reported a significantly higher response rate among parents who were anonymous to the researcher as compared to parents known to the researcher. It is hoped, therefore, that the self-selection bias was reduced in this study by providing language on the informed consent form that (a) asks participants to be honest and truthful when answering survey questions, (b) states that participants' responses are confidential, (c) denotes that results were reported on the aggregate, not the individual, level, and (d) outlines the benefits and risks of participating in the study. Having participants agree to informed consent before answering any survey questions may have also helped to reduce this bias.

Another internal threat to validity is the *social desirability bias*, which pertains to the tendency among study participants to answer survey questions in a socially-acceptable way, overstating positive attributes and behaviors and understating negative ones (King & Bruner, 2000; Moring, 2014). Social desirability bias is one of the most common sources of research bias (King & Bruner, 2000). It is a threat to the internal validity of correlational and causal-comparative non-experimental studies and can occur in quasi-experimental and experimental studies (Moring, 2014). The social desirability bias is associated with the sensitivity of the study survey questions (King & Bruner, 2000; Moring, 2014). In this study, some caregivers may have perceived parenting stress and/or PTG questions as sensitive, and as such, they may have answered questions less honestly than those who did not perceive study survey questions as sensitive. The informed consent process reduced the likelihood of social desirability bias (King & Bruner, 2000; Moring, 2014).

Causal ambiguity is an internal validity threat specific to cross-sectional studies, in which data are collected at the same time-point (Asamoah, 2014; Gorard, 2012). Causal ambiguity refers to the inability to determine temporal precedence - that the predictor variable did indeed precede the criterion variable (Asamoah, 2014; Gorard, 2012). Little could be done to minimize this threat in this study (Moring, 2014). However, this study was less concerned with the temporal precedence of the data and focused instead on whether there is a significant association between parent stress and PTG.

Threats to External Validity

Threats to external validity include those related to the study sample/population, the ecology or environment of the study, and the specificity of variables (Krupnikov & Levine, 2014). The *threat of population validity* refers to the inability to generalize findings to those, not in the target population (Krupnikov & Levine, 2014). The more specific the study sample, the higher the likelihood of the threat of population validity (Krupnikov & Levine, 2014). The selection bias could further enhance the likelihood of the threat of population validity by narrowing the participants to the specific gender, ethnicity, socioeconomic status, or highest degree of education groups (Krupnikov & Levine, 2014). This study focused on mothers of adolescents with ASD, and, as such, findings could only be generalized to those in this target group. Results could not be generalized to fathers of adolescents with ASD, parents of children with ASD or with other developmental disabilities, parents whose adolescents do not have ASD, and other parent groups. Moreover, findings could not be generalized to mothers of adolescents who were not represented in the sample.

Another concern of the threat to external validity is the *threat of ecological validity*, which refers to the inability to generalize study results to studies having environmental settings that differ from the study's (Krupnikov & Levine, 2014). This study was conducted online. There was no guarantee that responses from participants who answered survey questions in a different setting (e.g., in person, using paper and pencil) other than online (Teo, 2013) would be similar to those found in this study. The

threat of ecological validity is similar to the *threat of specificity of variables*, which refers to the inability to generalize findings beyond the time, context, and conditions in which the study was conducted (Krupnikov & Levine, 2014). The results of this study could not be generalized to future or past mothers of adolescents with ASD. This study utilized specific instruments to measure the constructs of perceived parenting stress and PTG, and findings could not be generalized to settings in which parenting stress and PTG are operationalized and measured differently than they are in this study.

Threats to Statistical Conclusion Validity

Statistical conclusion validity pertains to the level of certainty that the statistical results represent the population; it concerns the quality of the data (García-Pérez, 2012; Moring, 2014; Treiman, 2014). Statistical conclusion threats of concern in quantitative studies include low statistical power, violations of statistical assumption, and poor reliability of study instruments. The quality and rigor of statistical findings are dependent upon the reduction or elimination of these threats (García-Pérez, 2012). Specific statistical practices and analyses can be performed to reduce, if not eliminate, the threats of *low statistical power*, *violations of statistical assumption*, and *poor reliability of study instruments* (García-Pérez, 2012; Moring, 2014; Treiman, 2014).

I have addressed the threat of low statistical power by conducting a power analysis to determine the adequate sample size for the study, which is $N=131$. I achieved power above .80 by having a sample size of $N = 136$. I conducted specific statistical

procedures to test for violations of assumptions for HMLR. The assumptions tested were the normal distribution of variables (interval or ratio), homoscedasticity, linearity, and lack of multicollinearity. The inter-item reliability of an instrument is determined by calculating the Cronbach's alpha (Mertler & Reinhart, 2016; Nimon, 2012). I addressed the poor reliability threat by calculating the Cronbach's alpha of the PSI-4-SF and PTGI. A Cronbach's alpha of .60 indicates poor but acceptable inter-item reliability; it is preferred that the Cronbach's alpha be .70 or higher (Mertler & Reinhart, 2016; Nimon, 2012). I used the PSI-4-SF and PTGI, which are valid and reliable instruments.

Ethical Procedures

This study followed ethical procedures for human subjects, as outlined by the Belmont Report (U.S. Health and Human Services, 2017), the American Psychological Association (APA) (2016) Ethical Principles of Psychologists and Code of Conduct, and Walden University. The primary ethical procedures concern IRB approval, recruitment, and involvement of human subjects, and data collection, processing, and storage. These are discussed in the following sections.

IRB approval. I submitted an IRB application to the Walden University IRB Board. The application provided an overview of (a) participant recruitment procedures, (b) the informed consent process, (c) surveys to be utilized in the study (with documentation of permission to use surveys), (d) the data collection process, and (e) data analysis and storage procedures. The Walden University IRB Board approved the IRB application before I implemented any component of the study.

Recruitment and involvement of human subjects. The critical issue of research involving human subjects is obtaining informed consent from study participants. The informed consent form was the first component of the online survey. The informed consent form included (a) an introductory section that provides my name, my chair's name, my contact information, and the contact information of the Walden University IRB Board; (b) an overview of the goal and purpose of the study; (b) the role of the participant, that is, the activities that were asked of them, that is, to complete the online survey, (c) the potential benefits and risks in participating in the study; (d) the voluntary nature of the study, that is, that the participant can choose to not answer any or all surveys questions without penalty; (e) study practices regarding to ensure confidentiality of study participants, notably, that the survey questions do not inquire about personal information that could identify the participant, the use of aggregate-level data in analyses, and the storage and destruction of survey data and related materials upon five years of completion of the study; and (f) a statement regarding whom to contact should the participant have questions about the study.

The online survey was designed so that only those participants who select *Yes*, they understand the language in the informed consent form, and *Yes*, they agree to consent to participate in the study can access the survey. Once they select *Yes* to both questions, they were redirected to the start of the study survey. Participants who choose *No* to either or both items will not be able to access the survey; they instead will receive a message thanking them for their interest in the study and explaining that they cannot

complete the survey as they did not provide consent.

Data collection, data processing, and data storage. I utilized Survey Monkey®, which maintains survey data on a website that is encrypted and password-protected that can only be accessed by me an online survey platform, to collect data. I downloaded the online survey data directly into an SPSS 24.0 data file and then deleted survey information and data from the Survey Monkey® site. I downloaded the data onto an encrypted and password-protected jump-drive (and not on a computer hard drive), stored in a locked file cabinet in my work office. In published reports, information will be reported at the aggregate, or group, level. I will destroy the jump-drive and any related materials once five years have passed.

Summary

This study had a three-fold purpose. The first and second purposes were to compute the PSI, and PTGI mean scores and, via one-sample *t*-tests, determine if these means significantly differed from the population means (μ_s). The third purpose of the study, addressed using HMLR, was to determine if parenting stress, as measured by the PSI-4-SF, and PTG, as measured by the PTGI, were significantly associated with one another.

In this chapter, the following methodological aspects of the study were addressed: (a) the research design; (b) the population, sample, and sampling procedure; (c) participant recruitment and data collection procedures; (d) instrumentation and operationalization of study constructs; (e) the data analysis plan; (f) threats to the internal,

external, and statistical conclusion validity, and (g) ethical consideration. The study findings are the topic of the next chapter, chapter 4.

Chapter 4: Results

The detrimental and traumatic effects of the diagnosis of a child with ASD on parents and families have been studied for more than forty years (Bonis, 2016; Whitmore, 2016). Much of this work has used a deficits-approach, with many studies focusing on parenting stress (Bonis, 2016; Whitmore, 2016). Parenting stress is both more severe and qualitatively different in caregivers, especially maternal caregivers, of children and adolescents with ASD as compared to caregivers of typically-developing children and adolescents as well as caregivers of children and adolescents with other developmental disabilities (Hayes & Watson, 2013; Mount & Dillon, 2014; Woodman, 2014). Despite the knowledge gained about parenting stress, little is empirically known about strengths-based parenting attitudes that may help to ameliorate such stress (Zhang et al., 2013, 2015). Caregivers have been able to use their parenting experiences as an opportunity for personal growth, and having a child or adolescent with ASD can lead to caregivers' PTG, which is resilience that results from a traumatic event (Phelps et al., 2009; Prati & Pietrantoni, 2009; Zhang et al., 2013, 2015). However, there are a few studies that have examined PTG, especially concerning maternal caregivers of transition age youth. It was the intent of this study to investigate the degree of parenting stress and PTG and to assess the relationship between parenting stress and PTG in a national sample of maternal caregivers of transition age youth.

This quantitative nonexperimental study posed three research questions with associated null and alternative hypotheses. The first two research questions were

descriptive. However, to enhance understanding of the level of parenting stress and PTG among maternal caregivers of adolescents and young adults (ages 14 to 22) with ASD, the sample mean scores were statistically compared to the normed mean (μ) scores. The third research question was inferential and concerned the relationship between parenting stress and PTG, controlling for key covariates, among maternal caregivers of adolescents with ASD.

RQ1. What is the degree of maternal caregiver stress, as measured by the Parenting Stress Index- 4th Edition Short Form (PSI-4-SF; Abidin, 1990), among maternal caregivers of adolescents with ASD?

Ho1. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PSI-4-SF μ score.

Ha1. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is significantly different from the population PSI-4-SF μ score.

RQ2. What is the degree of maternal caregiver PTG, as measured by the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) for maternal caregivers of adolescents with autism spectrum disorder?

Ho2. The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

Ha2. The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

RQ3. Is there a significant relationship between maternal caregiver stress, as measured by the PSI-4-SF (Abidin, 1990), and maternal caregiver PTG, as measured by the PTGI (Tedeschi & Calhoun, 1996), controlling for covariates (i.e., relationship of caregiver to target child, number of children living in the household, and number of children with an IEP residing in the home), among a sample of maternal caregivers of adolescents with autism spectrum disorder?

Ho3. There is not a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with autism spectrum disorder.

Ha3. There is a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with autism spectrum disorder?

This chapter is devoted to the presentation and discussion of the empirical findings of the study. The chapter opens with a review of the data collection procedures, which includes a section that provides descriptive information on the study participants. The chapter then turns to the results of the study. The results section includes descriptive statistics of the study variables, covariate and assumption testing findings, and inferential

statistical findings that pertain to the study research questions. The chapter concludes with a summary.

Data Collection

The study data collection lasted from December 2018 to January 2019. The data were downloaded from Survey Monkey into an SPSS 25.0 data set. The original data set contained responses from 168 parents. Thirty-two (32) cases were removed for specific reasons. Data from the one participant who did not provide informed consent was deleted, as were the data from the five participants who did not meet the study criteria (i.e., they were not the maternal caregiver of the adolescent). Data from three respondents who resided in a country other than the United States were removed. Seven participants did not respond to any of the survey questions beyond answering the informed consent and study criteria questions, and as such, these cases were removed from the data set. Twelve (12) cases had missing data; these cases had partial responses to the PSI-4-SF questions and no PTGI or covariate data. An additional four cases had partial PSI-4-SF and PTGI data but did not identify if they were maternal caregivers and answered none of the covariate questions. These cases were removed. The removal of the 32 cases resulted in a final sample of 136 participants, 81% of the original sample. A post hoc power analysis indicated that the sample size of $N = 136$ resulted in 97% power.

Descriptive Statistics: Study Participants

The maternal caregivers provided their relationship status to the adolescent and their age. As seen in Table 2, the majority of participants were the biological mother of

the adolescent ($n = 114$, 83.9%). A smaller number were adoptive/foster mothers ($n = 12$, 8.8%), grandmothers ($n = 6$, 4.4%), step-mothers ($n = 3$, 2.2%), or other female relative ($n = 1$, 0.7%). Most of the maternal caregivers were White ($n = 119$, 87.5%). Of the remaining caregivers, 7 (5.2%) were Black, 4 (2.9%) were multiracial, 3 (2.2%) were Asian, and 3 (2.2%) were Hispanic. A one-sample chi-square test was significant, $\chi^2(4) = 32.47$, $p < .001$, indicating significant sample-population ethnic group percentage differences. Specifically, the percentage of White participants (87.5%) was significantly higher than the American population percentage of 76.6%. In addition, the percentage of Black participants (2.9%) was significantly lower than the American population percentage of 13.4%, the percentage of Asian participants (2.2%) was significantly lower than the American population percentage of 5.8%, and the percentage of Hispanic participants (2.2%) was significantly lower than the American population percentage of 18.1%. The sample percentage of multiracial participants (2.2%) was similar to the American population percentage of multiracial individuals (2.7%). The mean and median age of the caregivers was 49 years ($SD = 7.52$ years), and participants' ages ranged from 34 to 74 years.

Table 2.

Descriptive Statistics: Maternal Caregiver Status and Race Categories (N = 138)

<i>Variable</i>	<i>Frequency</i> <i>N</i>	<i>Percentage</i> <i>%</i>
Maternal Caregiver Category		
Biological mother	114	83.9
Adoptive/Foster mother	12	8.8
Grandmother	6	4.4
Step-mother	3	2.2
Other female relative	1	0.7
Race		
White	119	87.5
Black	7	5.2
Multiracial	4	2.9
Asian	3	2.2
Hispanic	3	2.2

Note. For covariate testing, maternal caregiver type was recoded where 0 = Biological mother and 1 = other and race was recoded where 0 = White and 1 = other.

The participants provided information on their geographical location and place of residence. As seen in Table 3, nine (6.6%) of participants resided in the West, 12 (8.8%) in the Midwest, 93 (68.4%) in the South, and 11 (16.2%) in the Northeast. Fifty-four (39.7%) participants lived in a rural area/small town, 30 (22.1%) in a large town/small city, 45 (33.1%) in a city suburb, and 7 (5.1%) in a large city.

Table 3.

Descriptive Statistics: Region of the United States and Location of Residence (N = 136)

<i>Variable</i>	<i>Frequency N</i>	<i>Percentage %</i>
Region of United States		
West	9	6.6
Midwest	12	8.8
South	93	68.4
Northeast	11	16.2
Location		
Rural area/Small town	54	39.7
Large town/Small city	30	22.1
Suburb of a large city	45	33.1
Large city	7	5.1

Note. The western states are Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. The Midwest includes the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. States in the South are Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington, DC, and West Virginia. The Northeast states are Connecticut, Maine, Massachusetts, New Hampshire, New York, Pennsylvania, Rhode Island, and Vermont; please refer to https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf.

The participants provided the age of their adolescent with ASD. Table 4 presents the descriptive data for the adolescent age variable. The mean age of the adolescents was $M = 17.16$ ($Md = 17.00$, $SD = 2.50$), and adolescents ranged from 14 to 22 years. Over a third, ($n = 48$, 35.2%) of the adolescents were age 14 or 15, while another third were between the ages of 16 and 18 ($n = 44$, 32.4%). Fifteen (11.0%) of the adolescents

were 19, while an equal number ($n = 11$, 8.1%) were 20 or 21 years of age. Only 7 (5.1%) of adolescents were age 22.

Table 4.

Descriptive Statistics: Age of Adolescents (N = 136)

<i>Age</i>	<i>Categorical Responses</i>		<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Range</i>	
	<i>N</i>	<i>%</i>				<i>Min</i>	<i>Max</i>
			17.16	17.00	2.50	14.00	22.00
14	24	17.6					
15	24	17.6					
16	14	10.3					
17	16	11.8					
18	14	10.3					
19	15	11.0					
20	11	8.1					
21	11	8.1					
22	7	5.1					

Participants were asked to provide the number of children (other than the target adolescent) who resided with them, as well as the number of children (other than the target adolescent) with an IEP who lived with them. The descriptive statistics for these two variables are presented in Table 5. The mean number of children living with the maternal caregiver was $M = 0.87$ ($Md = 1.00$, $SD = 0.99$), and the number of children in the home ranged from 0.00 to 5.00. Almost half ($n = 62$, 45.6%) had no other children residing in the house. The mean number of children with an IEP residing with the

maternal caregiver was $M = 0.83$ ($Md = 1.00$, $SD = 0.92$), and the number of children with an IEP in the home ranged from 0.00 to 4.00. Almost half ($n = 63$, 46.3%) of the caregivers had no other children with an IEP residing in the home, while nearly a third ($n = 1$, 29.4%) had one other child with an IEP. The substantial overlap of percentages indicated that if the maternal caregiver had at least one other child, the child was likely to have an IEP.

Table 5.

Descriptive Statistics: Number of Children in general and with an IEP who Resided in the Household (N = 136)

<i>Variable</i>				<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Range</i>	
		<i>n</i>	<i>%</i>				<i>Min</i>	<i>Max</i>
Number of children residing with maternal caregiver				0.87	1.00	0.99	0.00	5.00
	0	62	45.6					
	1	40	29.4					
	2	27	19.9					
	3	5	3.7					
	4	1	0.7					
	5	1	0.7					
Number of children with IEP residing with maternal caregiver				0.83	1.00	0.92	0.00	4.00
	0	63	46.3					
	1	40	29.4					
	2	27	19.9					
	3	5	3.7					
	4	1	0.7					

Results

This section of the chapter first includes information on the findings that resulted from covariate testing and the testing of data assumptions for HMLR, the statistical analysis used to address the third research question. Descriptive statistics of the respective variable and results from the one-sample *t*-tests, conducted to discuss the first and second research questions, are then presented. The last section provides the HMLR results for the third research question.

Results: Covariate Testing

Specific statistical tests were conducted for covariate testing. The first two tests were independent samples *t*-tests, conducted to determine if there were any significant PTG mean score differences between maternal caregiver type and caregiver race categories. Independent samples *t*-tests were conducted instead of one-way analyses of variance (ANOVAs) due to the highly unequal sample sizes across categories. The maternal caregiver type and race sample sizes other than the biological mother and White race were too small to make adequate comparisons. As such, the maternal caregiver types (i.e., adoptive/foster mother, grandmother, another female relative, stepmother) were combined and compared to biological mothers, and the maternal race categories (i.e., Asian, Black, Hispanic, multiracial) were combined and compared to White mothers. The first *t*-test examined PTG differences between biological and non-biological maternal caregivers. It was not significant, $t(134) = .08, p = .937$. PTG was similar for biological mothers ($n = 114, M = 56.03$) and non-biological maternal

caregivers ($n = 22$, $M = 56.41$). The second t -test examined PTG differences between White and non-White maternal caregivers. There were no significant PTG mean score differences between White maternal caregivers ($n = 119$, $M = 56.45$) and non-White maternal caregivers ($n = 17$, $M = 53.59$), $t(136) = -0.53$, $p = .594$.

As the geographical location and place of residence categorical numbers were large enough to allow for PTG comparisons, two one-way ANOVAs were conducted to examine potential differences across groups. The first one-way ANOVA examined PTG differences across the four geographical locations. It was not significant, $F(3, 132) = 0.78$, $p = .505$. Caregivers who resided in the West ($n = 9$) had a similar PTG mean score ($M = 50.89$) as compared to caregivers residing in the Midwest ($n = 12$, $M = 49.25$), South ($n = 93$, $M = 56.88$), and Northeast ($n = 22$, $M = 58.59$). The second one-way ANOVA examined PTG differences across place of residence categories. There were significant PTG mean score differences across caregivers' place of residence, $F(3, 132) = 3.20$, $p = .026$. Caregivers who resided in rural areas/small towns ($n = 54$) had a significantly higher PTG mean score ($M = 61.19$) as compared to caregivers residing in a large town/small city ($n = 30$, $M = 47.03$), caregivers residing in suburban areas of a large city ($n = 45$, $M = 55.89$), and caregivers living in large cities ($n = 7$, $M = 56.86$) (see Figure 4).



Figure 4. PTG mean score differences across the place of residence

The last set of covariate tests were Pearson bivariate correlations, conducted to examine if there were any significant associations between maternal age, adolescent age, the number of children residing in the home, and the number of children with an IEP residing in the home and PTG. As noted in Table 6, there were no significant correlations between maternal age and PTG scores, $r(136) = .11, p = .376$, adolescent age and PTG scores, $r(136) = .07, p = .408$, number of children in the home and PTG scores, $r(136) = -.05, p = .591$, or number of children with an IEP in the home and PTG scores, $r(136) = -.02, p = .850$.

Table 6.

Pearson Bivariate Correlations: Maternal Age, Adolescent Age, Number of Children in the Household, Number of Children with an IEP in the Household and PTG Scores

<i>Variable</i>	<i>PTG</i>	
	<i>r</i>	<i>p</i>
Maternal Age	.11	.219
Adolescent Age	.07	.408
Number of Children in the Household	-.05	.591
Number of Children with an IEP in the Household	-.02	.850

Covariate Testing Summary

A series of statistical tests were performed for covariate testing. Results from independent samples *t*-tests and one-way ANOVAs indicated no significant PTG mean scores across caregiver type, caregiver race, or geographical location categories. Pearson bivariate correlations yielded no significant associations between age of adolescent, the number of children in the home, and the number of children with an IEP in the home and PTG scores. The only significant finding pertained to caregivers' place of residence, with caregivers in rural areas/small towns having a significantly higher PTG mean score as compared to caregivers residing in other places. Due to the significant differences between caregivers living in rural areas/small towns and those who lived in different locations, this category was treated as the referent category, and the others were treated as the comparison categories in dummy coding, required for the HMLR conducted to address the third research question.

Testing of HMLR Assumptions

Linear regression models have assumptions about the data that must be met. These are: (a) normality in the distribution of scale scores; (b) linearity between the predictor and criterion variables; (c) homoscedasticity, that is, the variance of criterion variable data points are equivalent for all predictor variable values; and (d) lack of multicollinearity among predictors and covariates (Ernst & Albers, 2017; Nau, 2015; Williams et al., 2013). Specific statistical tests were performed to determine if these assumptions were met.

The assumption of normality. To test for variable normality, the $z_{skewness}$ values (i.e., skewness divided by the skewness standard error; Kim, 2013) were computed for the two study variables. For medium-sized studies, $z_{skewness}$ values less than ± 3.29 indicate acceptable univariate normality (Kim, 2013). Kolmogorov-Smirnoff (K-S) tests were also computed, with findings augmenting the $z_{skewness}$ value information. As indicated by the results in Table 7, the PSI-4-SF parenting stress and PTGI variables were normally distributed. The data met the normality assumption.

Table 7.

Tests of Normality: Z_{skewness} and Kolmogorov-Smirnoff Tests

	<i>Z_{skewness}</i>	<i>Kolmogorov-Smirnoff</i>	
		<i>K-S</i>	<i>p</i>
Parenting Stress (PSI-4-SF)	-1.86	.07	.200
Posttraumatic Growth (PTGI)	-0.02	.05	.200

The assumption of linearity. Linear regression models require a linear relationship between the predictor and criterion variables (Ernst & Albers, 2017; Nau, 2015; Williams et al., 2013). A P-P (probability) plot of standardized predicted versus actual residuals for the parenting stress-PTG relationship was computed to test the assumption of linearity. If the residuals align along a diagonal, the assumption of linearity is met (Ernst & Albers, 2017; Nau, 2015). As indicated in Figure 5, the residuals did in fact aligned along the diagonal, meaning that the assumption of linearity was met.

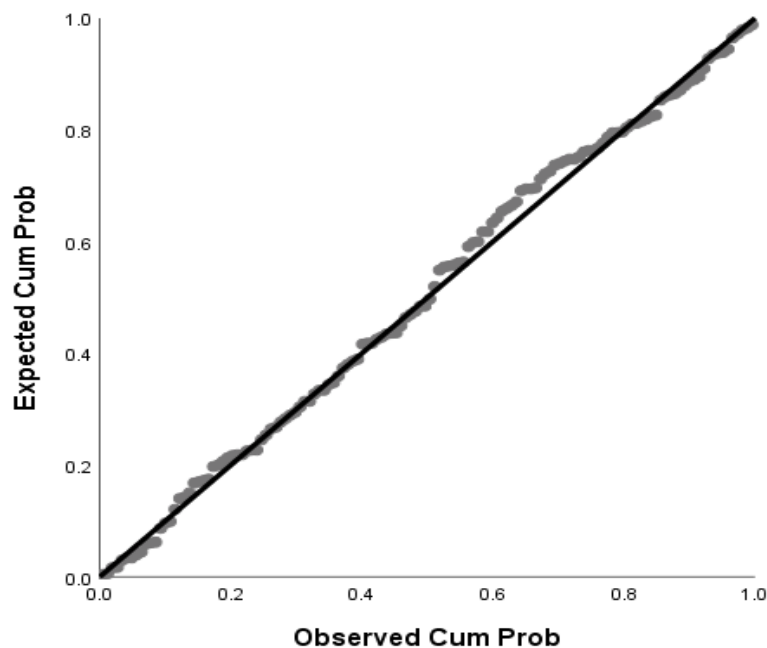


Figure 5. Parenting stress-PTG P-P plot

The assumption of homoscedasticity. The variance of criterion variable data points must be homoscedastic - equivalent - for all predictor variable values (Ernst & Albers, 2017; Nau, 2015; Williams et al., 2013). A scatterplot of standardized predicted versus actual residuals was computed for the parenting stress-PTG relationship to test for the assumption of homoscedasticity. The assumption of homoscedasticity is met if the residuals are equally dispersed above and below a horizontal zero value on the scatterplot (Ernst & Albers, 2017). As noted in Figure 6. the residuals were equally dispersed above and below the horizontal zero value, indicating that the homogeneity assumption was met.

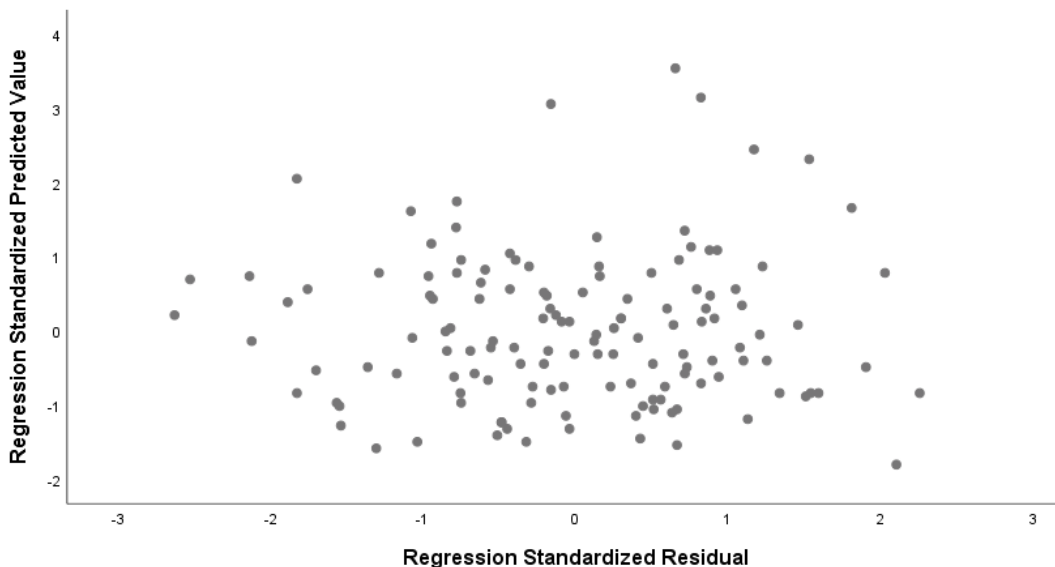


Figure 6. Scatterplot: Predicted versus actual residuals (parenting stress and PTG)

Lack of multicollinearity. Linear regression models have the assumption of absence of multicollinearity between predictor variables and covariates (Nau, 2015; Williams et al., 2013). Variance inflation factors (VIF) were computed for the predictor-covariate and covariate-covariate relationships to test the assumption of lack of multicollinearity. A VIF greater than 10.00 indicates the presence of multicollinearity (Nau, 2015; Williams et al., 2013). As seen in Table 8, the VIFs ranged from 1.00 to 1.23, all being below the critical value of 10.00. The assumption of lack of multicollinearity was met.

Table 8.

Variance Inflation Factors: Place of Residence Dummy-Coded Variables and Parenting Stress (PSI-4-SF) (N = 136)

	<i>Variance Inflation Factors (VIFs)</i>
Place of residence (dummy coded): Rural vs. Large City	1.07
Place of residence (dummy coded): Rural vs. Suburban Area	1.23
Place of residence (dummy coded): Rural vs. Large Town/Small City	1.21
Parenting Stress (PSI-4-SF)	1.00

Results: Research Questions

Research question 1. The first research question was, “What is the degree of maternal caregiver stress, as measured by the Parenting Stress Index- 4th Edition Short Form (PSI-4-SF; Abidin, 1990), among maternal caregivers of adolescents with ASD?” and the associated hypotheses were:

Ho1. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PSI-4-SF μ score.

Ha1. The PSI-4-SF mean score of the study sample of maternal caregivers of adolescents with ASD is significantly different from the population PSI-4-SF μ score.

Descriptive statistics for parenting stress percentile scores were computed, and are presented in Table 9. The PSI-4-SF had excellent reliability, Cronbach’s alpha = .93.

The mean PSI-4-SF percentile score was $M = 51.04$ ($Md = 51.00$, $SD = 8.18$). The range of PSI-4-SF scores was 29.00 to 68.00. PSI-4-SF scores between the 15th and 80th percentiles indicate ‘normal’ levels of parenting stress (Abidin, 1990, 2012; Solis & Abidin, 1991). As indicated by the highest score of 68.00, none of the caregivers in this study had clinical levels of parenting stress.

Table 9.

Descriptive Statistics: Parenting Stress (PSI-4-SF) Percentile Scores (N = 136)

<i>Variable</i>	<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Range</i>		<i>Cronbach's alpha</i>
				<i>Min</i>	<i>Max</i>	
Parenting Stress (PSI-4-SF)	51.04	51.00	8.18	29.00	68.00	.93

To address the study hypotheses, a one-sample t -test was conducted to determine if the sample PSI-4-SF parenting stress mean score (51.04) was significantly different from the parenting stress μ score (51.00) for the average parent population. The one-sample t -test was not significant, $t(136) = 1.49$, $p = .140$. The PSI-4-SF parenting stress mean score of 51.04 for this sample of maternal caregivers was not significantly different from the PSI-4-SF μ score of 50.00 for the average parent population. Due to the lack of significant effects, the null hypothesis was retained for the first research question.

Research question 2. The second research question was, “What is the degree of maternal caregiver PTG, as measured by the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) for maternal caregivers of adolescents with autism spectrum

disorder? The associated null and alternative hypotheses for the second research question were:

Ho2. The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

Ha2. The PTGI mean score of the study sample of maternal caregivers of adolescents with ASD is not significantly different from the population PTGI μ score.

Descriptive statistics for the PTGI variable were computed, and are presented in Table 10. The PTGI had excellent reliability, Cronbach's alpha = .93. The mean PTGI score was $M = 56.00$ ($Md = 56.00$, $SD = 20.57$). The PTGI population mean score is $\mu = 52.5$ (Tedeschi & Calhoun, 1996; Weiss & Berger, 2006). The range of PTGI scores was 13.00 to 105.00. PTGI scores of 62 or higher indicate exceptionally high levels of PTG. There were 50 (36.8%) of participants with PTGI scores of 62 or higher, denoting that over a third of caregivers had exceptionally high levels of PTG.

Table 10.

Descriptive Statistics: PTGI Posttraumatic Growth Scores (N = 136)

<i>Variable</i>	<i>M</i>	<i>Md</i>	<i>SD</i>	<i>Range</i>		<i>Cronbach's alpha</i>
				<i>Min</i>	<i>Max</i>	
PTGI Posttraumatic Growth	56.09	56.00	20.57	13.00	105.00	.93

To address the study hypotheses, a one-sample *t*-test was conducted to determine if the sample PTGI mean score (56.09) was significantly different from PTGI μ score

(52.5) for the average parent population. The one-sample t -test was significant, $t(136) = 2.03, p = .044$. The sample PTGI mean score of 56.09 was significantly higher than the population PTGI μ score of 52.50, indicating that this sample of maternal caregivers had significantly higher levels of PTG as compared to the average parent population. As the one-sample t -test was significant, the null hypothesis was rejected for the second research question.

Research Question 3. The third research question was, “Is there a significant relationship between maternal caregiver stress, as measured by the PSI-4-SF (Abidin, 1990), and maternal caregiver PTG, as measured by the PTGI (Tedeschi & Calhoun, 1996), controlling for covariates (i.e., relationship of caregiver to target child, number of children living in the household, and number of children with an IEP residing in the home), among a sample of maternal caregivers of adolescents with autism spectrum disorder?” The null and alternative hypotheses were:

Ho3. There is not a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with Autism Spectrum Disorder.

Ha3. There is a significant relationship between maternal caregiver stress and maternal caregiver PTG, controlling for covariates, among maternal caregivers of adolescents with autism spectrum disorder?

The third research question was addressed by computing an HMLR. In the HMLR, the three dummy-coded places of residence covariates (i.e., rural versus large

city, rural versus suburban, and rural versus large town/small city) were entered on the first model (step) of the HMLR, and the PSI-4-SF parenting stress predictor variable was entered on the second model (step) of the HMLR.

Results from the HMLR are presented in Table 11. The first HMLR model was significant, $F(3, 132) = 3.20, p = .026, R^2 = .07$. Bivariate results indicated a significant relationship between residing in a rural area/small town as opposed to a large town/small city and PTGI scores, $\beta(136) = -.29, p = .002$. That is, maternal caregivers who resided in rural areas/small towns were significantly more likely than maternal caregivers who resided in a large town/small city to have higher levels of PTG. The second HMLR model was significant, $F(1, 131) = 10.83, p = .001, R^2 = .07$. The relationship between residing in a rural area/small town as opposed to a large town/small city and PTGI scores remained significant, $\beta(136) = -.30, p = .002$. The second model further indicated a significant relationship between parenting stress and PTG, $\beta(136) = -.27, p = .001$. As the degree of parenting stress increased, the degree of PTG decreased in this sample of maternal caregivers. As a result of the significant HMLR findings, the null hypothesis was rejected for the third research question.

Table 11.

*Hierarchical Multiple Linear Regression: Place of Residence and Parenting Stress**Predicting Posttraumatic Growth (N = 136)*

	<i>Model 1</i>			<i>Model 2</i>		
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	<i>β</i>
Rural vs. City	-4.33	8.07	-.05	-5.36	7.79	-.06
Rural vs. Suburban	-5.30	4.06	-.12	-6.84	3.94	-.16
Rural vs. Large Town	14.15	4.58	-.29**	-14.66	4.42	-.30***
PSI-4-SF Parenting Stress				0.68	0.21	-.27***

Note. ** $p < .01$, *** $p < .001$. Model 1: $F(3, 132) = 3.20, p = .026, R^2 = .07$; Model 2: $F_{change}(1, 131) = 10.83, p = .001, R^2_{change} = .071$

Summary

This study was a quantitative non-experimental correlational study that was conducted with a national sample of 136 maternal caregivers of transition-age youth, aged 14 to 22, with ASD. The majority of participants were middle-aged ($M = 49$ years) biological mothers (83.9%) who were White (87.5%) and resided in rural areas to small cities (61.8%) in southern states (68.4%). Based on participants' reports, adolescents were, on average, 17 years of age, and the majority ($n = 78, 57.3%$) of the adolescents were between 14 and 17 years of age. The adolescent had an average of one sibling with an IEP.

Preliminary analyses were conducted for covariate and assumption testing. Results from a one-way ANOVA indicated that maternal caregivers who resided in rural areas/small towns had significantly high levels of PTG than did caregivers living in a large town/small cities, suburban areas, and large cities. This variable was recomputed as

three dummy-coded variables, which were entered as covariates in the HMLR conducted for the third research question. The data met all of the assumptions for HMLR.

This study had three goals. The first and second goals were to determine the average level of parenting stress and PTG, respectively, among the sample of maternal caregivers of transition-age youth with ASD. Statistical findings conducted to address the first and second goals yielded mixed results. The participants had an average degree of parenting stress; the sample mean score of 51 was remarkably close to the population μ of 50. The highest parenting stress score was 68, which indicated that none of the participants had clinically elevated levels of parenting stress. The participants had high levels of PTG, as indicated by the mean of 56, and this mean was significantly higher than the population μ of 52.5. Over a third of the participants ($n = 50$, 36.8%) had exceptionally high levels of PTG. The third goal was to assess whether a significant relationship existed between parenting stress, measured using the PSI-4-SF, and PTG, using the PTGI. An HMLR was conducted to address this goal. HMLR findings indicated that parenting stress was significantly associated with PTG, and the shared variance between the two variables was 7%, a small-to-medium effect size.

Finally, the study findings are discussed in the last chapter of the dissertation. In Chapter 5, results are reviewed in comparison to the guiding theory and prior empirical work. Study limitations and future empirical and applied recommendations are also topics of discussion in the last chapter.

Chapter 5: Discussion

The transition from adolescence to adulthood brings forth new stressors for the parent concerning planning for their adolescent's future educational, career/work, and social needs (Mount & Dillon, 2014; Smith & Anderson, 2014; Woodman, 2014). Because of the uncertain future of adolescents with autism spectrum disorder (ASD), parenting stress may be elevated among caregivers of adolescents with ASD (Hayes & Watson, 2013). However, few studies have examined parenting stress among maternal caregivers of adolescents with ASD (Bonis, 2016; Hayes & Watson, 2013; Whitmore, 2016). Moreover, little is empirically known about strengths-based attitudes held by parents that may help to ameliorate parenting stress (Zhang et al., 2013). Indeed, there exists little empirical research on ASD that takes a strengths-based approach. Cridland et al. (2014) noted that caregivers often adapt to and effectively cope with issues surrounding their child's diagnosis of ASD, and there is a growing body of literature that suggests they can utilize their experiences as an opportunity for PTG (Phelps et al., 2009; Zhang et al., 2013, 2015). However, studies examining PTG within the context of ASD have been conducted outside of the United States, and few of these studies have focused on families of adolescents with ASD (Whitehead et al., 2015; Whitmore, 2016).

This quantitative non-experimental correlational study addressed the gaps in the ASD literature as they pertained to lack of strengths-based research. The study was conducted with 136 maternal caregivers of transition-age youth with ASD, and it focused on the levels of and the relationships between parenting stress, measured using the PSI-4-

SF (Abidin, 1990, 2012; Solis & Abidin, 1991) and PTG, measured using the PTGI (Tedeschi & Calhoun, 1996; Weiss & Berger, 2006). The previous chapter presented the descriptive and inferential statistical findings of the study. In this last chapter of the dissertation, the study findings are reviewed and discussed. The chapter opens with a concise summary of the study findings, and the findings are then examined within the context of the family system theories and the prior literature on parenting stress and PTG among caregivers of children and adolescents. The chapter also includes sections on the study strengths and limitations, recommendations for future research and implications for social change. The chapter ends with a conclusion section.

Summary of Key Findings

This study was conducted with a national sample of 136 maternal caregivers (M age = 49 years) of adolescents (M age = 17.16 years). The participants were predominantly biological mothers (83.9%), White (87.5%), and resided in the South (68.4%). Relatively similar percentages of participants resided in a rural area/small town (39.7%), a large town/small city (22.1%), or a city suburb (33.1%). Covariate testing indicated that PTG was highest among caregivers living in a rural area/small town. Almost half (45.6%) of the maternal caregivers had no other children living in the home. For 49.3% of caregivers who did have one or two other children living in the home, all reported that their child or children had an IEP.

The first and second research questions of the study concerned the level of parenting stress and PTG, respectively, reported by the caregivers in comparison to the

population parenting stress and PTGI means (μ s). Preliminary statistical analyses indicated that the PSI-4-SF parenting stress and PTGI variables were normally distributed and had excellent inter-item reliability. Findings also indicated that caregivers had normal levels of parenting stress. In fact, the sample PSI-4-SF mean of 51.04 was very similar to the population PSI-4-SF μ of 50. Moreover, as indicated by the highest PSI-4-SF score of 68.00, none of the caregivers in this study had clinical levels of parenting stress (denoted by a PSI-4-SF score of 80 or higher). Based on the lack of significant parenting stress differences between the sample and population, the null hypothesis for the first research question was retained. Study findings showed that the caregivers had moderate-to-high levels of PTG. Indeed, the sample PTGI mean of 56 was significantly higher than the population μ of 52.5, and 36.8% of caregivers had exceptionally high levels of PTG (as indicated by scores of 62 or higher). Due to the significant mean PTGI differences between the sample and population, the null hypothesis for the second research question was rejected (failed to be retained).

The third research question examined if parenting stress was significantly associated with PTG, controlling for pertinent covariates. Preliminary analyses showed that the data met all assumptions for HMLR, the statistical analysis conducted for the third research question. The only control variable that was significantly associated with PTG, based on covariate testing, and included in the HMLR, was place of residence. HMLR findings indicated that, after controlling for place of residence, parenting stress was significantly associated with PTG: as parenting stress increased, PTG decreased.

Parenting stress explained 7% of the variance in PTG, a small effect size. Due to the significant finding, the null hypothesis for the third research question was rejected (failed to be retained). HMLR findings also showed that maternal caregivers who resided in rural areas/small towns were significantly more likely than maternal caregivers who resided in a large town/small city to have higher levels of PTG.

Interpretations of the Findings

This was one of the few ASD studies that examined parenting stress among caregivers of transition-age youth and to examine its association with PTG. The focus on PTG allowed the study to take a strengths-based approach, which is uncommon in the ASD empirical literature (Whitmore, 2016; Zhang et al., 2013, 2015). The study findings differed from previous ASD studies on parenting stress (Bluth et al., 2013; Bonis, 2016; Gong et al., 2015; Hayes & Watson, 2013; McStay et al., 2013; Smith et al., 2012; Whitmore, 2016; Wong et al., 2014; Woodman, 2014). Prior ASD empirical work has consistently documented high levels of parenting stress among caregivers of children with ASD; in fact, the parenting stress levels reported by caregivers have been clinically high and have been linked to the grief process, posttraumatic stress, depression, and anxiety (Bluth et al., 2013; Bonis, 2016; Hayes & Watson, 2013; McStay et al., 2013; Smith et al., 2012; Whitmore, 2016; Wong et al., 2014; Woodman, 2014).

While there is less empirical work examining parenting stress among caregivers of adolescents with ASD, findings from these studies have indicated that parenting stress worsens as the child ages (Barker et al., 2014; McStay et al., 2013; Smith & Anderson,

2014; Woodman et al., 2014). In fact, studies have suggested that parents of adolescents with ASD experience a trajectory of chronic stress, starting early in the child's life that is maintained throughout the child's life (Barker et al., 2014; Dieleman et al., 2016; McStay et al., 2013; Smith & Anderson, 2014; Woodman et al., 2014). While this study did not examine the progression of parenting stress, it did indicate that, among this group of maternal caregivers of transition-age youth with ASD, parenting stress levels were normal. In fact, no parent had clinically high levels of parenting stress.

It is unclear as to why this group of participants reported lower levels of parenting stress than what has been reported in the prior literature (Bonis, 2016; Hayes & Watson, 2013; Whitmore, 2016). Both the guiding theories as elucidated by Bowen (1966), Cridland et al. (2014), and Perry (2004) and prior literature can provide rationales for such findings. Family systems theories, as elucidated by Bowen (1966), Cridland et al. (2014), and Perry (2004) emphasize the dynamic and interactional qualities of the family and recognize that family function/dysfunction can shape parent attitudes and beliefs regarding the child with a disability. Cridland et al. (2014) posited that family systems theory is based on the understanding that families, or family systems, are fluid, and thus adaptable. As such, negative dynamics in a family system can adapt and develop more positive dynamics (Cridland et al., 2014). It seems that, in this study, the caregivers had adapted in a healthy way to their child's diagnosis of ASD and seemingly developed, over time, resilience and healthy functioning. They embodied PTG.

Previous studies have identified numerous factors that influence parenting stress (Acri & Hoagwood, 2015; Amiri et al., 2016; Benson, 2014; Dieleman et al., 2015; Lin, 2015; Smith et al., 2010; Taylor & Sletzer, 2011). These include parent intrapersonal (e.g., perceived burden, depression, coping skills, psychological control, self-efficacy) and personality factors (Acri & Hoagwood, 2015; Benson, 2014; Lin, 2015; Smith et al., 2010; Taylor & Sletzer, 2011) and adolescent factors, especially severity of ASD (Amiri et al., 2016; Dieleman et al., 2015). Social support also greatly enhances caregiver psychological functioning (Acri & Hoagwood, 2015; McStay et al., 2014; Smith et al., 2012). While this study did not examine these variables, the low levels of parenting stress suggest that maternal caregivers were psychologically healthy, utilized effective and healthy coping skills, and had high levels of social support.

As noted by Perry (2004), parenting stress is said to increase during the adolescent years due to the normative and ASD-specific transitional aspects of this stage. Instead of preparing their adolescent child for the adult world, many parents of children with ASD must confront the reality that they will be the lifelong caretakers of their child. As a result, parents may create boundaries and become disengaged from their child with ASD due to ambiguous loss, grief from the psychological absence yet the physical presence of their child with ASD (Cridland et al., 2014, 2016). Yet, in this study, parents seemed to have emotionally and spiritually grown from their experiences. These parents did, in fact, display PTG. Perry (2004) proposed evaluating the parenting stress from an existential perspective, or that that parenting stress could bring about a sense of higher

purpose in the parent's life. He proposed that research should evaluate if it were the child's symptoms themselves or the underlying meaning that parents assign to their experience of raising a child with a developmental disability that influenced the stress level experienced by parents (Perry, 2004). Furthermore, Perry (2004) stated that it was not just the child's symptoms that influenced stress but the parent's coping style that influenced the parents' response to stressors and subsequent resiliency.

This study found that, despite normal levels of parenting stress and high levels of PTG, higher levels of parenting stress were significantly associated with lower levels of PTG. These findings emphasize the sensitivity of PTG to stress and stressors; even a small increase of parenting stress can negatively affect caregiver adaptability and resilience. As this was the first study to examine the relationship between parenting stress and PTG within the context of ASD, findings cannot be compared to previous studies. However, in a qualitative study conducted by Swaab et al. (2017) with caregivers of adolescents with ASD, the primary theme that emerged was complex parental stress and growth, suggesting that these two constructs are in fact, linked. Halstead et al. (2018), in a quantitative correlational study with mothers of children with ASD, also found a significant association between parenting stress and resilience (i.e., as parenting stress increased, resilience decreased). Prior literature has also shown significant associations between the variables of adaptability, effective coping mechanisms, and social support and PTG among caregivers of children with ASD

(Wayment et al., 2018; Whitehead et al., 2015; Zhang et al., 2013, 2015), which does suggest that ASD can contribute to personal growth and resilience among caregivers.

Study Limitations

As with any empirical study, this study had strengths and limitations. There were methodological strengths to this study; these included a large enough sample size to achieve excellent power of 97% and data meeting all of the assumptions for HMLR. There were strengths associated with the study instruments. The PSI-4-SF and the PTGI are valid and reliable measures that are frequently utilized in ASD studies, which enhanced the comparability of study findings to prior work. The PSI-4-SF and PTGI scores were normally distributed and showed excellent inter-item reliability. The methodological strengths enhanced the likelihood that the study findings were, in fact, valid and meaningful.

The study, did, however, have some limitations. Some limitations pertained to the data collection procedures. Study participants were recruited by contacting service agency professionals who worked with families living with ASD. As such, it was highly likely that the study participants received ASD-associated services and likely had high levels of social support and resources. As parents of adolescents with ASD, they likely had a long history of receipt of ASD services, which may have helped to ameliorate their stress and enhance their PTG. As such, the study findings may have been adversely influenced by unmeasured confounds related to ASD service receipt. It is unfortunate

that the study did not capture the experiences of maternal caregivers of transition-age youth with ASD who lack needed services.

The study was have been adversely affected by the self-selection bias, where participants who volunteered for this study differed from those who chose not to participate (Patten, 2016). Parents who volunteer for studies tend to be White, mothers, married, of higher education level and income status, and have fewer children (He & dan de Vijver, 2012; Posserud et al., 2010; Regber et al., 2013). Indeed, in this study, the majority were White mothers who had fewer children. As all participants were female and the majority of participants were White and biological mothers, study findings cannot be generalized to fathers of adolescents with ASD, to other types of maternal caregivers of adolescents with ASD, or to ethnic minority maternal caregivers of adolescents with ASD. Moreover, almost half of the participants had only one child, the target adolescent. Parenting stress may have likely been lower and PTG higher among these participants because they did not have other children, and study findings cannot be generalized to maternal caregivers who had a larger number of children. Finally, while the focus of the study was national, the majority of participants resided in southern states of America, which decreased the generalizability of study findings to maternal caregivers living in other areas of the United States. Also, data from three participants had to be removed as these respondents resided outside the United States. It was also unfortunate that, despite having Spanish-language surveys available to participants, none of the

respondents completed a Spanish-language survey. Study findings cannot be generalized to the Spanish community.

Recommendations

It is hoped that this study acts a catalyst for future parenting stress and strengths-based empirical work, especially within the context of families with transition-age youth with ASD. In his systematic review of the parenting stress literature within the context of ASD, Bonis (2016) reported that just 39 (28%) of the 139 studies he reviewed were conducted with caregivers of adolescents with ASD (Bonis, 2016). Of the 15 studies examined in Hayes and Watson's (2013) meta-analytical studies, only three (20%) had been conducted exclusively with parents of adolescents with ASD. Due to the limited existing research (Bonis, 2016; Hayes & Watson, 2013), there is a continued need to conduct studies examining parenting stress among diverse (gender, ethnic, cultural, socioeconomic) groups caregivers of adolescents with ASD. Both theory (e.g., Perry, 2004) and empirical literature (e.g., Blacher & Baker, 2017; McStay et al., 2014) suggest that parenting stress is chronic among parents of children with ASD and progresses as the child ages. However, this study found average levels of parenting stress among participants. It is essential to conduct longitudinal studies that examine the progressions of parenting stress among caregivers across the ages and stages of the child. It may be that parenting stress does not show a linear progression as the child ages; there may be periods where parenting stress is especially high or low. Parenting stress may be curvilinear across the ages of the child. It is also important to examine parenting stress

within the context of aspects of the parent (e.g., gender, ethnicity, aging, personality, coping skills, optimism) and the family (e.g., size of family, number of children, family composition, separation/divorce). The same can be said about studies on PTG; moreover, ASD literature can be enhanced by conducting qualitative studies that examine caregivers' definitions of and lived experiences as it relates to PTG.

As noted previously, the professional and familial supports and resources likely introduced some biases into this study. It is important that future studies include relevant control variables that pertain to the type, degree, and duration of external supports and resources received by the parent and family that may influence both parenting stress and PTG. Just as social support and resources variables need to be examined as control variables, they also need to be assessed as mediators or moderators that influence the relationship between parenting stress and PTG. These types of studies would be well-aligned with family systems theories (Bowen, 1966; Cridland et al., 2014) that emphasize the dynamic process of interactions between an individual and the (family, peer, community, culture) systems that envelope him/her (Stokols et al., 2013). Family system theories provide numerous theoretical variables (e.g., related to emotional growth and triangulation, differentiation, support, types of resilience, communication skills) that can be examined as mediating or moderating variables. It is also essential to conduct intervention studies that assess the efficacy of parent training, including parenting stress reduction programs, on ameliorating parenting stress and increasing PTG. This study indicated that regional differences exist with regard to caregivers' PTG levels.

Quantitative studies that examine macro-level (e.g., state and regional) differences with regard to parenting stress, PTG, and available ASD services and resources would complement the existing body of ASD literature.

Implications

One of the greatest strengths of this study is its applied importance, especially as it relates to the development of interventions that focus on reducing parenting stress and enhancing PTG among caregivers of adolescents with ASD. Results from this study can increase stakeholder awareness of the unique needs of parents of adolescents with ASD, which can lead to the development of interventions, services, and programs that incorporate and address developmental concerns for both the adolescent and parent. Findings from this study can be especially informative for the development of initiatives that help parents and adolescents navigate the transition to adulthood. This study can also inform the development of actions that are aimed at reducing specific stressors that emerge during the adolescent period and promote adolescent and parent resilience and growth. Findings from this study may increase political stakeholder awareness of and following provision of resources and funding for services that address the specific needs of families with adolescents with ASD and may prompt continuation of services for the adults with ASD.

Conclusion

A substantial amount of empirical research that has examined the detrimental and traumatic effects of the diagnosis of a child with ASD on parents and families (Bonis,

2016; Whitmore, 2016). While much of this work has focused on parenting stress, there remains a lack of empirical examination of parenting stress among caregivers of transition-age youth with ASD. Family system theory (Bowen, 1966; Cridland et al., 2014) and empirical studies (Mount & Dillon, 2014; Smith & Anderson, 2014; Woodman, 2014) suggest that stress is exceptionally high among parents during their child's adolescent years for a variety of reasons. In contrast to typically-developing adolescents, adolescents with ASD do not tend to show declines in emotional and behavioral problems; instead, their emotional and behavioral difficulties are maintained at the same levels as they were in childhood or even increase in severity (McStay et al., 2013; Smith & Anderson, 2014). Adolescence introduces new stressors related to the transition to adulthood (Smith & Anderson, 2014). During this period, parents must plan for their adolescent's future educational, career/work, and social needs while being confronted with reduced professional supports (Mount & Dillon, 2014; Smith & Anderson, 2014; Woodman, 2014). Parents may also confront the reality that they will be their child's lifetime caretakers (Smith & Anderson, 2014) noted that adolescents and their parents frequently experience a significant decrease in the availability of community supports when their children leave high school. It is therefore not surprising that most studies have focused on the negative aspects of ASD, and many paint a bleak picture of parenting a child or adolescent with ASD.

This study contrasted with prior literature by taking a strengths-based approach. It expanded upon the minimal body of work conducted with parents with children

diagnosed with ASD that has attested that caregivers have been able to use their parenting experiences as an opportunity for personal growth (Halstead et al., 2018; Jones et al., 2014; Neff & Faso, 2014; Peer & Hilman, 2014; Wong et al., 2016). It was one of the very few studies to examine PTG among maternal caregivers of transition-age youth. The study findings were very affirming. Not only did respondents report normal levels of parenting stress, but they also had significantly higher PTG as compared to a normed population. A goal of this study was to emphasize the importance and beauty of being a parent, especially a parent of a special needs child. Being a parent of any child is a gift, something that study participants seem to realize.

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Appendix A

Study Flyer—English Version

Autism & Parent Stress Research Opportunity



Victoria Ambrus, MA, LPA, LPC
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 Facebook: @ambrusautism

I am currently a doctoral candidate in clinical psychology at Walden University. My passion for advocating on behalf of families of children with ASD has driven the focus of my dissertation study, entitled *Parenting Stress Adaption among Maternal Caregivers of Transition Age Youth with Autism Spectrum Disorder*. I have taken a strengths-based approach in my dissertation study. Research depends on feedback from families living with ASD.

You are invited to participate in this study if you meet the following criterion:

- Study participants are adult female legal guardians of individuals ages 14-22 with a formal diagnosis of autism spectrum disorder.
- Study is available online
- Takes 15-20 minutes to complete
- Study questions are kept confidential

To Participate in this study please visit:
https://www.surveymonkey.com/r/ASD_E



Study Flyer—Spanish Version

Oportunidad de investigación sobre el autismo y el estrés de los padres



Victoria Ambros, MA, LPA, LPC
 Doctoral Candidate
 Walden University
 Email: victoria.ambros@walden.edu
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Actualmente soy una candidata en el programa doctoral en la Psicología Clínica en la Universidad de Walden. Mi pasión para abogar de parte de las familias de niños con ASD me ha impulsado a enfocar de mi estudio doctoral, titulada *Tensión Parental entre madres quedan cuidado a jóvenes en transición de edades con el desorden del espectro autista*. He tomado un enfoque basado en fortalezas en mi estudio de esta disertación doctoral. La investigación depende en los comentarios que me darán las familias que viven con ASD. ¡Por favor coopere!

Información del estudio:

- Los participantes del estudio son adultos cuidadores femeninos (mama, tía, abuela, guardiante) de persons edads 14-22 con un diagnóstico formal del trastorno del espectro autista (TEA)
- Estudio está disponible en las redes sociales
- Toma 15-20 minutos para completar
- Preguntas de estudio se mantendrán confidencial

Para participar en este estudio por favor visita:
https://www.surveymonkey.com/r/ASD_SL



Appendix B

Permission to Conduct Research Using Survey Monkey®



SurveyMonkey Inc.
www.surveymonkey.com

For questions, visit our Help Center
help.surveymonkey.com

Re: Permission to Conduct Research Using SurveyMonkey

To Whom It May Concern:

This letter is being produced in response to a request by a student at your institution who wishes to conduct a survey using SurveyMonkey in order to support their research. The student has indicated that they require a letter from SurveyMonkey granting them permission to do this. Please accept this letter as evidence of such permission. Students are permitted to conduct research via the SurveyMonkey platform provided that they abide by our [Terms of Use](https://www.surveymonkey.com/mp/legal/terms-of-use/) at <https://www.surveymonkey.com/mp/legal/terms-of-use/>.

SurveyMonkey is a self-serve survey platform on which our users can, by themselves, create, deploy and analyze surveys through an online interface. We have users in many different industries who use surveys for many different purposes. One of our most common use cases is students and other types of researchers using our online tools to conduct academic research.

If you have any questions about this letter, please contact us through our Help Center at help.surveymonkey.com.

Sincerely,

SurveyMonkey Inc.

Appendix C

Statistical Findings

Descriptive Statistics

Are you the adolescent's ...

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BIOLOGICAL MOTHER	114	83.8	83.8	83.8
	ADOPTIVE/FOSTER MOTHER	12	8.8	8.8	92.6
	GRANDMOTHER	6	4.4	4.4	97.1
	OTHER FEMALE RELATIVE	1	.7	.7	97.8
	STEPMOTHER	3	2.2	2.2	100.0
	Total	136	100.0	100.0	

Biological mother versus other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other maternal caregiver	22	16.2	16.2	16.2
	Biological mother	114	83.8	83.8	100.0
	Total	136	100.0	100.0	

Maternal race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Asian	3	2.2	2.2	2.2
	Black	7	5.1	5.1	7.4
	Hispanic	3	2.2	2.2	9.6
	White	119	87.5	87.5	97.1
	Multiracial	4	2.9	2.9	100.0
	Total	136	100.0	100.0	

Race: White versus non-White

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not White	17	12.5	12.5	12.5
	White	119	87.5	87.5	100.0
	Total	136	100.0	100.0	

In what region of the United States do you reside?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	WEST	9	6.6	6.6	6.6
	MIDWEST	12	8.8	8.8	15.4
	SOUTH	93	68.4	68.4	83.8
	NORTHEAST	22	16.2	16.2	100.0
	Total	136	100.0	100.0	

Which of the following best describes the place you live now?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RURAL AREA/SMALL TOWN	54	39.7	39.7	39.7
	LARGE TOWN/SMALL CITY	30	22.1	22.1	61.8
	SUBURBAN AREA OF LARGE CITY	45	33.1	33.1	94.9
	LARGE CITY	7	5.1	5.1	100.0
	Total	136	100.0	100.0	

Statistics

		Maternal age	Child age	Number of children reside in home (other than target child)	Number of children reside in home with IEP (other than target child)
N	Valid	136	136	136	136
	Missing	0	0	0	0
Mean		49.0441	17.1618	.8676	.8309
Median		49.0000	17.0000	1.0000	1.0000
Std. Deviation		7.51873	2.50398	.98739	.92340
Minimum		34.00	14.00	.00	.00
Maximum		74.00	22.00	5.00	4.00

Maternal age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	34.00	1	.7	.7	.7
	35.00	3	2.2	2.2	2.9
	36.00	1	.7	.7	3.7
	37.00	1	.7	.7	4.4
	38.00	2	1.5	1.5	5.9
	39.00	5	3.7	3.7	9.6
	40.00	4	2.9	2.9	12.5
	41.00	4	2.9	2.9	15.4
	42.00	6	4.4	4.4	19.9
	43.00	3	2.2	2.2	22.1
	44.00	5	3.7	3.7	25.7
	45.00	7	5.1	5.1	30.9
	46.00	4	2.9	2.9	33.8
	47.00	11	8.1	8.1	41.9
	48.00	6	4.4	4.4	46.3
	49.00	18	13.2	13.2	59.6
	50.00	8	5.9	5.9	65.4
51.00	5	3.7	3.7	69.1	

52.00	8	5.9	5.9	75.0
53.00	4	2.9	2.9	77.9
54.00	3	2.2	2.2	80.1
55.00	3	2.2	2.2	82.4
56.00	2	1.5	1.5	83.8
57.00	4	2.9	2.9	86.8
58.00	6	4.4	4.4	91.2
59.00	1	.7	.7	91.9
60.00	1	.7	.7	92.6
61.00	1	.7	.7	93.4
62.00	1	.7	.7	94.1
63.00	3	2.2	2.2	96.3
64.00	1	.7	.7	97.1
67.00	1	.7	.7	97.8
69.00	1	.7	.7	98.5
73.00	1	.7	.7	99.3
74.00	1	.7	.7	100.0
Total	136	100.0	100.0	

Child age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	14.00	24	17.6	17.6	17.6
	15.00	24	17.6	17.6	35.3
	16.00	14	10.3	10.3	45.6
	17.00	16	11.8	11.8	57.4
	18.00	14	10.3	10.3	67.6
	19.00	15	11.0	11.0	78.7
	20.00	11	8.1	8.1	86.8
	21.00	11	8.1	8.1	94.9
	22.00	7	5.1	5.1	100.0
	Total	136	100.0	100.0	

Number of children reside in home with IEP (other than target child)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	63	46.3	46.3	46.3
	1.00	40	29.4	29.4	75.7
	2.00	27	19.9	19.9	95.6
	3.00	5	3.7	3.7	99.3
	4.00	1	.7	.7	100.0
	Total	136	100.0	100.0	

Number of children reside in home with IEP (other than target child)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	63	46.3	46.3	46.3
	1.00	40	29.4	29.4	75.7
	2.00	27	19.9	19.9	95.6
	3.00	5	3.7	3.7	99.3
	4.00	1	.7	.7	100.0
	Total	136	100.0	100.0	

Covariate Testing

Group Statistics

Biological mother versus other		N	Mean	Std. Deviation	Std. Error Mean
PTGI	Other maternal caregiver	22	56.4091	18.87719	4.02463
	Biological mother	114	56.0263	20.96371	1.96343

Independent Samples Test

		t-test for Equality of Means		
		t	Df	Sig. (2-tailed)
PTGI	Equal variances assumed	.080	134	.937
	Equal variances not assumed	.085	31.850	.932

Group Statistics

Race: White versus non-White		N	Mean	Std. Deviation	Std. Error Mean
PTGI	Not White	17	53.5882	22.57781	5.47592
	White	119	56.4454	20.35061	1.86554

Independent Samples Test

		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)
PTGI	Equal variances assumed	.054	.817	-.534	134	.594
	Equal variances not assumed			-.494	19.893	.627

Descriptives

PTGI					
	N	Mean	Std. Deviation	Std. Error	
WEST	9	50.8889	18.73796	6.24599	
MIDWEST	12	49.2500	21.75118	6.27902	
SOUTH	93	56.8817	20.24999	2.09983	
NORTHEAST	22	58.5909	22.26177	4.74623	
Total	136	56.0882	20.57452	1.76425	

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PTGI	Based on Mean	.345	3	132	.793
	Based on Median	.336	3	132	.799
	Based on Median and with adjusted df	.336	3	131.520	.799
	Based on trimmed mean	.348	3	132	.791

ANOVA

PTGI

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1000.785	3	333.595	.784	.505
Within Groups	56146.156	132	425.350		
Total	57146.941	135			

Descriptives

PTGI

	N	Mean	Std. Deviation	Std. Error
RURAL AREA/SMALL TOWN	54	61.1852	18.66292	2.53970
LARGE TOWN/SMALL CITY	30	47.0333	18.71471	3.41682
SUBURBAN AREA OF LARGE CITY	45	55.8889	22.95175	3.42144
LARGE CITY	7	56.8571	15.72078	5.94190
Total	136	56.0882	20.57452	1.76425

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PTGI	Based on Mean	.841	3	132	.474
	Based on Median	.922	3	132	.432

Based on Median and with adjusted df	.922	3	125.563	.432
Based on trimmed mean	.885	3	132	.451

ANOVA

PTGI

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3868.525	3	1289.508	3.195	.026
Within Groups	53278.416	132	403.624		
Total	57146.941	135			

Correlations

		PTGI
Maternal age	Pearson Correlation	.106
	Sig. (2-tailed)	.219
	N	136
Child age	Pearson Correlation	.071
	Sig. (2-tailed)	.408
	N	136
Number of children reside in home (other than target child)	Pearson Correlation	-.046
	Sig. (2-tailed)	.591
	N	136
Number of children reside in home with IEP (other than target child)	Pearson Correlation	-.016
	Sig. (2-tailed)	.850
	N	136

Research Question 1

Statistics

PSI_PercScore

N	Valid	136
	Missing	0

Mean	51.0419
Median	51.1670
Std. Deviation	8.18117
Minimum	29.46
Maximum	68.05

Reliability Statistics

Cronbach's	
Alpha	N of Items
.928	36

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
PSI_PercScore	136	51.0419	8.18117	.70153

One-Sample Test

Test Value = 50			
	t	df	Sig. (2-tailed)
PSI_PercScore	1.485	135	.140

Research Question 2

Statistics

PTGI		
N	Valid	136
	Missing	0
Mean		56.0882
Median		56.0000
Std. Deviation		20.57452
Minimum		13.00
Maximum		105.00

Reliability Statistics

Cronbach's	
Alpha	N of Items
.926	21

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
PTGI	136	56.0882	20.57452	1.76425

One-Sample Test

Test Value = 52.5			
	t	df	Sig. (2-tailed)
PTGI	2.034	135	.044

Research Question 3**Model Summary^c**

Model	R	R Square	Change Statistics			
			Change	F Change	df1	df2
1	.260 ^a	.068	3.195	3	132	.026
2	.373 ^b	.071	10.830	1	131	.001

a. Predictors: (Constant), US_LOC_DUMMY3, US_LOC_DUMMY1, US_LOC_DUMMY2

b. Predictors: (Constant), US_LOC_DUMMY3, US_LOC_DUMMY1, US_LOC_DUMMY2, PSI_PercScore

c. Dependent Variable: PTGI

Coefficients^a

Model		Unstandardized Coefficients		Standardized	Sig.
		B	Std. Error	Coefficients Beta	
1	(Constant)	61.185	2.734		.000
	US_LOC_DUMMY1	-4.328	8.071	-.047	.593
	US_LOC_DUMMY2	-5.296	4.055	-.122	.194
	US_LOC_DUMMY3	-14.152	4.575	-.286	.002
2	(Constant)	96.362	11.010		.000
	US_LOC_DUMMY1	-5.363	7.792	-.058	.493
	US_LOC_DUMMY2	-6.839	3.940	-.157	.085
	US_LOC_DUMMY3	-14.655	4.416	-.296	.001
	PSI_PercScore	-.676	.205	-.269	.001

a. Dependent Variable: PTGI