

2019

Effects of Online ABA Training on Stress Levels of Parents with a Child with Autism

Kristen Duffney

University of North Florida, kduffney@hotmail.com

Follow this and additional works at: <https://digitalcommons.unf.edu/etd>



Part of the [Educational Assessment, Evaluation, and Research Commons](#), [Educational Psychology Commons](#), [Other Education Commons](#), and the [Special Education and Teaching Commons](#)

Suggested Citation

Duffney, Kristen, "Effects of Online ABA Training on Stress Levels of Parents with a Child with Autism" (2019). *UNF Graduate Theses and Dissertations*. 887.

<https://digitalcommons.unf.edu/etd/887>

This Doctoral Dissertation is brought to you for free and open access by the Student Scholarship at UNF Digital Commons. It has been accepted for inclusion in UNF Graduate Theses and Dissertations by an authorized administrator of UNF Digital Commons. For more information, please contact [Digital Projects](#).

© 2019 All Rights Reserved

Running head: EFFECTS OF TRAINING ON STRESS

Effects of Online ABA Training on Stress Levels of Parents with a Child with Autism

by

Kristen Duffney

A Proposal submitted to the Department of Leadership,

School Counseling & Sport Management

in partial fulfillment of the requirements for the degree of

Doctor of Education in Educational Leadership

UNIVERSITY OF NORTH FLORIDA

COLLEGE OF EDUCATION AND HUMAN SERVICES

January 2019

Unpublished work © Kristen Duffney

This proposal titled “Effects of Online ABA Training on Stress Levels of Parents with a Child with Autism” is approved by

Dr. Daniel Dinsmore, Committee Chair

Dr. Angela Mann, Committee Member

Dr. Matthew Ohlson, Committee Member

Dr. Hope Wilson, Committee Member

Accepted for the Leadership, School Counseling & Sport Management:

Dr. Elizabeth Gregg, Department Chair

Accepted for the College of Education and Human Services:

Dr. Diane Yendol-Hoppey, Dean

Accepted for the University:

Dr. John Kantner, Dean of the Graduate School

Dedication

I dedicate this dissertation to all parents with a child that has a physical, developmental, or intellectual disability. Don't ever stop believing or encouraging your child to work hard and follow their dreams, no matter how far-fetched they seem to be. But, always remember that you are also a person with needs so take care of yourself too.

Acknowledgments

Throughout the dissertation process I have received nothing but encouragement and guidance from my dissertation committee chair, Dr. Dinsmore. I convinced myself more than once that I could not do it and that I did not really care if I graduated. Anytime I expressed even the slightest bit of doubt he never hesitated to remind me of all the work I had put in up to that point and that it would be worth all the stress, all the writing, and all the hours of sleep I lost worrying over whether I would ever finish. He was the one person that spent countless hours coaching and encouraging me over the past several years. Without him I would not have been able to get this far. Thank you.

I would also like to acknowledge my other three committee members for their willingness to read and reread my work and for spending their time meeting with me and attending my defenses without any sense of obligation. Dr. Mann, Dr. Wilson, and Dr. Ohlson, thank you.

I would like to acknowledge my husband, Jason. Although he will probably never read a single word in this paper and I do not think he has any idea what I have written about, his ability to listen to me complain and whine about school since I was a freshman in college without discouraging me from finishing has been immeasurable. My sister, Sarah has been my lifelong editor and has never hesitated to tell me my writing sucks or that I use too many commas. The number of hours she has spent with me reviewing, rearranging, and editing this paper have made me a better writer. Finally, my parents, who have never been anything other than encouraging

and optimistic about my professional or academic career. Without the support of my family I would not be the person I am today.

To my best friend, Ethan. I met Ethan when I was 18 years old, he was only 3 at the time and was the first child with special needs I had ever worked with. He taught me to have a level of patience that I did not know was possible and introduced me to the world of ABA. Jason and I have become part of his family and I am grateful for all he has taught me.

Finally, I would like to acknowledge all the kids with special needs that I have worked with over the past 10 years, as well as their parents and siblings. I learn something new from each family I meet and I hope I have made as big of an impact in their lives as they have in mine.

Abstract

This quantitative study investigated the effects of an online training program in applied behavior analysis (ABA) on stress levels of parents that have a child with autism spectrum disorder (ASD). The online ABA training program is comprised of 22 videos which take a total of 4½ hours to complete. Parenting stress levels were assessed using the Parenting Stress Inventory Short Form (PSI-SF, Abidin, 1995) and general stress levels were self-reported scores immediately before and after the training. The assessment and questionnaire were completed online immediately before the ABA training was made available and immediately after the ABA training was completed. The final PSI-SF was distributed one week after the ABA training was completed. This study confirmed that the ABA training decreased stress from the pretest to posttest but slightly increased after the delayed posttest, although delayed posttest scores remained below baseline levels. Results of the data analysis also found that general stress reduced significantly from baseline to posttests. In conclusion, the online ABA training program was an effective tool in decreasing parenting stress and general stress levels.

Table of Contents

Dedication iii

Acknowledgments iv

Abstract vi

List of Figures xi

List of Tables xii

Chapter 1: Introduction 1

 Problem Statement 3

 Purpose Statement 4

 Research Questions 4

 Hypothesis 4

 Significance of the Study 4

 Overview of Theoretical Framework 6

 The researcher’s perspective 7

 The teacher’s perspective 7

 Stress and Educational Leadership 8

 Definition of Terms 9

Chapter 2: Review of Related Literature 11

 Stress 11

 Factors of Stress 14

 General stress 15

TRAINING AND STRESS	viii
Parenting Stress.....	19
Parenting Stress Associated with ASD.....	23
Mitigating Stress.....	29
Measuring Stress.....	32
Brief Encounter Psychosocial Instrument (BEPSI).....	33
Social Readjustment Rating Scale (SRRS).....	34
Daily Stress Inventory (DSI).....	34
Parenting Stress Instruments.....	35
Parental Stress Scale (PSS).....	36
Parenting Stress Index – Short Form (PSI-SF).....	36
CHAPTER 3: METHODOLOGY	38
Participants.....	38
Demographics Survey.....	39
Instrumentation	41
Parenting Stress Index – Short Form (PSI-SF).....	42
Intervention.....	43
Online Training.....	43
Procedures.....	47
SI-SF Pretest.	48
Training Videos.	48
Follow-up Questionnaire.	48
PSI-SF Posttest.....	48

TRAINING AND STRESS	ix
PSI-SF Delayed Posttest.....	49
Data Analysis.....	49
Chapter 4: Results and Data Analysis.....	50
Descriptive Statistics.....	50
Parenting Stress.....	54
General Stress.....	55
Chapter 5: Discussion.....	56
Effectiveness of Intervention.....	56
Problem Behavior and Stress.....	57
Implications for Clinical Practice.....	58
Implications for Educational Leadership.....	60
Implications for Future Research.....	62
Limitations.....	63
Conclusion.....	64
References.....	67
Appendix A: The Social Readjustment Rating Scale.....	98
Appendix B: Daily Stress Inventory.....	99
Appendix C: Parental Stress Score.....	101
Appendix D: Parent Stress Research Study (1): Survey.....	103
Appendix E: Parent Stress Research Study (2): Stress Assessment #1.....	105
Appendix F: Parent Stress Research Study (3): Training Videos.....	106

TRAINING AND STRESS

x

Appendix G: Video Tracking Spreadsheet 107

Appendix H: Parent Stress Research Study (4): Follow-up Questionnaire 109

Appendix I: Parent Stress Research Study (5): Stress Assessment #2 110

Appendix J: Parent Stress Research Study (6): Stress Assessment #3 111

List of Figures

Figure 1: Path-Goal Theory 7

Figure 2. Participant Stress Scores for Pretest, Posttest, and Delayed Posttest 52

Figure 3. PSI-SF Mean Scores..... 53

Figure 4. General Stress Before and After Training 54

List of Tables

Table 1: Participant Demographics.....	40
Table 2: Training Video List.....	45
Table 3: PSI-SF Pretest, Posttest, and Delayed Posttest Scores	51
Table 4: General Stress Score	53

Chapter 1: Introduction

An autism diagnosis tends to carry a stigma that can lead to damaging, long-term effects on a family's dynamics, cohesiveness, and interpersonal relationships (Chan & Lam, 2017). The stress associated with having a child with autism spectrum disorder (ASD) has been found to profoundly affect a parent's health and daily functioning simply due to the overwhelming amount of information regarding the diagnosis (Zuckerman, Lindly, Reyes, Chavez, Cobian, Macias, & Smith, 2018). The uncertainty of not knowing whether their child will be able to communicate or care for themselves, the worry about school placement and academic advancement, and the various therapies and time commitments can often elicit overwhelming panic and stress (Shepherd, Csako, Landon, Goedeke, & Ty, 2018).

A parent's disposition toward events that are perceived as negative are often reflected on their interactions with family and friends and puts them at a greater risk for poorer quality of life (Holzman, Burt, Edwards, Rosinski, & Bridgett, 2017). Lecavalier, Leone, and Wiltz (2016) studied stress levels of parents with typically developing children and found that 57.7% of their participants experienced higher than normal stress compared to 77% of parents of children with ASD. Participants in their study were assessed using the Parenting Stress Index Short Form (PSI-SF) and reported similar effects of stress as they related to their physical and mental well-being, including depression, anxiety, and loneliness. This study, as well as many others, determined that a child's diagnosis of ASD was the primary factor that affected their participants' levels of stress (McStay, Trembath, & Dissanayake, 2014; Sommers-Flanagan, Polanchek, Zeleke, Hood, & Shaw, 2015; Zaidman-Zait, Mirenda, Duku, Szatmari, Georgiades, Volden, & Fombonne, 2014).

With all the decisions that parents are required to make, deciding which interventions to implement with their child is among the most important and can be the most stressful as it relates to characteristics of autism. (Edwards, Brebner, McCormack, & MacDougall, 2018). Multiple effective interventions are often recommended to parents of a child with ASD but many diagnosticians agree that applied behavior analysis (ABA) is the most effective way to address the gamut of deficits related to the diagnosis (Bailey & Burch, 2017). While ABA is often recommended by doctors and other professionals they do not always explain why it is effective or how it works (Ryan & O'Connor, 2017). The knowledge of a concept (i.e., ABA) and the knowledge of its importance, paired with a lack of understanding of the concept has been shown to create additional stressors and can deter individuals from seeking out more in-depth understandings (Kaseman, 2016).

Unfortunately, most ABA services are delivered in school or clinical settings without the child's parent's participation or presence and opportunities for trainings and practice are often not easily accessible (Ledford & Gast, 2018). Many studies have also found that limiting parental exposure to strategies can impede on strategical effectiveness, have negative effects on the child's development, and create an unhealthy environment that can increase stress related health issues (Dixon, Burns, Granpeesheh, & Amarasinghe, 2017). With the need for in-depth understanding and practice, training is vital for learning (Bucher & Lovaas, 2017), and learning a concept that is important to an individual can result in feelings of empowerment and lower stress (Collins & Olson, 2014).

Problem Statement

Stress often varies in topography and intensity but it affects every living organism and can be caused by a multitude of factors (Hugget, 2018); therefore, it is a topic that is universally applicable and has been studied extensively. While this topic yields countless causes and effects of stress, many authors agree that parenting is an area that causes some of the highest levels in humans (Pemberton, Ellis, Pilkington, & Bérénos, 2017). Parenting stress is dissected further throughout literature and all reviewed studies that compare parenting with parenting children with autism concluded that parenting stress is highest in the latter group.

Although there is no shortage of research on coping strategies or ways to mitigate the effects of stress, it often focuses more on modifying or applying existing stress reduction strategies rather than proposing novel methodologies. Many broad concepts that recurred were related to increasing social support, exercise, meditation, and adaptation (Dardas & Ahmad, 2015; Meichenbaum, 2017; Mikolajczak, Raes, Avalosse, & Roskam, 2018). More specific strategies are suggested related to ASD parenting stress but they are also repetitive and many are costly and time consuming (Dardas & Ahmad, 2015). Similar to general coping strategies, the proposed strategies to alleviate the stress brought upon parents of children with autism have been replicated many times and found to be effective, but there also seems to be a shortage of variability regarding mitigating ASD parenting stress. This research will add to the limited number of strategies to decrease ASD parenting stress. Because there is no personal or professional relationships between the researcher and the participants there are no conflicts of interest, including financial, to be declared.

Purpose Statement

The purpose of this study was to investigate changes that occur in parent stress levels following the introduction and completion of an online training designed for parents of children with autism spectrum disorder (ASD) to further explore the concepts and principals of ABA.

Research Questions

- 1. For parents with a child diagnosed with autism spectrum disorder, what are the effects of an online ABA training on parenting stress levels immediately following the training and after a 7 to 10 day delayed posttest?*
- 2. What are the effects of the online ABA training on general stress levels reported by parents before and immediately following the training?*

Hypothesis

Based upon findings in areas related to the effects of studying on student stress levels (Vaessen, van den Beemt, van de Watering, van Meeuwen, Lemmens, & den Brok, 2017), I hypothesize that stress levels of parents will decrease following immediate completion of the online training program over pretest and that posttest stress levels will remain lower than pretest, but will increase from the levels in the immediate posttest. Further, I hypothesize that general stress levels will decrease from pretest to posttest.

Significance of the Study

Studies on stress primarily focus on how it affects the individual but rarely deviate on known stress reduction strategies (Zhang & Baranek, 2016). Further, stress reduction strategies proposed in research are typically costly and/or time consuming which can deter individuals from seeking help (Parish, Thomas, Williams, & Crossman, 2015). ABA therapy can be used to

address a multitude of behaviors, and because of the commonalities within the diagnosis of ASD (i.e., developmental delays, behavioral deficits, and social impairments), a general online training that provides in-depth information regarding this therapeutic technique as well as video examples of implementation can be used for all parents. In addition, the ability for parents to complete this training at their own pace and at their convenience makes this solution less time consuming and less costly than other training opportunities previous studies have suggested. If my hypothesis is supported through this study, this intervention could provide an easier means for stress reduction in parents of a child with ASD.

On April 26, 2018, the Center for Disease Control and Prevention (CDC) released data determining the prevalence of autism spectrum disorder (ASD) had increased by 15% compared to their previous findings from 2014. Based on research that links higher-than-average stress levels in parents with a child with ASD, the increasing prevalence of the diagnosis also increases the number of individuals that experience ASD parenting stress. With parents of children with autism having a greater likelihood of experiencing parental stress, I believe exploring alternative means of mitigating stress can greatly benefit this population. Parents may find the results of this study useful when selecting whether to pursue ABA services for their child, provide them with the ability to utilize tools presented in the training, and be more involved in their child's treatment plan. If this study reveals that online parent training has a significant effect on decreasing stress levels in parents with a child with ASD, professionals in the field of ABA may place a greater focus on the importance of parent training.

Overview of Theoretical Framework

Path-goal theory of leadership operates on the premise that generating motivation is the driving force for accomplishing designated goals (Davis, 2017). In order for path-goal theory to be effective, the learner/subordinate must believe they are capable of performing the tasks on the path to obtain their goals and that the payoff for their work is worthwhile (Northouse, 2013). House and Mitchell (1974) list four types of leadership styles within this theory: directive, supportive, participative, and achievement-oriented. Davis (2017) describes the four types:

A directive leader explains to the subordinates what is expected from them, provides guidance and ensures procedures and rules implementation. The supportive leader pays high attention to the subordinates' needs and well-being. The participative leader encourages the subordinate's participation in the process of decision making whereas achievement-oriented leader attempts to enhance the performance, defines the standards and ensures achievement of these standards by the subordinates (p.86).

These leadership styles allow path-goal theory to be applied in infinite situations by offering such a variety of directions for a leader to affect motivation.

The role of the leader in this theory is to create and facilitate motivation using a leadership style that is best suited to meet the needs of the learner/subordinate (Drotter, 2003; Drucker, 1997; Maxwell, 1998). In order to effectively create and facilitate motivation, a leader must work with the learner/subordinate to define goals, clarify the path, remove obstacles, and provide support. Northouse (2013) provides a visual representation of path-goal theory including the four roles of an effective leader, shown in Figure 1.

Figure 1: Path-Goal Theory



The researcher's perspective. As a professional that interacts almost daily with parents that have a child with ASD, I am familiar with the effects that stress has on them. I have found that many parents know what their goals are (e.g., decreasing their child's problem behavior or increasing their social skills) but are unsure of the steps they need to take to reach them. Regardless of how clear or simple it may seem, they often encounter obstacles that are overwhelming or seem too great to overcome and can lose sight of the path that leads to goal attainment (e.g., spontaneous recovery of extinguished behaviors, personal life changes, etc.). Typically, the most I can offer these parents are words of encouragement or suggestions on how to address their concerns using procedures specific to their situations, but the variables surrounding their situations are often ambiguous and need to be addressed in a direct and formal way. Words of encouragement are not enough to help them through those obstacles.

The teacher's perspective. Collaboration between teachers and parents are necessary to facilitate the path to goal attainment. Parents are often invited to participate in setting goals with

their child's teacher and educational team (i.e., principal, vice principal, and other school support staff) but many parents lack the knowledge or strategies necessary to contribute toward a plan to meet the shared goals, which hinders collaboration (McLean & Connor, 2015). McCaffrey and Ferguson (2018) found that interacting with school systems was a strong contributor to the amount of stress some parents experience because of the lack of collaboration, lack of support, and path to goal attainment. Many of their participants reported that their educational team (i.e., themselves, principals, vice principals, teachers, other school staff) lacked cohesion, which affected collaborative decision making.

Collaboration can provide a framework for creating a path to accomplishing the shared goals of the team and provide more open communication and establish a stronger partnership. The effects of impaired relationships and failed collaborations can often have negative impacts on the child's development, educational success, parent participation, and teacher performance (McLean & Connor, 2015). While improving collaboration and promoting teamwork can address stress that is related to school interactions specifically, outside stressors related to parenting a child with ASD will, for the most part, remain unaffected. Unless a general stress reduction technique can be implemented, parenting stress is likely to continue to affect educators.

Stress and Educational Leadership

Regardless of the specific causes of stress the outward behavioral displays toward school personnel by parents has been found to affect teacher performance, self-esteem, increase burnout, and can result in high turnover rates (Prilleltensky, Neff, & Bessell, 2016). Maintaining high quality teachers is the responsibility of a school's leadership team (i.e., principals and administrators) and high turnover rates make it difficult to accomplish that. In summation, the

displays of parent stress affect the stress levels of teachers, which provides additional stressors for a school's leadership team. If a new strategy that reduces parenting stress levels can be provided to parents, teachers and school leaders may also benefit from this new tool and alleviate some unnecessary stressors directly related to stress levels or the parents they serve.

Based on my research, stress often becomes one of the largest obstacles in these situations and leads to loss of motivation, and loss of motivation is a contributing factor to stress. Having a clear path that addresses obstacles and creates paths around them can help maintain motivation. Each of the four types of leadership styles within path-goal theory propose a variety of components to facilitate and maintain motivation. By adding to existing strategies to mitigate stress I am hopeful that parents, teachers, and principals can work through the obstacles that develop along their path to achieve their collective goals.

Definition of Terms

- Autism spectrum disorder (ASD) is a developmental disorder characterized by difficulties with social interaction, communication, and by restricted or repetitive patterns of thought and behavior.
- General Stress is "the experience of a perceived threat (real or imagined) to one's mental, physical, or spiritual well-being, resulting from a series of physiological responses and adaptations" (Seaward, 2007, pg. 2).
- Parenting stress is stress that is experienced by individuals with children that is directly related to the demands of being a parent.

- ASD parenting stress is parenting stress that is experienced by individuals with a child diagnosed with ASD that is directly related to the demands of being a parent with a child with ASD.
- Applied behavior analysis (ABA) is a scientific discipline that changes socially significant behavior by applying techniques based on the principles of learning.
- Factors are events or specific influences that create and/or maintain stress.
- Assessments/Measurements/Surveys are tools used to collect quantitative data.
- Mitigating is minimizing negative effects of stress.

Chapter 2: Review of Related Literature

This chapter presents a synthesis of empirical literature about stress and includes the following sections: definition of stress, factors related to stress, mitigating parenting stress, and tools that measure parenting stress. There is no shortage of literature on stress, factors related to parenting stress, or tools that measure parenting stress. Although research distinguishes between general stress and parenting stress, few studies found different mitigating strategies between the two and even fewer studies provided effective ways to mitigate ASD parenting stress specifically. This study will attempt to present a unique mitigating strategy to reduce stress in parents of children with autism.

Some of the most common contributors to parenting stress are related to a child's health, successes, friendships, behaviors, and their intellectual and physical development (Mikolajczak, Raes, Avalosse, & Roskam, 2018). The extent of perceived achievements to expectations in these areas are found to be positively correlated with varying stress levels associated with parenting (Meadan, Halle, & Ebata, 2010). Although the areas mentioned above are not the only characteristics that are related to parenting stress, children with ASD are more likely to struggle in these areas which increases the prevalence and higher levels of parenting stress within this population (Weitlauf, Vehorn, Taylor, & Warren, 2014).

Stress

Existing literature provides a plethora of definitions and explanations of stress. For example, Folkman and Lazarus (1980) refer to stress as a state of anxiety that develops when events and responsibilities exceed one's ability to cope, and Foody (2015) describes stress by the effects that challenging events enable us to evaluate and respond to threats by eliciting physical

or emotional responses. A third example explained by Seaward (2017) states that stress is "the experience of a perceived threat (real or imagined) to one's mental, physical, or spiritual well-being, resulting from a series of physiological responses and adaptations" (pg. 2). Although a single definition has not been agreed upon in the literature many researchers concur that stress includes a physiological response to an event or situation that may be good or bad and disturbs normal functions (Barry & Jones, 1995; Gladstone, McKeever, Seeman, & Boydell, 2014; Sapolsky, 2004; Schönfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016; Vedhara et al., 2000).

Seaward (2017) goes on to explain that types of stress can be divided into three categories: eustress, neustress, and distress. Eustress is a motivating stressor that arises in situations that a person finds inspiring or exciting, such as falling in love. Neustress is information that a person perceives to be interesting but unimportant as it pertains to them, such as witnessing a minor car crash. Distress is the physiological or emotional responses to threatening events, and is what is commonly referred to as 'stress' (Schaaf, Tooth-Cohen, Johnson, Outten & Benevides, 2011). Eustress, neustress, and distress are not mutually exclusive and can often evolve and intertwine. Waldréus, Jaarsma, Van der Wal, and Kato (2018) add that there are two subtypes of distress: acute stress and chronic stress. Acute stress often appears suddenly and intensely but disappears quickly, whereas chronic stress typically evolves over time and increases in intensity.

According to the Yerkes-Dodson Principal, some stress is necessary for optimal health and performance but the deterioration of that balance will increase stress levels, typically amplifying chronic distress (Broadhurst, 1957). Unbalanced, elevated stress levels have repeatedly shown to affect a multitude of factors related to physical health, including increased

cortisol levels (e.g., blood sugar levels, metabolism regulation, and memory formulation), high blood pressure, heart rate variability, cognitive impairments, and weakened immune systems (Allen, & Knott, 2016; Allen, Kennedy, Cryan, Dinan, & Clarke, 2014; Falk, Norris, & Quinn, 2014; Foody, James, & Leader, 2015).

Because stress has been shown to have such a profound effect on immune systems, some health experts speculate that 70%-85% of diseases and illnesses are related to stress (Samios & Baran, 2018), and people with weak immune systems are the most susceptible (Chishima, Mizuno, Sugawara, & Miyagawa, 2018; Pines, 2017; Sladek, Doane, Luecken, & Eisenberg, 2016). The American Institute of Stress (AIS, 2018) attests that 43% of all adults suffer adverse health effects due to stress and an estimated 80% of visits to primary care physicians are for stress-related complaints or disorders. Stress has also been linked to heart disease, lung ailments, cirrhosis, cancer, influenza, and suicide (Bloy et.al, 2017). These six conditions are also among the leading causes of death in the United States per the Center for Disease Control and Prevention (CDC, 2018).

A multitude of factors related to mental health and quality of life are often affected negatively by stress. While men are also affected, stress was found to be the leading cause of depression, anxiety, and insomnia in women (Azak, Murison, Wentzel-Larsen, Smith & Gunnar, 2013; Falk, Norris, & Quinn, 2014; Issler & Nestler, 2018). Individuals with these mental health disorders also report lower self-worth, grief, guilt, greater feelings of loneliness, and less marital, job, and social satisfaction (Sapolsky, 2004; Barry & Jones, 1995; Schönfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016). Many factors are known to cause stress; some are applicable to the general population and others apply to specific populations.

Factors of Stress

Research on emotional and physical effects of stress are consistent irrespective of the cause (Tse, Pang, & Lee, 2017). Similarly, factors of stress are also consistent but individual circumstances often dictate what that the emotional and physical effects are. Holmes and Rahe's life events theory (1967) explains that critical life events stimulate change that produce perceived challenges to an individual. Major life changes are inevitable and every individual constantly experiences them. For example, moving is among the most common stressors and is something that most people experience in their lifetime; in fact, the United States Census Bureau found that American's move an average of 11.7 times in their lifetime (2015). The challenges of moving were reported to elicit stress for 100% of participants in a study by Colten (2017) and multiple components affected the reported levels, intensities, and effects of stress. Although reported stress levels were similar, many participants that moved due to desirable circumstances (e.g., work promotions or to be closer to family) reported their stress to be related more to excitement and uncertainty whereas participants that moved due to undesirable circumstances (e.g., financial strain or divorce) reported stress levels with primarily negative emotional effects such as depression.

The theory of cognitive appraisal by Lazarus and Folkman (1984) explains that ones' vulnerability and reaction to stress is positively correlated with the uniqueness of individual and specific stressors. In other words, two people may experience the exact same event but the emotional and physical effects can be completely different. Although the example above discusses different types of stress between two different sets of circumstances (i.e., desirable versus undesirable) within the same event (i.e., moving), distinctions can also be made between

two similar sets of circumstances. Roberts and Woodman (2017) explain how an individual's personality and outlook are often vital determinants of the effects of stress. Using the example above and assuming that all external factors are identical, a person with an extroverted personality may report less stress than an introvert simply due to internal factors within the individual. The extrovert may look forward to meeting new people and exploring their new environment whereas an introvert may look at these unfamiliar circumstances with a greater sense of hesitance and view them as hurdles that cause high levels of stress.

General stress. Work-related stress is also among the most common factors that creates and intensifies daily stress (Haigh, Walsh, Mazefsky, Minshew, & Eack, 2018; Camaioni, 2017). Multiple elements within work-related stress include: job satisfaction, workload, work schedule, control, organizational culture, interpersonal relationships, role in organization, and chances for advancement or promotions (Kompier & Marcelissen, 1990). Person-environment fit (PE fit) theory developed by Caplan in 1987 attempts to explain these factors and the degree of fit, or match, between an environment and an individual. PE fit theory determined that when the demands of the work environment exceed the employee's abilities and the employee's needs consistently fail to be met, workplace stress is likely to occur at high rates and at high intensity. Due to the subjectivity of work-stressors, Caplan refers to an individual's stress-related factors as individual cultural values to encompass the common factors as they relate to the specific person.

PE fit theory contains four sub-sections that determine a total score, predicting an all-encompassing fit between a person and their job: Person-job fit (PJ fit), person-organization fit (PO fit), person-group fit (PG fit), and person-supervisor fit (PS fit) (Jansen, & Kristof-Brown, 2006). First, PJ fit looks specifically at the congruence between the requirements of a job and an

individual's skills, knowledge, and abilities to successfully execute those requirements. Next, PO fit compares an individual's needs, goals, and values with those of the organization. PG fit compares similarity of values, goals, personalities, and interpersonal styles between the individuals and co-workers/work group, and finally, PS fit compares similarity of values goals, personalities, and interpersonal styles between the individual and superiors. Each of these is correlated with factors of work-related stress and is predictive of job satisfaction, organizational commitment, and longevity of effectiveness in the workplace. Caplan determined that cultural values for individuals with higher "fit scores" onboard faster, perform better, stay within their organization longer, report higher levels of job satisfaction, and report lower levels of work-related stress than those with lower scores. Although PE fit theory was developed specifically to apply to the workplace, the premise has been applied to other common stressors such as financial stress and relationship/social stress (Su, Murdock, & Rounds, 2015).

"Money is arguably the most important resource derived from work and the most important source of stress for contemporary employees" (Sinclair & Cheung, 2016, pg. 181). Not only is it important for a person to have a high fit score, but that person must also feel that their compensation is worth their time and effort (Benjak 2009; Bitsika & Sharpley 2004; Kuusikko-Gauf & Gauffun et al. 2013). It can be argued that one's financial state is a key determinant of their self-worth, self-esteem, and social status, but factors related to specific financial stressors differ by individual circumstance (Lee, C., Lee, J., & August, 2011). Financial stress reported by higher income earners is often related to maintaining their financial and societal status, whereas financial stress reported by lower income earners is more often related toward earning enough money to stay out of debt and the ability to afford basic necessities (Cronin, Becher, Christians,

& Debb, 2015). Society regularly associates money with power and people that earn less than they feel they are worth often feel less powerful (Underhill, 2018). This concept is particularly true for lower-income earners due to higher stress levels associated with fewer personal and social resources (Bowen et al., 1995).

Notwithstanding job satisfaction or monetary compensation, finances can be particularly unstable due to factors outside an individual's control, such as the economy, regional employment patterns, and company needs (Ennis, Hobfoll, & Schröder, 2000). McGrattan and Edward (2014) explain the reality of this concept in their business cycle theory which pulls from Keynesian and monetarist explanations (Coddington, 2013; Venkateswaran & Wright, 2014). The business cycle theory compares modern day's financial instability with the Great Depression, citing the possibility of similar circumstances that occurred during that era, such as debt inflation and under-consumption. As many researchers put it, stress is most often associated with the concept of unpredictability and uncontrollability (Kakouros & Räsänen, 2016). The fluctuation of the unknown adds additional stressors that are shared universally, regardless of financial status.

Noninterpersonal stressors (i.e., occupational and financial) are often contingent on interpersonal stressors (i.e., romantic partners, peers, and family) (Sheets & Craighead, 2014). When in a relationship, stress can often have a dyadic effect that can originate inside or outside of the relationship and affect both partners (Randall & Bodenmann, 2017). Dyadic effects have been described as the interdependence between partners and the mutual influence on each other (Kelley et al., 1983); these effects have been shown to be the most influential factor associated with relationship stress levels (Allen, Rhoades, Stanley, & Markman, 2010; Buck & Neff, 2012;

Langer, Lawrence, & Barry, 2008; Story & Bradbury, 2004). While most relationship-related stress literature focuses on individuals within a romantic relationship many authors relate the same concepts to social relationships (Falconier, Nussbeck, Bodenmann, Schneider, & Bradbury, 2015). For the purposes of this study, relationship-related stress refers to romantic relationships unless otherwise specified.

Building on the theories of stress developed by Lazarus and Folkman (1984), Bodenmann (1997) proposed that stress from daily hassles not directly related to the relationship can have a negative impact on the relationship; they coined this the systemic-transactional stress model (STM). STM operates based on the assumption that there is a level of interdependence between individuals and they have strong mutual influences on each other. For example, Randall and Bodenmann (2009) apply the idea of a shared experience to rowing on a lake. When rowing, in order to successfully get from point A to point B both rowers must move synchronically to advance and disjointedness will result in going off-track and diverting from the path. Further, if not in sync, one rower may experience high levels of stress due to the event (i.e., disjointedness) which could cause the second person to experience high stress levels due to the reaction/behavior of their partner rather than the event itself. In other words, the idea of interdependence and mutual influence conceptualizes stress as an experience shared between the partner directly affected by a stressor and the partner indirectly affected by the stressor. In many cases, regardless of the specific cause, the direct situational effects and reactions on one partner results in crossover stress to the other (Neff & Karney, 2007; Story & Bradbury, 2004; Westman & Vinokur, 1998).

Internal relationship stressors are directly correlated with the cohesiveness and compatibility between the individuals in the relationship, whereas external stressors are the events outside the relationship that cause stress due to other general factors of stress (Karney & Bradbury, 1995). For example, internal relationship stressors may be related to each individual's interests and hobbies, and external relationship stressors are typically related to the effects of general stress factors. Internal relationship stressors are much less prevalent in the research and often result in shorter committed relationships due to more controllable factors, while external stressors often result in longer lasting relationships due to more subjectively uncontrollable factors (Lee, 2017). While the STM model can encompass internal and external relationship stressors, Karney and Bradbury's vulnerability-stress-adaptation model (1995) was developed to address effects of external stressors on couples. This model emphasizes the importance for partners to provide each other with support and collaborative problem solving. Negative and constant factors of stress commonly result in communication problems, relationship dissatisfaction, and dissolution (Randall & Bodenmann, 2017). Although they are typically perceived as undesirable and thought to increase stress, the results of negative and constant stress factors can increase or decrease stress levels depending on the situation (Sbarra, Hasselmo, & Bourassa, 2015). For example, major life events such as relationship dissolution may be preceded by years of struggles and residual effects of stress for some but others might perceive the events leading up to the dissolution more traumatic than the outcome.

Parenting Stress. Stress is experienced by everyone but parents often report higher levels than non-parents (Frontini et. al, 2016). While there are multiple variations to the definition of stress, the definition of parenting stress is much more universally agreed upon. Deater-Deckard

(1998) define parenting stress as “a psychological reaction to the demands of being a parent” (pg. 315). The difference between factors related to general stress and parenting stress are the added components of the unique and permanent modifications in almost every aspect of a parent’s life (Bateson, Gluckman, & Hanson, 2014). Parents typically experience stress because of the immediate demands of meeting a child’s needs (e.g., food, comfort, and attention), the need to balance a child’s needs with their own needs, and the general social pressure associated with a long-term investment in the child’s growth and wellbeing (Boss, Bryant, & Mancini, 2016). Holmes and Rahe’s life events theory (1967) regards parenting as another major life change that amplifies and adds to current stressors. Lazarus and Folkman’s theory of cognitive appraisal can once again be applied to distinguish general stressors from the uniqueness of parenting stressors. Some researchers suggest that, while general stressors are described as universally applicable, they can be exacerbated and expanded upon when applied to the concept of parenting (Bloy, Garcia, Laumont, Pitt, Sistigu, Stoll, & Drijfhout, 2017; Meadan, Halle, & Ebata, 2010). More specifically, the stress of being a parent often results in higher levels of financial strain, problematic relationships, family strain, difficulties at work, and intensifies the mental and physical illnesses related to chronic stress (Wells, 2012).

Using the previous example of moving and the stress factors related to the process, parents often have additional elements to consider. For example, in addition to the importance of location, job satisfaction, and cost of moving that is universally applicable, parents often have added considerations such as quality of school zones and accessibility to childcare. Similarly, many people would agree that buying a vehicle is stressful. In addition to the cost and satisfaction of the type of vehicle, choices may be limited due to the necessity of specifications

to accommodate a child (i.e., car seat, stroller, etc.). Further, work-related stress can become intensified due to increased expenses of the household and pressure to maintain employment. Caplan's PE fit theory may no longer apply in certain cases whereas the fit between a person and employer alters its focus from job satisfaction to maintaining employment (Morrison, 2017).

Sheets and Craighead (2014) studied the difference between interpersonal stress and noninterpersonal stress and they found that, while there is a bidirectional effect, interpersonal stress was a stronger predictor of chronic stress in parents. Existing stressors are often automatically and internally prioritized and can either be amplified or extinguished based on perceived levels and intensities of stress (Guralnick, 2000). Within that internal prioritization, a flood of new stressors begins to develop that are often directly related to the parenting role and some personal stressors no longer seem as important as they once did (Schönfeld, Brailovskaia, Bieda, Zhang, & Margraf, 2016). For example, saving up for a vacation or cosmetic home renovations may no longer be as significant as saving up a college fund or making functional home renovations.

Stress levels are often at their highest during the beginning and end of pregnancy, which are considered to be the high-risk periods of gestation, while mid-pregnancy levels are considerably lower (DiPietro, Ghera, Costigan, & Hawkins, 2004). Surprisingly, labor and delivery were found to be less stressful than the pregnancy itself as a whole (Reitman, Currier, & Stickle, 2002). One possible explanation for this uses Karney and Bradbury's vulnerability-stress-adaptation model (1995), whereas the perception of events leading up to labor and delivery (i.e., pregnancy) are more stressful and traumatic than the event itself (i.e., labor and delivery) due to the perceived level of control by the parent. Assuming there are no complications,

parenting stress immediately shifts from pregnancy-focused to child-focused after birth; this is predominantly true for first time parents (Cameron et al. 1991). The ebb and flow cycle of stress levels during pregnancy and child birth continues to repeat throughout stages in child development.

Parenting stress often causes a disturbance in the steady state of the family system which can lead to high levels of parent-child dysfunctional interactions, parent-family dysfunctional interactions, and parent-parent dysfunctional interactions (Boss, Bryant, & Mancini, 2016). Research shows that stages of development are correlated with levels of dysfunctional interactions, specific stressors associated with child behaviors/development, and levels of stress experienced by parents (Tehee, Honan, and Hevey, 2009): 1) infant (birth – 18 months), 2) toddler (18 months – 3 years), 3) preschool/childhood (3 – 12 years), and 4) adolescence (12 – 18 years). While researchers disagree about which stages in child development are the most stressful for parents (Deckers, Muris, & Roelofs, 2017; Estes et al., 2009; Osborne et al., 2008) many concluded that the parenting stress levels that are specifically due to the child are the highest during adolescence and lowest during preschool/childhood (Parent, McKee, Rough, & Forehand, 2016). One study explains that adolescence is the time when children are often undergoing puberty and searching for a sense of independence, which can manifest as defiance or rebellion, whereas preschool/childhood is the age where children begin to develop a sense of independence and become slightly less reliant on their parents (Minnes 1988).

Child characteristics and parenting responsibilities also influence a parent's well-being and mental health (Belsky, 1984). Because the stages of development have a direct effect on physical/developmental characteristics and parental responsibilities, they can have a direct effect

on other specific stressors associated with parenting. First, infancy has been linked with the highest levels of stress related to finances; second, toddlerhood encompasses the highest rate of divorce/parental separation; third, the preschool/childhood stage has been shown to have the greatest effect on personal relationships; finally, adolescence often results in the highest level of parent-child dysfunction and stress related to parents feeling as if they are losing control (Cronin, Becher, Christians, & Debb, 2015). Although the stages of development provide insight on the correlation between parenting stress and specific stressors, parenting stress is not determined specifically by the age of a child.

Parenting Stress Associated with ASD. A problem with the concept of parenting stress as it relates to the stages of development is that those stages do not necessarily apply to all children; in fact, children with autism often progress more slowly than typically developing children and sometimes do not progress through all the stages (Watkins, Kuhn, Ledbetter-Cho, Gevarter, & O'Reilly, 2017). Many studies on stress report that parents of children with autism show the most elevated levels of stress and lowest levels of parenting competence associated with parenting (Blacher & Baker, 2017; Hassall, Rose, & McDonald, 2005; Hastings & Johnson, 2001; Tomanik, Harris, & Hawkins, 2004). According to the American Psychiatric Association (2013), autism spectrum disorder (ASD) is a neurodevelopmental disorder that is often defined by deficits in areas of communication, social skills, and motor behavior as compared to typically developing peers. Morrison (2017) classifies the three areas of deficits into three levels: mild (e.g., requires support), moderate (e.g., requires substantial support), and severe (e.g., requires very substantial support). Individuals with ASD often encounter many barriers regarding learning and development in home, school, and community settings (Koegel, Singh, & Koegel,

2010). Blacher and Baker (2017) attribute differences in family dynamics to the diagnostic severity level, the amount of attention required by the parents, the amount of attention provided to siblings, and the perceived level of support to the parents.

Factors of stress are not typically consistent across all domains and rarely occur in isolation. Serious stressors experienced in certain areas of life often spill over into other areas and intensify causes and effects. Pearlin, Aneschel, and Mullan (1997) explain the concept of spill over and accumulation of multiple stressors using their theory of *stress proliferation*. The idea of this theory has already been exemplified when comparing factors of general stress to those of parenting stress. Just as parenting stress levels are shown to be associated with higher than normal levels regarding finances, relationships, family, and work, ASD parenting builds upon the intensity of those and evokes deeper layers of rationales. Further, factors of ASD parenting stress will attempt to demonstrate this theory further.

Circumstantial stress is typically related to situations that arise unexpectedly or when control is taken away (Morrison, 2017). This type of stress can be applied to many situations, but the control Morrison refers to is specific to circumstances that are life-altering and irreversible, such as an autism diagnosis. Wheaton's daily hassles theory (1996) poses that adaptation is part of the job. He differentiates parenting stress from ASD parenting stress by distinguishing typical daily annoyances associated with parenting from extreme circumstances that create a potential threat to a parent's identity or ability to parent effectively. This is often associated with attitudes and perceptions of events and can be subjective due to each individual's personality and perception (Roberts and Woodman, 2017). Similar to the example of moving referenced in *general stress*, two people may each have a child with ASD but their outlook can determine the

level of stress they experience. Parents that feel like they are doing a good job and are actively involved in addressing their child's areas of concern often feel more successful and have a positive parenting outlook, thus decreasing their levels of stress.

Job satisfaction and maintaining employment were two examples of job-related stress factors as they relate to general stress and parenting stress. While they are also applicable to parents of a child with ASD, there are added components of job-related stress due to specific insurance benefits to cover the added expenses due to the needs of the child and schedule flexibility. Children with ASD often have greater needs of medical and specialty services than typically developing children (Christensen, Bilder, Zahorodny, Pettygrove, Durkin, Fitzgerald, & Yeargin-Allsopp, 2016). On average, a child with ASD goes to the doctor 7 times more per year than a typically developing child, and while most insurance policies offer medical coverage for children many do not offer, or limit, important specialty visits to address their child's specific needs (Zan, & Scharff, 2015). Some specialty services include applied behavior analysis (ABA), speech-language therapy, occupational therapy, and physical therapy, which typically have higher co-pays and out-of-pocket costs. Even with insurance that covers all services needed/recommended they are often scheduled multiple days per week and are time consuming. This can have a great effect on the consistency of a parent's work schedule and may limit their job options. For working parents that have less flexible schedules, the frequencies of services for their child are less available which can result in feelings of parenting failure and further increase levels of stress (Deckers, Muris, & Roelofs, 2017).

While single-income households are decreasing overall, they are most prevalent among families that have a child with ASD (McAuliffe, Cordier, Vaz, Thomas, & Falkmer, 2017).

McAuliffe, Cordier, Vaz, Thomas, and Falkmer found that the primary reasons for only one parent to work is so that the other can be available to take their child to appointments and to avoid the cost of specialty child-care. Although the cost of living is rising and they have the added financial strain due to their unique circumstances, a family that has a child with ASD may have fewer opportunities to contribute financially and often accrue debt more rapidly than a typical family (Coddington, 2013). Not only is money one of the primary contributing factor to general stress it is intensified with the cost of being a parent and is even further strengthened with the cost of being a parent of a child with ASD. The stress of job stability and earning potential not only takes a toll financially, it affects self-worth and self-esteem which are highly correlated with levels and effects of stress (Lee, C., Lee, J., & August, 2011).

The financial strain and stress related to family income is often carried over to the child and can influence the child's externalizing problem behaviors (e.g., flapping, inappropriate/abnormal vocalizations, property destruction, physical aggression, and self-injury) in various settings (Lee, C., Lee, J., & August, 2001). Some parents report that they often feel belittled, embarrassed, and judged when in public places with their children who may exhibit these types of behaviors (Burrell, Ives, & Unwin, 2017). For example, some parents may consider a typical trip to the grocery store with a child to include repetitive requests or statements (i.e., "can I have this", "I want that") or whining that, while annoying, can be manageable and can quickly subside, whereas a typical trip to the grocery store for a parent with a child that has ASD might include displays of screaming, flopping to the floor, or hitting that can result in stares, whispering, or being approached by others with negative comments. Public embarrassment can frequently result in avoidance of public outings, thus secluding themselves

and their children from social events which can hinder the development of social skills, cause further delays in communication, and increase the frequency and intensity of problem behaviors. In addition to the effects of the child directly, avoidance of public outings often builds up resentment, increase parents' feelings of loneliness, decrease expressions of warmth and affection, and can lead to feelings of incompetency as a parent (Murdoch, Rahman, Barsky, Maunula, & Cawthorpe, 2014). Not only do the factors related to feelings of parental incompetency result in unwanted effects on the child, they also have similar effects on relationships.

The systematic-transactional stress model (STM) that describes the level of interdependence between a couple and the mutual influence each has over one another can be applied in this situation. This idea can once again be demonstrated using Randal and Bodenmann's example of rowing on a lake. While the goal is still the same, to get from point A to point B, the location of point B might be different for each rower. Unless each rower agrees on where point B is, they will either be rowing against one another or one may give up. If not in sync, their display of disjointedness will continue to increase stressors related to the event directly. Perceptions of point B in these situations can include differences of opinions regarding their child's wellbeing, education, social support, and long-term goals. While a couple's internal relationship stressors (i.e., cohesiveness and compatibility between the two in a relationship) may be strong, the external relationship stressors (i.e., effects of their child's diagnosis on daily life, roles as a parent, and roles in the relationship) can often be too great to overcome.

Independent of the effects education has on employment opportunities and income, a parent's level of formal education has a significant influence on ASD parenting stress (Corwyn

& Bradley, 2002). There are multiple explanations for this but a recurring hypothesis is that well-educated individuals have higher self-esteem, feelings of competence, and are more self-motivated than less-educated individuals (Osborne, McHugh, Saunders, & Reed, 2008). ASD parenting stress affected by self-esteem has been associated with optimal levels of parenting, number of services their child receives, and overall progression of their child's development. Additionally, well-educated parents are more likely to notice signs of abnormal development and seek services sooner. ASD is typically diagnosed around 2 years old, and early intervention is the biggest predictor of child development and achievement (Salomone, Charman, McConachie, & Warreyn, 2016); therefore, the earlier the diagnosis the more beneficial early intervention services. The importance of early intervention is often relayed during a diagnosis but additional supports and the overwhelming information often results in immediate panic and elevated stress (Christensen, Bilder, Zahorodny, Pettygrove, Durkin, Fitzgerald, & Yeargin-Allsopp, 2016). Studies have shown that well-educated parents are better able to gather and make sense of the significant information available, which allows them to process faster and make timely decisions to support early intervention (Baker-Ericzen, Brookman-Frazee, & Stahmer, 2005).

Although it was originally applied to university students, Ortega-Maldonado and Salanova (2018) proposed the idea of psychological capital (PsyCap). PsyCap is a psychological construct that is goal driven and focuses on task performance. Their idea proposes that positive psychological internal resources such as self-efficacy, optimism, hope, and resilience (Luthans, Avolio, & Youssef, 2007) are self-motivated constructs that are more prevalent in formally educated individuals. Self-motivation is an important attribute for all parents to facilitate their child's success, but is even more important for parents whose child has additional, more unique

needs. Hobfoll's conservation of resources theory (COR) is a stress theory that describes the motivation necessary for humans to protect current resources and pursue new ones (1988). The basis of COR theory assumes that while an ASD parent is likely to experience high levels of stress and the physical and mental effects that accompany them, their focus quickly shifts to obtain information, support, and other resources that can meet their goals, address their child's needs, and mitigate their own stress.

Mitigating Stress

Stressful events range from temporary, minor inconveniences to permanent, life-altering situations that can require adjustments or adaptation over time (Huggett, 2018). Adjusting and adapting are the two primary concepts found throughout literature that refer to methods of addressing stressful events in order to lessen the negative effects (Segerstrom & Miller, 2004). Essentially, *adjusting* is modifying the environment within the original parameters (Helff & Glidden, 1995) and *adapting* is modifying the environment for a purpose not anticipated and typically outside the original parameters (Trute, Benzies, Worthington, Reddon, & Moore, 2010). For example, if the volume of the radio is too loud you can adjust the volume, but if the radio is too loud and the volume control is broken you may have to adapt, or acclimate to the volume the way it is. These two are very similar and are frequently used interchangeably but their subtle differences often become more obvious as stress levels rise and the permanency of events become more clear (McCubbin & Patterson, 1983).

Similar to the concepts of adjusting and adapting, *coping* and *mitigating* are two primary concepts related to relieving stress. *Coping* is typically what is meant by adjusting something that contributes to the targeted stressor (i.e., turning the loud volume down) and *mitigating* is

more often referred to as the adaptive responding to the targeted stressor (i.e., learning how to deal with the broken volume) (Elliot, Thrash, & Murayama, 2011). Again, these two concepts are not typically distinguished but are both required to relieve stress. Stang and Loth (2011) describe the concept of mitigation as proactive coping because it better encompasses the entire event and focuses on minimizing all the negative effects. For the purposes of this paper mitigating and coping will be used interchangeably and both will refer to minimizing negative effects of stress while encompassing stress reduction techniques.

Figley and McCubbin (2016) classify coping into two distinct categories: dysfunctional and functional. They discuss the strong prevalence of dysfunctional coping among this population which includes denial and avoidance and the detrimental effects of this coping style on their family life. Through denial and avoidance, parents are often unable to effectively address and manage the social and emotional development and cohesiveness of their family. The disturbances that go unaddressed can often result in chaos that extends outside the home, affecting school, work, relationships, and other means of social functioning (Lai, Goh, Oei, & Sung, 2015). Functional coping encompasses a sense of perception and situational control, which then can then be addressed using a wide variety of more specific stress mitigation techniques (Figley & McCubbin, 2016).

Exercise, meditation, and expansion of social opportunities are recurring strategies discussed throughout literature that aim to reduce all types of stress (Mikolajczak, Raes, Avalosse, & Roskam, 2018). While these strategies have also been used to specifically target ASD parenting, unique modifications to the strategies are often necessary for similar effects regarding reduction levels compared to general stressors (Burrell, Ives, & Unwin, 2017). For

example, many studies focus primarily on expanding one's social circle in order for the individual to take a break from primary stressors, such as going out with friends. Although this same strategy is recommended for ASD parents, their circle expansion is likely to include other parents with similar stressors. The problem with this is that social opportunities are intended for individuals to take time for themselves (Ashman, Banks, Philip, Walley, & Stanfield, 2017) but social opportunities for ASD parents are often more focused around their child (Azad & Hashemi, 2014).

While perception often dictates effectiveness of mitigating techniques, social circles for ASD parents mentioned above is one example of functional coping. Functional Coping, also referred to as parental activism, involves in-depth searches of resources and services that aim to elicit societal changes that provide more opportunities and support for families with special needs (Darling, 1979). Social support from the community and by those in similar situations can often alleviate emotional burdens families carry (Cardwell, 1956; Shere, 1957). Many authors determined that parents who surround themselves with people they can relate to regarding specific stressors can lead to the process of self-awareness (Bell et al., 2008; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Self-awareness in and of itself can be an important motivator for the desire to alleviate stress and in learning to adapt and react. Meichenbaum (2017) explains that the process of becoming aware of the impact a person is having as a result of stressful situations is a step toward the development of problem-focused strategies. Problem-focused strategies involve concentrating on the aspects of a situation that identify the sources of the problems and generating solutions to those specific problems (Dardas & Ahmad, 2015).

Parenting stress has been identified as a prevalent and persistent problem associated with various emotional and physical effects that can negatively affect a parent's ability to function productively, effectively, and efficiently (Sumra & Schillaci, 2015). More importantly, a parent's inability to perform their role as a parent is directly correlated with the perceived success and happiness of their child (Olsaretti, 2018). Given the importance of effective parenting and the fact that parents of children with ASD are at an increased risk for significant parenting stress, there will always be a need for expansion and development of stress-reduction interventions (Davis, 2015).

Measuring Stress

Stress is a difficult concept to measure because of subjectivity within definitions, causes, and effects (Gross & Seebaß, 2014). Many researchers have developed ways to measure and categorize stress in general terms but here are no instruments that fully encompass objective quantitative measures of stress (Azak, Murison, Wentzel-Larsen, Smith & Gunnar, 2013). Existing measurement tools are typically mutually exclusive, either focusing specifically on the causes or effects of stress (Allen, Kennedy, Cryan, Dinan, & Clarke, 2014). For example, questionnaires are most frequently administered to determine the causes of stress and medical tests are used most frequently to determine effects of stress (e.g., blood pressure and heart rate) but one without the other only addresses half the problem (Falk, Norris, & Quinn, 2014). While researchers argue which is a better overall measurement technique, many agree that without identifying the causes of stress, addressing the effects are often short-term solutions (Vliegenthart, Noppe, Van Rossum, Koper, Raat, & Van den Akker, 2016). In other words, unless the source of the problem is identified and addressed, the effects will not dissipate, just as

pulling weeds will make a yard look better for a little while but unless they are pulled from the root they will continue to grow.

Research has repeatedly determined that common factors have been found to heavily affect one's physical and emotional wellbeing (Foody, 2015; Seaward, 2017). Continuing with the premise that two people may experience differences in stress during the same situation, two people may read questions on a stress assessment and perceive them differently (Gray, 2002). Responses to stress are primarily determined by individual perceptions or problems and recognizing the degree to which stress affects those events is an important step to begin addressing the specific causes. Many instruments have been used throughout history in attempt to measure levels of stress experienced by individuals and universally apply their findings. Some have been used for decades and are still found to accurately represent causes and levels while some have become outdated and are no longer considered relevant

Brief Encounter Psychosocial Instrument (BEPSI). An early measurement instrument was introduced by Frank and Zyzanski in 1988 that investigated the interaction effects between physical and emotional reactions. The Brief Encounter Psychosocial Instrument (BEPSI), as they termed it, utilized questionnaires that contained both open-ended questions and Likert-type scale items. Because the development of more thorough and extensive instruments began to emerge, the BEPSI was no longer deemed an effective tool to quantify levels of stress. Frank and Zyzanski's version of the BEPSI was modified in 1996 by Huh to include only five, close-ended questions, focused on stress related to more broad experiences related to stress, and converted into Korean (BEPSI-K) (Lee, Sung, Kim, Lee, Park, & Shim, 2015). Each question of this version is scored as a yes/no (1/0 point) and the five responses are totaled and divided by 5 to

obtain the level of stress. Similar to the original BEPSI, this questionnaire was designed to obtain a stress score reflective of an extrinsic demand, intrinsic demand, attributional demand, demand uncertainty and demand perspective. Since the development of the BEPSI more thorough self-assessments have been created and render smaller instruments such as the BEPSI non-functional. (Vliegenthart, Noppe, Van Rossum, Koper, Raat, & Van den Akker, 2016).

Social Readjustment Rating Scale (SRRS). Unlike the short-lived BEPSI, the social readjustment rating scale (SRRS) that was developed decades earlier by Holmes and Rahe (1967) and is still being used. The SRRS is one of the earliest measurement tools that focused on specific life events as they relate to self-reported degrees of stress. 43 events are listed and assigned a numerical value; participants are asked to note whether the event applies to them and points are added together to calculate a stress score. Of the proposed 43 events that were directly correlated with varying levels of stress, parents typically reported higher stress scores than non-parents (Noone, 2017). Subsequently, this assessment tool has been replicated many times and parenting has been found to be a consistent cause of higher than normal stress levels (Lazarus, 1990). Over the years, measurements on the causes and effects of stress have evolved to determine the extent to which known stressor events have on an individual's level of stress. A copy of the full assessment is presented in Appendix A.

Daily Stress Inventory (DSI). The DSI is a unique assessment that aims to measure daily stressful events, looking specifically at the previous 24-hours before administration (Brantley, Waggoner, Jones, & Rappaport, 1987). The concept regarding the application of stressful events in specific contexts and as they relate to specific individuals proposed by Lazarus and his colleagues (Lazarus, 1966; Lazarus & Folkman, 1984; Lazarus *et al.*, 1985) is the underlying

concept for this measurement tool. Their 58-item assessment is most interested in determining consistencies and inconsistencies over time by comparing the scores of multiple time periods to the same individual. A copy of the full assessment is presented in Appendix B

Parenting Stress Instruments

The measurement assessments above are a few examples of the countless tools found throughout existing literature to quantify stress levels. While many determine commonalities between the key factors (e.g., relationships, work, and finances) only a few have been created to examine the relationship between the key factors and specific characteristics of the participants until recent years (Dhabhar, 2014; Samios & Baran, 2018; Parish, Thomas, Williams, & Crossman, 2015). A problem with this is that some factors found to elicit higher levels of stress in general may be non-applicable to specific populations. For example, The SRSS ranks the top three stressors as marital related; this automatically lowers the stress score for non-married individuals and renders the tool as less reliable unless comparing scores between married individuals. Because many factors within an assessment are not applicable to entire populations scores are still compared between the groups and typically result in skewed data (Rivard, Terroux, Parent-Boursier, & Mercier, 2014).

Although many of these tools result in skewed data related to specific populations, they are still vital components to measure stress. They have been regarded as the building blocks for the development of stress measurement tools that focus on specific populations, including parenting (Issler & Nestler, 2018). Parenting stress measurement tools are designed to systematically measure and quantify the level of stress parents experience as a result of having a child. While there are stress measurement assessments specifically targeted for parents of a child

with autism, such as the childhood autism related scale (CARS) and autism parenting stress index (APSI), these tools focus more on the child's attributes specifically rather than the overall experience of parenting a child with autism (Phetrasuwan & Shandor Miles, 2009; Silva & Schalock, 2012). Two of the most common parenting assessment tools that are applied to ASD parenting are the Parent Stress Scale (PSS) and the Parenting Stress Index (PSI)

Parental Stress Scale (PSS). The PSS was created in 1995 by Berry and Jones as a tool to measure levels of stress experienced by parents in order to improve parenting skills, which they believed to be directly correlated with parenting stress. This assessment is comprised of 18 items related to positive (i.e., emotional benefits and personal development) and negative (i.e., demands on resources and restrictions) themes of parenting and is evaluated using a 5-point Likert-type scale. The overall possible scores range from 18 – 90 and higher scores are correlated with higher levels of stress. The PSS was developed as an alternative to the time consuming 101-item Parenting Stress Index (Abidin, 1983). A copy of the full assessment is presented in Appendix C.

Parenting Stress Index – Short Form (PSI-SF). The PSI was originally created in 1983 but multiple versions have developed over the years (Abidin, 1983; Abidin, 1995; Abidin 2012). The original version was cited as one of the pioneer measurement tools to focus specifically on parenting but was heavily criticized due to its overwhelming number of questions (Perera et al., 2017). To address the concerns and fleeting popularity, in 1995 Abidin modified his assessment and developed a shorter version (PSI-SF); the PSI-SF is comprised of 36 questions evaluated using a 5-point Likert-type scale. The 36 questions are comprised of four subscales which include *Parental Distress* (i.e., the extent to which the parent is experiencing stress in his/her role

as a parent), *Parent-Child Dysfunctional Interaction* (i.e., the extent to which the parent believes that his/her child does not meet their expectations and their interactions are not satisfying), *Difficult Child* (i.e., how easy or difficult the parent perceives his/her child), and *Defensive Responding* (i.e., answering in a way that he/she thinks will make them look best). The PSI-SF is under copyright and therefore, no sample questions are available to display.

CHAPTER 3: METHODOLOGY

This study used a quasi-experimental research design to answer the following research questions:

1. *For parents with a child diagnosed with autism spectrum disorder, what are the effects of an online ABA training on their parenting stress levels immediately following the training and after a 7-10 day delayed posttest?*
2. *What are the effects of the online ABA training on general stress levels reported by parents before and immediately following the training?*

This chapter includes an overview of the study's participants, instrumentation, intervention, data collection procedures, and data analysis.

Participants

Participants for this study consisted of parents that have a child diagnosed with ASD. Each participant's child must have been receiving ABA services at the time of their participation and, due to the parameters of the instrument, they must have been between 1 month and 12 years of age. Participants were not selected based on the demographics of themselves or their child, including their race, gender, date of diagnosis, or severity of diagnosis, although demographic data was collected that included race, gender, socioeconomic status (SES), relationship status, relationship status with child's other biological parent, number of children, number of children with autism, and the perceived behavior problems of their child. In order to have sufficient power to demonstrate a medium effect size (Faul et al., 2013) the required sample size was 28.

Recruitment of participants was initially targeted to parents of a child with ASD that received ABA services in a clinical setting, but due to the lack of participants and the willingness

of parents whose child receives ABA at a private school to participate, children attending an ABA based private school were included. These participants were recruited from privately-run ABA clinics and ABA based private schools for children with autism in the southeastern United States. Participants were recruited in groups of 5 to 10 until 28 total participants completed all of the trainings and assessments. A total of 39 parents participated in at least the first phase but only 28 completed the entire sequence.

Demographics Survey. An email was distributed to each participant individually with an outline of the research study and participant requirements (Appendix D). The email included a demographics survey using Qualtrics software that contained a consent form and 11 questions related to their age, ethnicity, parental status (i.e., mother, father, other), average household income, current relationship status, current relationship status with their child's other biological parent, education, the number of children they have, the number of children with autism that they have, how many hours of ABA services received per week, and the amount of time their child has been receiving ABA services. In addition to their demographics, each participant was asked to rate their child's problem behavior using a Likert-type scale with possible responses ranging from 1 = "Mild" to 5 = "Severe" and their current level of stress using a Likert-type scale ranging from 1 = "Low Stress" to 10 = "High Stress".

Of the 28 participants 20 were mothers and 8 were fathers, with ages ranging from 28 to 55 years old. 24 participants were Caucasian, 3 were Hispanic, and 1 was Asian/Pacific Islander. On a scale of 1-5 the reported severity of child problem behaviors ranged from 1-5 and averaged 3.5; additionally, on a scale of 1-10 the self-reported stress levels ranged from 5-10 and averaged 7.89. The average number of hours receiving ABA therapy was 17.68 per week and 42.86% had

been receiving more than three years of services. These figures and the rest of the demographic data are displayed in Table 1.

Table 1

Participant Demographics

Variables	N	Mean	Range	Total %
Parental Status				
Mother	20			71.43%
Father	8			28.57%
Other	0			
Age		38.57	29-55	
Ethnicity				
Caucasian/White	24			85.72%
African American/Black	0			0%
Hispanic	3			10.71%
Asian	1			3.57%
Other	0			0%
Household Income				
\$0 - \$24,999	3			10.71%
\$25,000 - \$49,999	2			7.14%
\$50,000 - \$74,999	10			35.71%
\$75,000 +	13			46.43%
Current Relationship Status				
Married	19			67.86%
Divorced	3			10.71%
In a Relationship	4			14.29%
Single	1			3.57%
Other	1			3.57%
Current Relationship with Other Parent				
Together	21			75%
Separated	6			21.43%
Other	1			3.57%
Education				
High School	8			28.57%
Some College	5			17.86%
College Graduate	8			28.57%
Graduate Degree	7			25%
Total # of Children		2.32	1-4	
Total # of Children with Autism		1.11	1-2	
Avg Hours ABA/week		17.68	4-40	
Duration Receiving ABA Services				

Less than 6 Months	8	28.57%
6 Months – 1 Year	2	7.14%
1 – 2 Years	3	10.71%
2 – 3 Years	3	10.71%
More than 3 Years	12	42.86%
Severity of Problem Behavior		
1 - mild	1	3.57%
2	2	7.14%
3	10	35.71%
4	12	42.86%
5 - severe	3	10.71%
Self-Reported Stress		
1-4 - low	0	0%
5	1	3.57%
6	2	7.14%
7	8	28.57%
8	7	25%
9	8	28.57%
10 - high	2	7.14%

Instrumentation

After reviewing the existing literature on frequently used assessment tools, and based on the conceptual framework of this study, I decided to utilize an online survey that provides a quantitative representation of stress scores. Online assessments have been shown to have higher completion rates than other forms and are typically preferred by participants and assessors (Nulty, 2008). Participants have also reported that electronic surveys which include personal, sensitive, or controversial subject matter they are more likely to be answered truthfully, thus, providing a more accurate representation of the answers (Wright, 2005). While online surveys are more likely to yield accurate responses related to personal, sensitive, or controversial subject matter than other forms, that is not true for all of them and few account for inaccurate (defensive) responding due to these types of questions (Verschuere, Crombez, De Clercq, & Koster, 2004).

Parenting Stress Index – Short Form (PSI-SF). While there are multiple online assessment tools that measure parenting stress (Holzman, Burt, Edwards, Rosinski, & Bridgett, 2017; Huang, Costeines, Kaufman, & Ayala, 2014; Kasari, Gulsrud, Paparella, Hellemann, & Berry, 2015), the Parenting Stress Index – Short Form accounts for inaccurate/defensive responses were be used for this study (i.e., answering in a way that he/she thinks will make them look best). Through a secured server, participants were emailed a link to access the assessment and provided with directions for completion. Once complete, the assessment software sent the administrator an automatic confirmation email with the results completion duration and breakdown of scores. Additionally, the company that holds the copyright to this assessment automatically organizes a log for each individual participant to ensure accurate coding and minimize loss of data.

The PSI-SF (Abidin, 1995) was used to assess parental stress at pretest, immediate posttest, and delayed posttest. This index is comprised of 36 items and is rated on a 5-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree”. The PSI-SF is composed of four subscales: 1) *Parental Distress* (i.e., the extent to which the parent is experiencing stress in his/her role as a parent”), 2) *Parent-Child Dysfunctional Interaction* (i.e., the extent to which the parent believes that his/her child does not meet their expectations and their interactions are not satisfying) 3) *Difficult Child* (i.e., how easy or difficult the parent perceives his/her child), and 4) *Defensive Responding* (i.e., answering in a way that he/she thinks will make them look best). Previous research on the PSI-SF has provided strong evidence for the validity of these subscales with acceptable reliability (Mori, Ujiie, Smith, & Howlin, 2009; Östberg, Hagekull, & Wettergren, 1997; Sepa, Frodi, & Ludvigsson, 2004; Waltz, Strickland, & Lenz, 2005). The

original article by Abidin (1995) reported internal reliability coefficients (Cronbach's alpha) of .80 to .87 for the three subscales related to parenting. More recently a study by Shawler and Sullivan in 2017 determined Cronbach's alphas for Total Stress was .91 and the subscales of parent distress, parent-child dysfunctional interactions, and difficult child were .85, .84, and .87, respectively. Reliability for the current sample will be calculated using coefficient alpha or a latent-variable reliability.

Intervention

Online Training. *Behavior Frontiers Applied Behavior Analysis (ABA) Training Program with an Autism Specialization* was provided to all participants immediately upon completion of the PSI-SF pretest. The Mission Statement of Behavior Frontiers (2018) is as follows: "Our goal is to provide training participants with high-quality, video-based training programs that teach all the ABA skills necessary to effectively interact with children with autism or other special needs to help them reach their potential," as is written on homepage of their website. Behavior Frontiers offers an "Online Family Training Package" that includes assessments, certification trainings, seminars, manuals, and other training materials in addition to the online training videos. For the purpose of this study only the training videos were provided to participants.

After researching, sampling, and discussing online training options, very few trainings are available that focus specifically on parent or family training, although there are a great number of options for individuals pursuing professional ABA certification. There are two primary reasons I chose Behavioral Frontiers' training program for my study: it was created specifically for my target population, and the program takes 4.5 hours to complete, versus the 30+ hours for most other similar training programs. The 22 online training videos include 15

Units which are broken down into three categories: *Introduction to ABA*, *Increasing Appropriate Behaviors*, and *Decreasing Problem Behaviors*. The topics, units, sections, and descriptions for each are displayed in Table 2.

Table 2

Training Video List

Topics	Units	Sections	Descriptions
Introduction			
	1. Autistic Disorder		A thorough description of all the diagnostic characteristics of autism shown in videos of students demonstrating the symptoms
	2. Applied Behavior Analysis (ABA)		An overview of how all people learn each day through interactions with their surrounding environment
Increasing Appropriate Behaviors			
	3. Discrete Trial Teaching (DTT)	a. The Discrete Trial, SD, & Response	Descriptions and guidelines regarding how to teach students new skills using the first two components of the discrete trial
		b. Reinforcement	Detailed information on how to reward students in order to increase their appropriate behaviors
		c. Other Reinforcement Concepts	Useful information on how often to reward your student, as well as options on how to present rewards using the Premack Principle and token systems
		d. Motivation	Explanations of how students are motivated, as well as guidelines on how instructors can increase motivation
		e. Preference Assessments and Inter-trial Interval	Ideas on how to figure out what your student likes before beginning a learning situation, as well as how to transition in between learning trials
	4. Prompting, Fading, & Differential Reinforcement		Numerous examples on how to help students learn to respond correctly, as well as the key to helping students become independent

5. Discrimination Teaching & Probing

Helpful guidelines on how to teach students to identify the difference between new concepts, as well as ways to figure out what students still need to learn

6. Shaping, Chaining, & Task Analysis

Information on how to break complex skills down into teachable parts, as well as how to link those parts back together to teach the entire skill

7. Generalization

Ideas on how to encourage students to use their new skills in the natural setting and over time once formal instruction is done

8. Data Collection for Discrete Trial Teaching (DTT)

Detailed instructions on how to take and graph data in order to track students' day-to-day progress

9. Verbal Behavior

An overview of how language functions as behavior, as well as descriptions of the different types of verbal behavior students can learn

10. Naturalistic Teaching Strategies (NATS)

Various methods and examples of how to teach students new skills, including verbal behavior, in their natural setting

Decreasing Problem Behaviors

11. Functional Behavior Assessment (FBA)

Essential information on why problem behaviors occur, which is helpful in choosing interventions to reduce those problem behaviors

12. Reductive Interventions

a. Extinction

A variety of examples on how to reduce problem behaviors by not allowing students to be rewarded for problem behaviors

	b. Differential Reinforcement Procedures	Even more examples on how to reduce problem behaviors by teaching students appropriate behaviors while not rewarding their problem behaviors
	c. Antecedent Interventions	Techniques for preventing problem behaviors from occurring in the first place
13. Other Restrictive Interventions		A summary of how and when interventions, such as time-out and response cost, might be used to reduce problem behaviors
14. Data Collection for Problem Behaviors		Options on how to collect and graph data to show that problem behaviors are reducing
15. Ethical Considerations		Highlights on how to act ethically to ensure appropriate service delivery and protection for those involved in the behavior intervention program

Procedures

This study required each participant to complete six separate tasks in order for their data to be included: 1) a demographic survey, 2) completion of PSI-SF pretest, 3) training completion within 7 days of access, 4) completion of a follow-up questionnaire, 5) completion of the PSI-SF posttest within 24 hours post-training, and 6) completion of the second delayed posttest within 7 to 10 days after the initial posttest. Emails for completion of tasks 1, 2, and 3 were sent at the same time, emails for completion of tasks 4 and 5 were sent together a week later, and an email regarding completion for task 6 was sent 7 to 10 days after completion of the PSI-SF Posttest. The 7 to 10 day delayed posttest was included in order to determine whether the effects of the training could maintain for a period of time after the training was completed.

SI-SF Pretest. The PSI-SF was purchased and distributed through PariConnect Inc.. The online distribution was sent through the PariConnect website and included a message asking the participant to complete the assessment and contained information regarding an additional email that would be sent with instructions on how to access the training videos (Appendix E). Each email that was sent through this website contained an individual link that allowed each participant's results to be automatically tracked and filed into their own folder for each assessment.

Training Videos. Each participant was sent an email with instructions on how to create a personal account to access and complete the training videos (Appendix F). Unlike the PSI-SF, the program for the training videos did not send automated emails informing of participant completion so each person was asked to send an email or text message informing of their completion. The training videos program did not include a progress or completion report so a tracking sheet was created and sent to all participants for optional use (Appendix G).

Follow-up Questionnaire. Immediately after each participant completed their training videos, an email was sent giving the remaining instructions (Appendix H) which included a follow-up questionnaire that was distributed using Qualtrics software and was comprised of five questions regarding the training. Included in the five questions each participant was once again asked to rate their current level of stress using a Likert-type scale ranging from 1 = "Low Stress" to 10 = "High Stress".

PSI-SF Posttest. The PSI-SF posttest was distributed to each participant in conjunction with the follow-up questionnaire immediately after the completion of the training videos. The PSI-SF posttest was identical to the PSI-SF pretest and distribution was the same with the

exception of the message in the email, which informed the participants that a final PSI-SF assessment would be distributed in 7 to 10 days (Appendix I).

PSI-SF Delayed Posttest. A final copy of the PSI-SF was distributed to each participant 7 to 10 days after the PSI-SF posttest was completed. Once again, the PSI-SF delayed posttest was identical to the PSI-SF pretest and PSI-SF posttest but contained a message informing the participants that this was their final step (Appendix J).

Data Analysis

To determine the effect training had on parenting stress levels, I used a repeated measures analysis of variance (RMANOVA) in this quasi-experimental design to analyze the data. To reduce the likelihood of threats to internal and external validity, this study used a within-subjects design. Participants were selected based on a convenience sample due to the nature of the grouped population with each participant serving as their own baseline. Conditions were equivalent between each participant, including independent (i.e., 3-points in time) and dependent (i.e., stress) variables. A descriptive analysis of data (i.e., means, standard deviations, and ranges) for both independent and dependent variables in the study, as well as reliability checks for internal consistency of scales, is discussed in Chapter 4. Because demographic variables were not of interest, no covariates were included in the analysis.

Chapter 4: Results and Data Analysis

The purpose of this study was to investigate changes that occur in parents' stress levels following the introduction and completion of an online training program designed for parents of children with autism spectrum disorder (ASD) to further explore the concepts and principles of applied behavior analysis (ABA). A repeated measures ANOVA (RMANOVA) methodology was chosen to answer the following research questions: 1) *For parents with a child diagnosed with autism spectrum disorder, what are the effects of an online ABA training on their stress parenting levels immediately following the training and after a 7 to 10 day delayed post-test?* and, 2) *What are the effects of the online ABA training on general stress levels reported by parents before and immediately following the training?*

Descriptive Statistics

The raw scores generated by the PSI-SF are comprised of scores related to the areas of parental distress, parent-child dysfunctional interaction, and difficult child. Raw scores for the PSI-SF pretest ranged from 84 to 155 and averaged 129.39, raw scores from the PSI-SF posttest ranged from 84 to 140 and averaged 115.79, and the raw scores from the PSI-SF delayed posttest ranged from 86 to 133 and averaged 117.68. Although the raw scores decreased from pretest to posttest then increased from posttest to delayed posttest, the standard deviations all decreased, showing the least amount of variance for the delayed posttest. It is important to note that the follow-up questionnaire contained a question asking participants if they encountered any significant, life altering events since their enrollment in this study, all participants reported that there were none. Table 3 displays the means and standard deviations for the PSI-SF pretest, posttest, and delayed posttest.

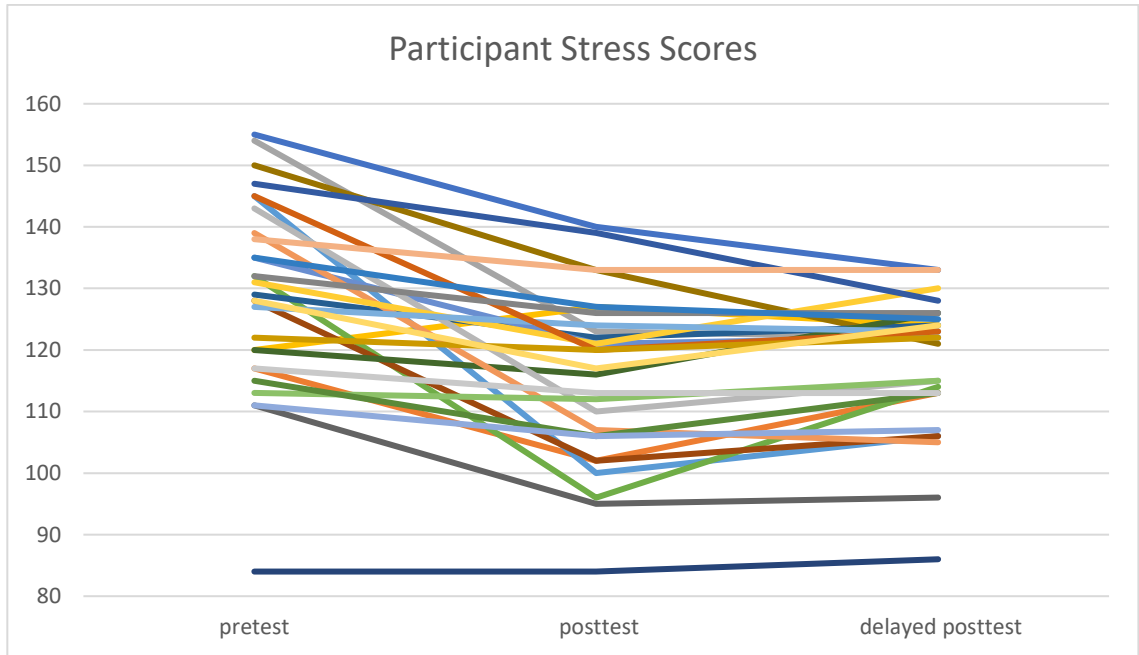
Table 3

PSI-SF Pretest, Posttest, and Delayed Posttest Scores

	Mean	SD	Range
PSI-SF Pretest	129.39	15.72	84 – 155
PSI-SF Posttest	115.79	13.79	84 – 140
PSI-SF Delayed Posttest	117.68	11.02	86 – 133

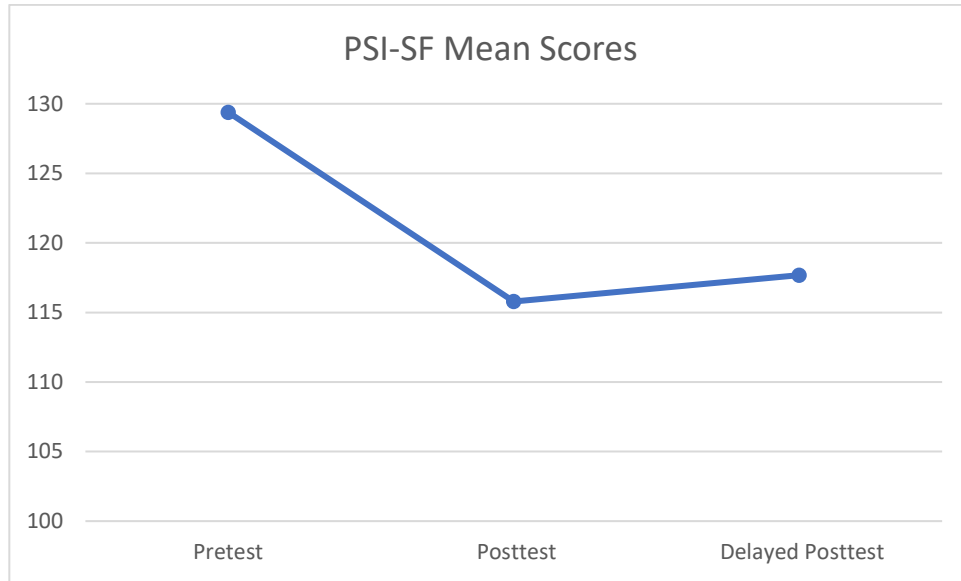
Figure 2 graphically displays the mean scores from Table 6 to raw scores for each participant for all three points in time. It shows that the majority of individual participant scores shows a relatively steep decline from pretest to posttest and only a slight increase between posttest to delayed posttest. It is important to note that one participant’s stress levels were significantly lower than all other scores during all three tests (pretest = 84 compared $M=129.39$, posttest = 84 compared to $M=115.79$, and delayed posttest = 86 compared to $M=117.68$) but shows a minimal amount of variance between the three ($SD=1.15$).

Figure 2. Participant Stress Scores for Pretest, Posttest, and Delayed Posttest



The data within the descriptive statistical analysis has confirmed that the PSI-SF scores decreased from pretest ($M=129.39$) to posttest ($M=115.79$) with a slight increase between the posttest and delayed posttest ($M=117.68$) while remaining well below pretest scores. This is displayed in Figure 3.

Figure 3. PSI-SF Mean Scores

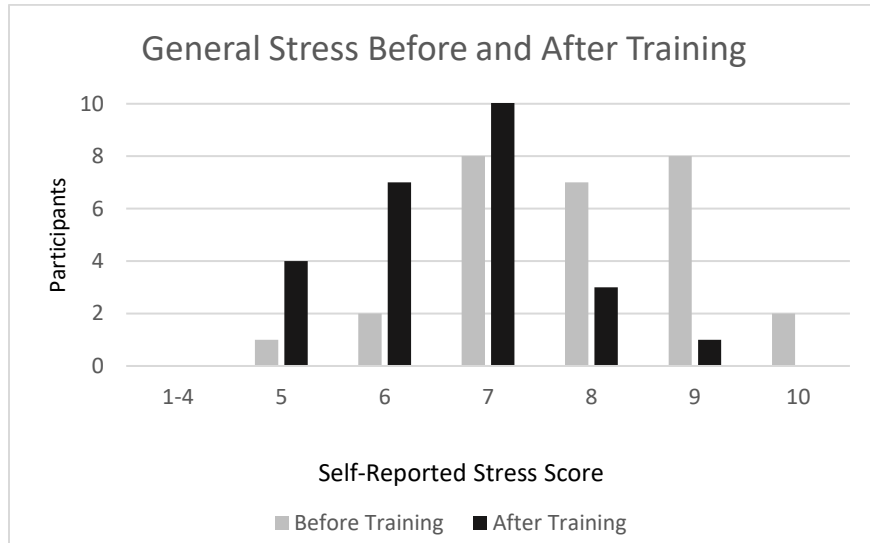


Seven participants reported the same pre and post general stress scores and all others reported reduced scores, there were no increased self-reported stress scores. The scores ranged from 5-9 and averaged 6.6, compared to the self-reported stress before the training that ranged from 5-10 and averaged 7.89. The pre and post self-reported stress level scores are displayed in Table 4. The frequency of each level reported (i.e., 1-10) is displayed in Figure 4.

Table 4

<i>General Stress Score (Scale of 1-10)</i>			
	Mean	SD	Range
Pre-Intervention	7.89	1.23	5 – 10
Post-Intervention	6.62	1.02	5 – 9

Figure 4. General Stress Before and After Training



Parenting Stress

To address the effects of the online ABA training on parental stress levels I focused on the PSI-SF pretest, posttest, and delayed posttest scores. Descriptive statistics show that there is a correlation between the effects of the training and levels of stress tested by the PSI-SF. A test of a sphericity indicated that the assumption of sphericity for the repeated measures ANOVA (RMANOVA) was violated ($W=.55, df=2, p<.001$). Given this violation, the Hyuhn-Feldt correction is used for all the resulting RMANOVA interpretations. The RMANOVA for the training on parental stress was significant with a large effect ($F=25.21, df=1.43, p<.001, p\eta^2=.48$; Cohen, 1988). Additionally, stress was reduced most for those parents for whom their children had the highest reported problem behaviors – and this effect was also large ($F=4.23, df=4, p=.01, p\eta^2=.42$).

To further investigate the changes between each timepoint (i.e., pretest, posted, and delayed posttest) a repeated contrast within the RMANOVA analysis was used. The contrast revealed that the difference between the pre and posttest was significant and large ($F=32.09$, $df=1$, $p<.001$, $p\eta^2=.54$). However, the difference between the posttest and the delayed posttest was not significant ($F=2.54$, $df=1$, $p=.12$).

General Stress

With regard to the effects of the ABA training on *general* levels of stress I focus on the pre and posttest measures of general stress. Descriptive statistics show a large effect for general stress before the training ($M=7.89$) and after the training ($M=6.62$). For general stress, the RMANOVA was significant with a large effect ($F=34.41$, $df=1$, $p<.001$, $p\eta^2=.58$; Cohen, 1988). The unanticipated effects of this training on general stress are important indicators of the effectiveness of the intervention and may demonstrate generalizability across types of stress.

Chapter 5: Discussion

This study was developed in order to provide a novel strategy for parents with a child with autism spectrum disorder (ASD) to decrease their levels of stress related to parenting. This research investigated changes that occurred in parenting stress levels following the introduction and completion of an online training designed for parents of children with ASD to further explore the concepts and principles of applied behavior analysis (ABA). This chapter is intended to provide educators and other professionals that work alongside parents with a child with ASD an effective method that can decrease their levels of stress and encourage a collaborative approach to address areas of concern.

This study has provided unique opportunities for parents to obtain formal training related to the services their child is currently receiving but may know little about. Because each participant served as their own baseline, the effectiveness of the training can be tracked for each individual. Also, because each person reported their own perceived level of general stress before and after the training it is possible to compare how they reported feeling in addition to how their scores compared to one another.

Effectiveness of Intervention

This study began with the intention of answering a single research question regarding the effects of the intervention on parenting stress levels, however, a second research question was added regarding the effects of the intervention on general stress levels. The results of this study yielded two major findings: 1) the level of parent stress was largely diminished as a result of the online ABA training, and 2) the online ABA training showed a large effect on general stress for the same parents. Results of the RMANOVA supported the hypothesis that the post-training

stress test scores would decrease from baseline but the delayed posttest scores would increase slightly compared to the posttest scores while remaining below baseline levels. Results of the data analysis also indicated that general stress reduced significantly from levels reported before the training to levels reported immediately after the training.

General stress was assessed before and after the intervention using a single question scored on a Likert-type scale: “What is your current level of stress?”. There was no definition or mention of stress related to their child, so it could be assumed that their reports included a variety of noninterpersonal stressors (ex., occupational and financial) and interpersonal stressors (ex., romantic partners, peers, and family) unrelated to their child with ASD. This study was designed to answer that question seven days apart in order to minimize the opportunity for those common stressors, unrelated to their child, to have a large effect on their general stress levels. Regardless of the timeframe, opportunities for other noninterpersonal and interpersonal stressors remained available so the second survey contained a question asking whether there had been any significant changes since the first survey; all participants answered “no”.

Problem Behavior and Stress

One finding that was not targeted by the intervention but was found to be a contributing factor to the highest reported stress level was the parents’ perceived level of behavioral issues of their child. Research has repeatedly shown that for parents with a child with ASD, inappropriate behavioral issues are the highest contributing factor to increased stress levels (Pennefather, Hieneman, Raulston, & Caraway, 2018). Frequent inappropriate behavioral issues include self-injurious behaviors, aggression, tantrums, elopement, and self-stimulatory behavior (Moskowitz et.al., 2017; Fritz, Jackson, Stiefler, Wimberly, & Richardson, 2017; Lanovaz & Huxley, 2017).

Problem behaviors such as those can range from mild to severe depending on the child, parent's perception, frequency, and intensity of the behaviors (Alhosani, Singh, & Al Nahyan, 2017).

Increasing appropriate behaviors was a predominant topic discussed in the training but a large portion of it also focused on decreasing problem behaviors. This section of the training included antecedent interventions, explanations regarding the functions of behaviors, and reduction strategies. Additionally, the trainings provided a great deal more video modeling and specific examples of the behavior reduction strategies than in the other topic areas. The parents of children that were reported to have more behavioral issues had higher levels of assessed and general stress but also demonstrated the most significant decreases in stress. Using a scale of 1 to 5, ranging from mild to severe, the majority of participants rated their child's problem behavior to be a 4 ($n = 12$) or 3 ($n = 10$) with only a few scoring their child's problem behaviors as a 1 ($n = 1$), 2 ($n = 2$), or 5 ($n = 3$).

Implications for Clinical Practice

ABA is primarily delivered in clinical and school settings which does not allow for a great deal of interaction or collaboration between therapist/teacher, parent, and child. Interaction and collaboration are necessary in order to develop an effective approach where all team members understand the demands of their roles in the process. Although mindfulness participation (i.e., attending to what is happening) is important, providing parents with tools and encouraging development of skills will allow for more informed participation that is likely to promote family involvement. While progress is still likely to occur without a great deal of collaboration, generalization is the primary component in order to ensure the progress is maintained over time and in a variety of settings with multiple people (Mace & Nevin, 2017).

When this study was first being developed, the participants were defined as parents of a child with autism that received ABA therapy in a clinical setting. As I began recruiting participants, I contacted various clinics offering trainings to their parents, but it quickly became clear that I would have to expand my parameters to find my 28 participants. After this realization, I contacted a private school that specializes in ABA for children with autism. After speaking with the director of the school she expressed similar concerns regarding the lack of parent training and parent involvement, as well as the quality of knowledge the parents possessed related to the therapy the children are receiving. Further, she agreed that stress plays a large role in the child's and teacher's performance as well as their general demeanor, which has a cyclical effect on the quality of their performance. Coincidentally, she requires that the parents of her students receive a specific amount of training and collaboration each year but was having a difficult time providing training options. She willingly provided the parents of her students with information regarding my study which enabled me to reach my participant goal.

I recently followed up with her to see if she noticed any changes within her teachers, students, or parents and she informed me that the parents that participated in the trainings have been more collaborative with their child's teachers and they seem to be more forthcoming with their concerns regarding their educational goals and behavioral issues. The teachers have also reported that parents have begun asking more questions about how they can implement strategies at home for behaviors that have reduced at school. After this conversation I looked specifically at the data of these participants and found that the effect on stress reduction is larger for these participants compared to clinic-based participants.

Implications for Educational Leadership

As discussed in Chapter 3, path-goal theory of leadership provides an effective model for outlining the roles of the subordinates and leaders that explains how leaders can help subordinates along the path to goal attainment and productivity (Northouse, 2013). Northouse offers multiple definitions and variations of what leadership is and ways to improve leadership qualities in individuals. One recurring theme that he discusses in his book is that leadership is intended to influence others to seek adaptive and constructive change in order to achieve a common goal. In order for leadership to be executed effectively teamwork must occur between at least two individuals to reach a common goal, which is dependent on what the team feels is attainable and important and is driven by motivation (Jermier, 1996). The idea of educational leadership is also defined various ways and is not limited to the confines of educational institutions. Thomson and Stoll (2017) explain that the concept of educational leadership can simply be the teamwork between a child and parent or a teacher and parent to develop and navigate the path and remove obstacles to reach a goal.

The concept of training in a specific area relevant to the subordinate's life to reduce stress is universal and not exclusive to the parameters of this study. As is discussed previously, stress affects mental and physical wellbeing, decreases productivity, and can disrupt one's lifestyle in various aspects. Therefore, in order to maximize leadership practices, it is optimal for the leader and subordinate to minimize stress in order to be successful. Research clearly shows that knowledge boosts self-esteem, increases productivity, and reduces stress directly and indirectly related to the specific stressor (Whalley, 2017). If the concept of learning about a topic relevant

to a parent of a child with autism reduces stress then, according to Whalley, not only does that training reduce stress, but it has the potential to boost self-esteem and increase their productivity.

Although this study specifically investigated the effects of an online training on parent stress, the concepts discussed throughout this paper can be applied to educational leadership in many respects. For example, adequate trainings are often not provided for paraprofessionals in special education classrooms within public school settings (Brown & Devecchi, 2013). The lack of training often leads to the accidental reinforcement of previously acquired skills and inappropriate behaviors of the children (Giangreco, 2005), feelings of incompetence (Mallet, 2017), and degenerative team collaboration (Malachowski, 2018). Because maintaining high quality teachers is ultimately the responsibility of the school's leadership team (i.e., principals and vice principals) the results of stress experienced by their staff can make that difficult and can also elicit additional stressors for the school's leadership team.

The results of this study may be able to provide a strategy to address the elevated levels of stress experienced by parents with a child with ASD. It has also been determined that stress experienced by a person can directly or indirectly affect others (Um & Harrison, 1998). As indicated earlier in this study, parents feel that their child's education plays a major role in their associated stress, and thus, parent stress indirectly affects teacher stress which can indirectly affect principal stress. Not only can teachers benefit from carryover effects of decreased stress levels in parents, a deeper understanding of educational procedures and principals may contribute to a more receptive parent.

Implications for Future Research

Despite using a small sample size, this study has the potential to guide future research in areas related to stress reduction techniques given the statically significant and large effects of the results. The need for stress reduction techniques aimed toward this population is critical and few strategies exist that address these issues specifically. The statistically significant results of this study suggest the need for similar larger-scale replications related to parenting stress and ABA training. Additionally, because stress is a universal concept, the idea of trainings that address potential causes of stress regardless of specific contributing factors is likely to yield similar results.

A study was conducted by Jacobs et.al. (2017) that aimed to determine the effects of stress reported by paraprofessionals (i.e., teacher aides/teaching assistants) working in special education classrooms. They found that paraprofessionals experienced higher rates of burnout and depression, developed a large number of sleep disorders, and reported lower job satisfaction than other faculty positions at their place of employment, including custodial staff members. The authors were able to positively correlate these effects with the amount of reported work stress. The stress reduction technique proposed by Jacobs was not unlike existing stress reduction techniques for general stress and did not utilize any training in their intervention. If the concepts of stress experienced by paraprofessionals could be approached with specific training like the one utilized in this study, their teaching effectiveness and general health and wellbeing are likely to improve. Applying the concept of an online ABA based training for paraprofessionals that work with children with ASD could be a beneficial follow up study.

Limitations

Several limitations exist within this study. First, the training program that was chosen did not contain any tracking software. In other words, each participant's progress and/or completion of the training program was not able to be monitored and no completion notifications were sent out. The participants' reports were based on the honor system and it is possible that some may not have fully completed each module in the training. Some training programs do contain progress updates that track engagement and some even include mandatory quizzes at the end of each module to ensure satisfactory completion. Many of the online training programs that were considered for this study did contain similar tracking software, however, each of these trainings were at least double the time commitment than the one chosen. As a result of using a program that had no tracking software, there is no way to ensure proper completion of the training.

Secondly, because participants were parents whose child was already receiving ABA services, they may have yielded different results than parents whose child had not ever received ABA services. Many professionals in the field might assume that parents with a child receiving ABA have some knowledge of the concepts and principles within the field, whereas it could also be assumed that parents with a child not receiving ABA could have less knowledge. Limiting this study to participants that were assumed to have some prior knowledge decreases the generalizability of the results. It would be very interesting to see whether these results would be consistent using a broader parenting population.

The vast majority of online ABA training programs are not free, in fact, only 2 free programs were found that seemed to be all encompassing of the material. The prices for the non-free trainings ranged from approximately \$50 - \$1000. Trainings that are accompanied by a fee

paid for by the participant might be more motivating for the parents to find some benefit.

Participants that have a financial investment in a training program may have shown significantly different results.

Conclusion

After a thorough examination of existing research on parenting stress, factors related to stress, and stress mitigation techniques, results from this study appear to provide a unique contribution to current literature. Strategies for stress reduction techniques for specific populations are often uniform, and the results of this study have identified a novel strategy to address an issue that has been found to cause mental and physical health declines. Additionally, this study has provided unique opportunities for parents to obtain formal training related to services their child is currently receiving but may know little about. Whether decreases in general stress levels and parenting stress levels are due to acquiring specific knowledge, learning strategies to target areas of concern, gaining confidence in dealing with specific issues, or another underlying benefit, these trainings served as a catalyst to mitigate some stress the research participants were experiencing.

The follow-up survey contained specific questions requesting feedback regarding the trainings and encouraged other questions or comments. Although the majority of feedback was positive, some parents felt the training was aimed more toward adults trying to enter the field of ABA as a professional and others reported that it was too simplistic or basic and didn't provide enough examples to accompany the information to be applied. Regardless of their specific feedback, each person reported that they gained some practical knowledge that they found to be

beneficial and the assessment results indicate a clear correlation between the training and reduction of general stress as well as parenting stress levels.

The findings in this research suggest that strategies are available that can serve as stress reduction techniques although they may have been designed for different purposes. All assessment and trainings already existed and nothing new was created for this study. ABA trainings are readily available on countless websites and offered by companies throughout the United States. Although trainings can vary in price and can be quite expensive, free trainings are often available within the autism community. Private clinics and therapists are often receptive to offering parent training and frequently are willing to collaborate during scheduled sessions.

Chapter 2 discusses various factors related to stress as well as the effects of stress on mental and physical health, relationships, and other areas within one's personal life. While some of the most common contributors or challenges as they relate to parenting stress are not addressed in the current intervention (e.x., child's health, successes, friendships, and other intellectual and physical developmental delays), the challenges to an individual that are described by Holmes and Rahe's life events theory (1967) explains that many critical life events, regardless of specifics, are related to a person's perceptions. Perceptions are a form of awareness and are unique to each individual, which makes them unable to be adequately defined or conceptualized (Efrom, 1969).

Stress is a relative term that is based on one's perception of situations and circumstances (Minnwegen et. al, 2018). Building upon the life events theory, Averill (1973) applied the concept of perception as it relates to control and found that control can be gained through knowledge, regardless of whether the knowledge facilitates actual changes. If the life events

theory is correct, the argument can be made that, if stress is related to control and control is related to the acquisition of knowledge then a correlation can be made between the amount of stress one experiences to the amount of knowledge one possesses.

References

- Abidin, R. R., & Abidin, R. R. (1990). *Parenting stress index (PSI)*. Charlottesville, VA: Pediatric Psychology Press.
- Abidin, R. R. (1995). *Parenting Stress Index, Third Edition: Professional Manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- Abidin, R. R. (2012). *Parenting Stress Index—Fourth Edition (PSI-4)*. Lutz, FL: Psychological Assessment Resources.
- Abidin, R.R. (1983). *Parenting Stress Index: Manual, Administration Booklet, and Research Update*. Charlottesville: Pediatric Psychology Press.
- Adamo, S. A. (2017). The stress response and immune system share, borrow, and reconfigure their physiological network elements: Evidence from the insects. *Hormones and Behavior*, 88, 25-30.
- Alhosani, A. A., Singh, S. K., & Al Nahyan, M. T. (2017). Role of school leadership and climate in student achievement: The mediating role of parental involvement. *International Journal of Educational Management*, 31, 843-851.
- Allen, E. S., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2010). Hitting home: Relationships between recent deployment, posttraumatic stress symptoms, and marital functioning for Army couples. *Journal of Family Psychology*, 24, 280-288.
- Allen, A. P., Kennedy, P. J., Cryan, J. F., Dinan, T. G., & Clarke, G. (2014). Biological and psychological markers of stress in humans: Focus on the trier social stress test. *Neuroscience & Biobehavioral Reviews*, 38, 94-124.
- Allen, S. and Knott, F. (2016) How do children's challenges to function and participation impact

- maternal stress? A survey of mothers of children with suspected developmental coordination disorder. *New Zealand Journal of Occupational Therapy*, 63, 29-37.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing
- Ashman, R., Banks, K., Philip, R. C., Walley, R., & Stanfield, A. C. (2017). A pilot randomised controlled trial of a group based social skills intervention for adults with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 43, 67-75.
- Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological bulletin*, 80, 286-303
- Azad, E. M., & Hashemi, S. Z. (2014). The Effectiveness of Mindfulness Training in Improving the Quality of Life of the War Victims with Post Traumatic stress disorder (PTSD). *Iranian Journal of Psychiatry*, 9, 228-236.
- Bailey, J. S., & Burch, M. R. (2017). *Research methods in applied behavior analysis*. New York: Routledge.
- Baker-Ericzén, M. J., Brookman-Frazee, L., & Stahmer, A. (2005). Stress levels and adaptability in parents of toddlers with and without autism spectrum disorders. *Research and Practice for Persons with Severe Disabilities*, 30, 194-204.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28, 117-148.
- Bateson, P., Gluckman, P., & Hanson, M. (2014). The biology of developmental plasticity and the Predictive Adaptive Response hypothesis. *The Journal of Physiology*, 592, 2357-2368.

- Bazzano, A., Wolfe, C., Zylowska, L., Wang, S., Schuster, E., Barrett, C., & Lehrer, D. (2015). Mindfulness based stress reduction (MBSR) for parents and caregivers of individuals with developmental disabilities: A community-based approach. *Journal of Child and Family Studies, 24*, 298-308.
- Bearss, K., Johnson, C., Smith, T., Lecavalier, L., Swiezy, N., Aman, M., & Sukhodolsky, D. G. (2015). Effect of parent training vs parent education on behavioral problems in children with autism spectrum disorder: a randomized clinical trial. *JAMA, 313*, 1524-1533.
- Bechard, A. R., Cacodcar, N., King, M. A., & Lewis, M. H. (2016). How does environmental enrichment reduce repetitive motor behaviors? Neuronal activation and dendritic morphology in the indirect basal ganglia pathway of a mouse model. *Behavioural Brain Research, 299*, 122-131.
- Behavior Frontiers (2018). Behavior Frontiers Mission Statement – Retrieved from <http://training.behaviorfrontiers.com/>
- Bell, D. S., Harless, C. E., Higa, J. K., Bjork, E. L., Bjork, R. A., Bazargan, M., & Mangione, C. M. (2008). Knowledge retention after an online tutorial: A randomized educational experiment among resident physicians. *Journal of General Internal Medicine, 23*, 1164-1171.
- Benson, P. R. (2006). The impact of child symptom severity on depressed mood among parents of children with ASD: The mediating role of stress proliferation. *Journal of Autism and Developmental Disorders, 36*, 685-695.
- Berry, J. O., & Jones, W. H. (1995). The parental stress scale: Initial psychometric evidence. *Journal of Social and Personal Relationships, 12*, 463-472.

- Blacher, J., & Baker, B. L. (2017). Collateral effects of youth disruptive behavior disorders on mothers' psychological distress: adolescents with autism spectrum disorder, intellectual disability, or typical development. *Journal of Autism and Developmental Disorders, 24*, 1-12.
- Bloy, N., Garcia, P., Laumont, C. M., Pitt, J. M., Sistigu, A., Stoll, G., & Drijfhout, J. W. (2017). Immunogenic stress and death of cancer cells: Contribution of antigenicity vs adjuvanticity to immunosurveillance. *Immunological Reviews, 280*, 165-174.
- Bode, A. A., George, M. W., Weist, M. D., Stephan, S. H., Lever, N., & Youngstrom, E. A. (2016). The impact of parent empowerment in children's mental health services on parenting stress. *Journal of Child and Family Studies, 25*, 3044-3055.
- Bodenmann, G., Randall, A. K., & Falconier, M. K. (2016). Coping in couples: The Systemic Transactional Model (STM). *Couples coping with stress: A cross-cultural perspective*. New York: Routledge.
- Boss, P., Bryant, C. M., & Mancini, J. A. (2016). *Family stress management: A contextual approach*. Thousand Oaks: Sage Publications.
- Bowden, R. A., Slichter, S. J., Sayers, M., Weisdorf, D., Cays, M., Schoch, G., & Fisher, L. (1995). A comparison of filtered leukocyte-reduced and cytomegalovirus (CMV) seronegative blood products for the prevention of transfusion-associated CMV infection after marrow transplant. *Blood, 86*, 3598-3603.
- Brantley, P. J., Waggoner, C. D., Jones, G. N., & Rappaport, N. B. (1987). A daily stress inventory: Development, reliability, and validity. *Journal of Behavioral Medicine, 10*, 61-73.

- Brignell, A., Williams, K., Prior, M., Donath, S., Reilly, S., Bavin, E. L., & Morgan, A. T. (2017). Parent-reported patterns of loss and gain in communication in 1-to 2-year-old children are not unique to autism spectrum disorder. *Autism, 21*, 344-356.
- Broadhurst, P. L. (1957). Emotionality and the Yerkes-Dodson law. *Journal of Experimental Psychology, 54*, 345.
- Brown, J., & Devecchi, C. (2013). The impact of training on teaching assistants' professional development: Opportunities and future strategy. *Professional Development in Education, 39*, 369-386.
- Bucher, B., & Lovass, O. I. (2017). Operant procedures in behavior modification of children. *Foundations of Behavioral Therapy, 36*, 27-36.
- Buck, A. A., & Neff, L. A. (2012). Stress spillover in early marriage: The role of self-regulatory depletion. *Journal of Family Psychology, 26*, 698-709.
- Burrell, A., Ives, J., & Unwin, G. (2017). The experiences of fathers who have offspring with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 47*, 1135-1147.
- Camaioni, L. (2017). The development of intentional communication: A re-analysis. *New perspectives in early communicative development*. New York: Routledge.
- Caplan, R. D. (1987). Person-environment fit theory and organizations: Commensurate dimensions, time perspectives, and mechanisms. *Journal of Vocational Behavior, 31*, 248-267.
- Cardwell, V. E. (1956). *Cerebral palsy: Advances in understanding and care*. New York: Association for the Aid of Crippled Children.

- Centers for Disease Control and Prevention (CDC). (2014). Prevalence of autism spectrum disorder among children aged 8 years - autism and developmental disabilities monitoring network, 11 sites, United States. *MMWR Surveillance Summaries*, *63*, 1–21.
- Center for Disease Control and Prevention. (2018). Leading Cause of Death in Males. Retrieved from <https://www.cdc.gov/healthequity/lcod/men/2015/race-ethnicity/index.htm>
- Center for Disease Control and Prevention. (2018). Leading Cause of Death in Females. Retrieved from <https://www.cdc.gov/women/lcod/2015/index.htm>
- Chan, K. K. S., & Lam, C. B. (2017). Trait Mindfulness Attenuates the Adverse Psychological Impact of Stigma on Parents of Children with Autism Spectrum Disorder. *Mindfulness*, *8*, 984-994.
- Chang, S. J., Koh, S. B., Kang, D., Kim, S. A., Kang, M. G., Lee, C. G., & Kim, J. W. (2005). Developing an occupational stress scale for Korean employees. *Korean Journal of Occupational and Environmental Medicine*, *17*, 297-317.
- Chishima, Y., Mizuno, M., Sugawara, D., & Miyagawa, Y. (2018). The Influence of Self-Compassion on Cognitive Appraisals and Coping with Stressful Events. *Mindfulness*, *9*, 1907-1915.
- Christensen, D. L., Bilder, D. A., Zahorodny, W., Pettygrove, S., Durkin, M. S., Fitzgerald, R. T., & Yeargin-Allsopp, M. (2016). Prevalence and characteristics of autism spectrum disorder among 4-year-old children in the autism and developmental disabilities monitoring network. *Journal of Developmental & Behavioral Pediatrics*, *37*, 1-8.
- Coddington, A. (2013). *Keynesian Economics*. New York: Routledge.

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1994). Perceived stress scale. *Measuring stress: A guide for health and social scientists. Journal of Health and Social Behavior, 24*, 386-396.
- Cohen, R. A. (2011). Yerkes–Dodson Law. In J. S. Kreutzer, J. DeLuca, & B. Caplan (Eds.) *Encyclopedia of clinical neuropsychology* (pp. 2737-2738). New York: Springer.
- Collins, J. A., & Olson, I. R. (2014). Knowledge is power: How conceptual knowledge transforms visual cognition. *Psychonomic Bulletin & Review, 21*, 843-860.
- Colten, M. (2017). *Adolescent stress: Causes and consequences*. New York: Routledge.
- Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. E. (2001). Coping with stress during childhood and adolescence: Problems, progress, and potential in theory and research. *Psychological Bulletin, 127*, 87.
- Crnic, K. A., Neece, C. L., McIntyre, L. L., Blacher, J., & Baker, B. L. (2017). Intellectual Disability and Developmental Risk: Promoting Intervention to Improve Child and Family Well-Being. *Child Development, 88*, 436-445.
- Cronin, S., Becher, E., Christians, K. S., & Debb, S. (2015). Parents and stress: Understanding experiences, context, and responses. St. Paul: University of Minnesota Extension, Children, Youth, and Family Consortium.
- Curtin, C., Hubbard, K., Anderson, S. E., Mick, E., Must, A., & Bandini, L. G. (2015). Food selectivity, mealtime behavior problems, spousal stress, and family food choices in

- children with and without autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 45, 3308-3315.
- Dardas, L. A., & Ahmad, M. M. (2015). For fathers raising children with autism, do coping strategies mediate or moderate the relationship between parenting stress and quality of life? *Research in Developmental Disabilities*, 36, 620-629.
- Darling, R. B. (1979). *Families against society: A study of reactions to children with birth defects*. London: Sage.
- Davis, S. (2017). Framing the path goal leadership theory with the relationship of academic validation on student experiences in online courses. *Journal of Global Leadership*, 5, 83-90.
- Davis, N. O., & Carter, A. S. (2008). Parenting stress in mothers and fathers of toddlers with autism spectrum disorders: Associations with child characteristics. *Journal of Autism and Developmental Disorders*, 38, 1278-1291.
- DeLongis, A., & O'Brien, T. (1990). An interpersonal framework for stress and coping: An application to the families of Alzheimer's patients. In M. A. P. Stephens, J. H. Crowther, S. E. Hobfoll, & D. L. Tennenbaum (Eds.), *Series in applied psychology. Stress and Coping in Later-Life Families* (pp. 221-239). Washington, DC: Hemisphere Publishing Corp.
- Deater-Deckard, K. (2008). *Parenting stress*. Connecticut: Yale University Press.
- Deater-Deckard K (1998) Parenting stress and child adjustment: some old hypotheses and new questions. *Clinical Psychology: Science and Practice*, 5, 314–332.

- Deckers, A., Muris, P., & Roelofs, J. (2017). Being on your own or feeling lonely? Loneliness and other social variables in youths with autism spectrum disorders. *Child Psychiatry & Human Development, 48*, 828-839.
- Dempsey, I., Keen, D., Pennell, D., O'Reilly, J., & Neilands, J. (2009). Parent stress, parenting competence and family-centered support to young children with an intellectual or developmental disability. *Research in Developmental Disabilities, 30*, 558-566.
- Dhabhar, F. S. (2014). Effects of stress on immune function: the good, the bad, and the beautiful. *Immunologic Research, 58*, 193-210.
- DiPietro, J. A., Ghera, M. M., Costigan, K., & Hawkins, M. (2004). Measuring the ups and downs of pregnancy stress. *Journal of Psychosomatic Obstetrics & Gynecology, 25*, 189-201.
- Dixon, D. R., Burns, C. O., Granpeesheh, D., Amarasinghe, R., Powell, A., & Linstead, E. (2017). A program evaluation of home and center-based treatment for autism spectrum disorder. *Behavior Analysis in Practice, 10*, 307-312.
- Drotter, S. (2003). The leadership pipeline: The right leader in the right job. In *Management Forum Series, 22*, 1-7.
- Drucker, P. F. (1997). The global economy and the nation-state. *Foreign Affairs, 159-171*.
- Edwards, A. G., Brebner, C. M., McCormack, P. F., & MacDougall, C. J. (2018). From 'parent' to 'expert': How parents of children with autism spectrum disorder make decisions about which intervention approaches to access. *Journal of Autism and Developmental Disorders, 48*, 1-17.

- Efron, R. (1969). What is perception?. In *Proceedings of the Boston Colloquium for the Philosophy of Science* (pp. 137-173). Springer,.
- Elliot, A. J., Thrash, T. M., & Murayama, K. (2011). A longitudinal analysis of self-regulation and well-being: Avoidance personal goals, avoidance coping, stress generation, and subjective well-being. *Journal of Personality, 79*, 643-674.
- Ennis, N. E., Hobfoll, S. E., & Schröder, K. E. (2000). Money doesn't talk, it swears: How economic stress and resistance resources impact inner-city women's depressive mood. *American Journal of Community Psychology, 28*, 149-173.
- Falconier, M. K., Nussbeck, F., Bodenmann, G., Schneider, H., & Bradbury, T. (2015). Stress from daily hassles in couples: Its effects on intradyadic stress, relationship satisfaction, and physical and psychological well-being. *Journal of Marital and Family Therapy, 41*, 221-235.
- Falk, N. H., Norris, K., & Quinn, M. G. (2014). The factors predicting stress, anxiety and depression in the parents of children with autism. *Journal of Autism and Developmental Disorders, 44*, 3185-3203.
- Figley, C. R., & McCubbin, H. I. (Eds.). (2016). *Stress and the family: Coping with catastrophe*. New York: Routledge.
- Fischer, M. (1990). Parenting stress and the child with attention deficit hyperactivity disorder. *Journal of Clinical Child Psychology, 19*, 337-346.
- Foa, E. B., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report measure of posttraumatic stress disorder: The posttraumatic diagnostic scale. *Psychological Assessment, 9*, 445.

- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior, 21*, 219-239.
- Foody, C., James, J. E., & Leader, G. (2015). Parenting stress, salivary biomarkers, and ambulatory blood pressure: A comparison between mothers and fathers of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 45*, 1084-1095.
- Forte, S. (2017). *An Evaluation of the Generalization and Maintenance Outcomes of a Competency-Based Training Program Aligned with the BACB® Registered Behavior Technician™ Task List*. Boston: Endicott College.
- Frank, S. H., & Zyzanski, S. J. (1988). Psychosocial instrument. *The Journal of Family Practice, 26*, 533-539.
- Fritz, J. N., Jackson, L. M., Stiefler, N. A., Wimberly, B. S., & Richardson, A. R. (2017). Noncontingent reinforcement without extinction plus differential reinforcement of alternative behavior during treatment of problem behavior. *Journal of Applied Behavior Analysis, 50*, 590-599.
- Gates, J. A., Kang, E., & Lerner, M. D. (2017). Efficacy of group social skills interventions for youth with autism spectrum disorder: A systematic review and meta-analysis. *Clinical Psychology Review, 52*, 164-181.
- Giangreco, M. F., & Broer, S. M. (2005). Questionable utilization of paraprofessionals in inclusive schools: Are we addressing symptoms or causes? *Focus on Autism and Other Developmental Disabilities, 20*, 10-26.

- Gill, A. S., Flaschner, A. B., & Shachar, M. (2006). Mitigating stress and burnout by implementing transformational-leadership. *International Journal of Contemporary Hospitality Management, 18*, 469-481.
- Ginn, N. C., Clionsky, L. N., Eyberg, S. M., Warner-Metzger, C., & Abner, J. P. (2017). Child-directed interaction training for young children with autism spectrum disorders: Parent and child outcomes. *Journal of Clinical Child & Adolescent Psychology, 46*, 101-109.
- Giovagnoli, G., Postorino, V., Fatta, L. M., Sanges, V., De Peppo, L., Vassena, L., & Mazzone, L. (2015). Behavioral and emotional profile and parental stress in preschool children with autism spectrum disorder. *Research in Developmental Disabilities, 45*, 411-421.
- Gladstone, B. M., McKeever, P., Seeman, M., & Boydell, K. M. (2014). Analysis of a support group for children of parents with mental illnesses: Managing stressful situations. *Qualitative Health Research, 24*, 1171-1182.
- Gray, D. E. (2002). 'Everybody just freezes. Everybody is just embarrassed': Felt and enacted stigma among parents of children with high functioning autism. *Sociology of Health & Illness, 24*, 734-749.
- Griffith, G. M., Hastings, R. P., Petalas, M. A., & Lloyd, T. J. (2015). Mothers' expressed emotion towards children with autism spectrum disorder and their siblings. *Journal of Intellectual Disability Research, 59*, 580-587.
- Gross, C. & Seebaß, K., (2014). *The standard stress scale (SSS): Measuring stress in the life course*. Bamberg: Leibniz Institute for Educational Trajectories, National Educational Panel Study.

- Gwynette, M. F., Morriss, D., Warren, N., Truelove, J., Warthen, J., Ross, C. P., & Borckardt, J. (2017). Social skills training for adolescents with autism spectrum disorder using facebook (project rex connect): A survey study. *JMIR Mental Health, 4*, 68-74.
- Haigh, S. M., Walsh, J. A., Mazefsky, C. A., Minshew, N. J., & Eack, S. M. (2018). Processing speed is impaired in adults with autism spectrum disorder, and relates to social communication abilities. *Journal of Autism and Developmental Disorders, 8*, 2653-2662.
- Haskett, M. E., Ahern, L. S., Ward, C. S., & Allaire, J. C. (2017). " Factor structure and validity of the parenting stress index-short form": Corrigendum.
- Haskett, M. E., Ahern, L. S., Ward, C. S., & Allaire, J. C. (2006). Factor structure and validity of the parenting stress index-short form. *Journal of Clinical Child & Adolescent Psychology, 35*, 302-312.
- Hastings, R. P. (2007). Longitudinal relationships between sibling behavioral adjustment and behavior problems of children with developmental disabilities. *Journal of Autism and Developmental Disorders, 37*, 1485-1492.
- Hastings, R. P., & Taunt, H. M. (2002). Positive perceptions in families of children with developmental disabilities. *American journal on mental retardation, 107*, 116-127.
- Helff, C. M., & Glidden, L. M. (1998). More positive or less negative? Trends in research on adjustment of families rearing children with developmental disabilities. *Mental Retardation, 36*, 457-464.
- Hobfoll, S. E. (1988). *The ecology of stress*. Routledge: Taylor & Francis.

- Hobfoll, S. E., & Shirom, A. (2001). Conservation of resources theory: Applications to stress and management in the workplace. In R. T. Golembiewski (Ed.), *Handbook of organizational behavior* (pp. 57-80). New York: Marcel Dekker.
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied psychology, 50*, 337-421.
- Holmes & Rahe (1967). The social readjustment rating scale. *Journal of Psychosom Research, 11*, 213-218.
- Holzman, J. B., Burt, N. M., Edwards, E. S., Rosinski, L. D., & Bridgett, D. J. (2017). Negative (but not positive) parenting interacts with infant negative affect to predict infant approach: Evidence of diathesis-stress. *Infancy, 23*, 471-480.
- Howard, S., & Frank, M. D. (1938). Psychosocial instrument. *The Journal of Family Practice, 26*, 533-539.
- Huang, C. Y., Costeines, J., Kaufman, J. S., & Ayala, C. (2014). Parenting stress, social support, and depression for ethnic minority adolescent mothers: Impact on child development. *Journal of Child and Family Studies, 23*, 255-262.
- Huggett, R. J. (2018). *Biomarkers: biochemical, physiological, and histological markers of anthropogenic stress*. Boca Rotan: CRC Press.
- Huh, H. Y., Pearce, S. F., Yesner, L. M., Schindler, J. L., & Silverstein, R. L. (1996). Regulated expression of CD36 during monocyte-to-macrophage differentiation: Potential role of CD36 in foam cell formation. *Blood, 87*, 2020-2028.

- Hutchison, L., Feder, M., Abar, B., & Winsler, A. (2016). Relations between parenting stress, parenting style, and child executive functioning for children with ADHD or autism. *Journal of Child and Family Studies, 25*, 3644-3656.
- Iadarola, S., Levato, L., Harrison, B., Smith, T., Lecavalier, L., Johnson, C., & Scahill, L. (2018). Teaching parents behavioral strategies for autism spectrum disorder (ASD): Effects on stress, strain, and competence. *Journal of Autism and Developmental Disorders, 48*, 1031-1040.
- Issler, O., & Nestler, E. J. (2018). The molecular basis for sex differences in depression susceptibility. *Current Opinion in Behavioral Sciences, 23*, 1-6.
- Jacobs, R. H., Guo, S., Kaundinya, P., Lakind, D., Klein, J., Rusch, D., & Atkins, M. (2017). A pilot study of mindfulness skills to reduce stress among a diverse paraprofessional workforce. *Journal of Child and Family Studies, 26*, 2579-2588.
- Jansen, K. J., & Kristof-Brown, A. (2006). Toward a multidimensional theory of person-environment fit. *Journal of Managerial Issues, 18*, 193-212.
- Jermier, J. M. (1996). The path-goal theory of leadership: A subtextual analysis. *The Leadership Quarterly, 7*, 311-316.
- Kakouros, S., & Räsänen, O. (2016). Perception of sentence stress in speech correlates with the temporal unpredictability of prosodic features. *Cognitive Science, 40*, 1739-1774.
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology, 36*, 567-589.

- Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*, 1-39.
- Kasari, C., Gulsrud, A., Paparella, T., Helleman, G., & Berry, K. (2015). Randomized comparative efficacy study of parent-mediated interventions for toddlers with autism. *Journal of Consulting and Clinical Psychology, 83*, 554-563.
- Kasemsap, K. (2016). The roles of e-learning, organizational learning, and knowledge management in the learning organizations. In *Civil and Environmental Engineering: Concepts, Methodologies, Tools, and Applications* (pp. 1198-1228). Pennsylvania: IGI Global.
- Kelley, H. H., Berscheid, E., Christensen, A., Harvey, J. H., Huston, T. L., Levinger, G., & Peterson, D. R. (1983). *Close Relationships*. New York: Freeman.
- Khemakhem, A. M., Frye, R. E., El-Ansary, A., Al-Ayadhi, L., & Bacha, A. B. (2017). Novel biomarkers of metabolic dysfunction in autism spectrum disorder: Potential for biological diagnostic markers. *Metabolic Brain Disease, 32*, 1983-1997.
- Kiami, S. R., & Goodgold, S. (2017). Support needs and coping strategies as predictors of stress level among mothers of children with autism spectrum disorder. *Autism Research and Treatment, 2017*, 1-10 .
- Kidwell, J., & DUNHAM, J. R. M. (2014). Parents and adolescents: Push and pull of change in *stress and the family* (pp. 104-119). New York: Routledge.
- Kim, M. J., & Gu, M. O. (1984). The development of the stress measurement tool for staff nurses working in the hospital. *The Journal of Nurses Academic Society, 14*, 28-37.

Kompier M.A.J & Marcelissen, F.H.G (1990) Handbook of work stress: A systematic approach for organizational practice, Amsterdam: NIA

Lai, W. W., Goh, T. J., Oei, T. P., & Sung, M. (2015). Coping and well-being in parents of children with autism spectrum disorders (ASD). *Journal of Autism and Developmental Disorders, 45*, 2582-2593.

Lai, V., Theppitak, C., Makizuka, T., Higuchi, Y., Movahed, M., Kumudini, G., & Kumashiro, M. (2014). A normal intensity level of psycho-physiological stress can benefit working memory performance at high load. *International Journal of Industrial Ergonomics, 44*, 362-367.

Landers-Potts, M. A., Wickrama, K. A. S., Simons, L. G., Cutrona, C., Gibbons, F. X., Simons, R. L., & Conger, R. (2015). An extension and moderational analysis of the family stress model focusing on African American adolescents. *Family Relations, 64*, 233-248.

Langer, A., Lawrence, E., & Barry, R. A. (2008). Using a vulnerability-stress-adaptation framework to predict physical aggression trajectories in newlywed marriage. *Journal of Consulting and Clinical Psychology, 76*, 756-768.

Lanovaz, M. J., & Huxley, S. C. (2017). Effects of background music on socially reinforced problem behaviors in children with autism spectrum disorders. *Psychology of Music, 45*, 450-456.

Lasswell, H. D. (2017). *Power and personality*. New York: Routledge.

Lavee, Y., McCubbin, H. I., & Patterson, J. M. (1985). The double ABCX model of family stress and adaptation: An empirical test by analysis of structural equations with latent variables. *Journal of Marriage and the Family, 47*, 811-825.

- Lazarus, R. S. (1990). Theory-based stress measurement. *Psychological Inquiry, 1*, 3-13.
- Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. *The Handbook of Behavioral Medicine*. New York: Guilford.
- Leaf, J. B., Leaf, R., McEachin, J., Cihon, J. H., & Ferguson, J. L. (2017). Advantages and challenges of a home-and clinic-based model of behavioral intervention for individuals diagnosed with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 48*, 2258-2266.
- Lecavalier, L., Leone, S., & Wiltz, J. (2006). The impact of behaviour problems on caregiver stress in young people with autism spectrum disorders. *Journal of Intellectual Disability Research, 50*, 172-183.
- Ledford, J. R., & Gast, D. L. (2018). *Single case research methodology: Applications in special education and behavioral sciences*. New York: Routledge.
- Lee, S. P., Sung, I. K., Kim, J. H., Lee, S. Y., Park, H. S., & Shim, C. S. (2015). The effect of emotional stress and depression on the prevalence of digestive diseases. *Journal of Neurogastroenterology and Motility, 21*, 273-282.
- Lee, C. Y. S., Lee, J., & August, G. J. (2011). Financial stress, parental depressive symptoms, parenting practices, and children's externalizing problem behaviors: Underlying processes. *Family Relations, 60*, 476-490.
- Lee, S. (2017). A review of function-based behavior interventions for young children with autism spectrum disorders: Teaching appropriate communication with delayed reinforcement as a means of decreasing temper tantrums. *National Teacher Education Journal, 10*, 21-29.

- Leia-Charmforoush, J., Saeed, H., Mehdi, D., & Gholamali, A. (2016). Development and assessment of effects of de-stress training program on stress of mothers with mentally disabled children. *Iranian Rehabilitation Journal, 14*, 223-228.
- Lessenberry, B. M., & Rehfeldt, R. A. (2004). Evaluating stress levels of parents of children with disabilities. *Exceptional Children, 70*, 231-244.
- Letourneau, N. L., Stewart, M. J., & Barnfather, A. K. (2004). Adolescent mothers: Support needs, resources, and support-education interventions. *Journal of Adolescent Health, 35*, 509-525.
- Levenstein, S., Prantera, C., Varvo, V., Scribano, M. L., Berto, E., Luzzi, C., & Andreoli, A. (1993). Development of the perceived stress questionnaire: A new tool for psychosomatic research. *Journal of Psychosomatic Research, 37*, 19-32.
- Liang-Chih Chang (2014) Leisure education reduces stress among older adults. *Aging & Mental Health, 18*, 754-758.
- Lu, A. C. C., & Gursoy, D. (2016). Impact of job burnout on satisfaction and turnover intention: Do generational differences matter? *Journal of Hospitality & Tourism Research, 40*, 210-235.
- Mace, F. C., & Nevin, J. A. (2017). Maintenance, generalization, and treatment relapse: A behavioral momentum analysis. *Education and Treatment of Children, 40*, 27-42.
- Malachowski, M. (2018). Surveying Supervision: Special Education Teachers and Paraprofessionals Serving Students with Low-Incidence Disabilities. *ProQuest LLC*.
- Mallet, M. M. (2017). *Exploring the value of trust between teams of special education teachers and paraprofessionals*. Malibu: Pepperdine University.

- Maxwell, J. A. (1998). Designing a qualitative study. In L. Bickman & D. J. Rog (Eds.), *Handbook of applied social research methods* (pp. 69-100). Thousand Oaks: Sage Publications, Inc.
- McAuliffe, T., Cordier, R., Vaz, S., Thomas, Y., & Falkmer, T. (2017). Quality of life, coping styles, stress levels, and time use in mothers of children with autism spectrum disorders: Comparing single versus coupled households. *Journal of Autism and Developmental Disorders, 47*, 3189-3203.
- McCaffrey, F., & Ferguson, R. (2018). Parent training as a means of reducing anxiety in autistic children. *Autism Network, 1*, 14-19.
- McCubbin, H. I., & Patterson, J. M. (1983). The family stress process: The double ABCX model of adjustment and adaptation. *Marriage & Family Review, 6*, 7-37.
- McGrattan, Ellen R., and Edward C. Prescott. 2014. "A Reassessment of Real Business Cycle Theory." *American Economic Review, 104*, 177-182.
- McHale, S. M., Updegraff, K. A., & Feinberg, M. E. (2016). Siblings of youth with autism spectrum disorders: Theoretical perspectives on sibling relationships and individual adjustment. *Journal of Autism and Developmental Disorders, 46*, 589-602.
- McKissick, B. R., Diegelmann, K. M., & Parker, S. (2017). Using technology to address barriers in rural special education for students with autism: A do-it-yourself guide. *Rural Special Education Quarterly, 36*, 155-159.
- McLean, L., & Connor, C. M. (2015). Depressive symptoms in third-grade teachers: Relations to classroom quality and student achievement. *Child Development, 86*, 945-954.

- McStay, R. L., Trembath, D., & Dissanayake, C. (2014). Stress and family quality of life in parents of children with autism spectrum disorder: Parent gender and the double ABCX model. *Journal of Autism and Developmental Disorders, 44*, 3101-3118.
- McStay, R. L., Dissanayake, C., Scheeren, A., Koot, H. M., & Begeer, S. (2014). Parenting stress and autism: The role of age, autism severity, quality of life and problem behaviour of children and adolescents with autism. *Autism, 18*, 502-510.
- Meadan, H., Halle, J. W., & Ebata, A. T. (2010). Families with children who have autism spectrum disorders: Stress and support. *Exceptional Children, 77*, 7-36.
- Meichenbaum, D. (2017). Stress inoculation training: A preventative and treatment approach. In *The Evolution of Cognitive Behavior Therapy* (pp. 117-140). New York: Routledge.
- Minnwegen, M., Eikamp, J., Fischer, F., Buettner, B., Bauer, M., Pruefer-Kraemer, L., Krämer, A. (2018). A survey on health status, stress perception and work ability of anaesthesiologists employed at university hospitals. *Anesthesiologie & Intensivmedizin, 59*, 302-314.
- Mikolajczak, M., Raes, M. E., Avalosse, H., & Roskam, I. (2018). Exhausted parents: Sociodemographic, child-related, parent-related, parenting and family-functioning correlates of parental burnout. *Journal of Child and Family Studies, 27*, 602-614.
- Mori, K., Ujiie, T., Smith, A., & Howlin, P. (2009). Parental stress associated with caring for children with asperger's syndrome or autism. *Pediatrics International, 51*, 364-370.
- Morrison, J. (2017). *DSM-5 made easy: The clinician's guide to diagnosis*. New York: Guilford Publications.

- Moskowitz, L. J., Walsh, C. E., Mulder, E., McLaughlin, D. M., Hajcak, G., Carr, E. G., & Zarcone, J. R. (2017). Intervention for anxiety and problem behavior in children with autism spectrum disorder and intellectual disability. *Journal of Autism and Developmental Disorders, 47*, 3930-3948.
- Murdoch, D. D., Rahman, A., Barsky, V., Maunula, S., & Cawthorpe, D. (2014). The use of the burden assessment scale with families of a pediatric population. *Community Mental Health Journal, 50*, 703-710.
- Nawaz, M. S., Hassan, M., Hassan, S., Shaukat, S., & Asadullah, M. A. (2014). Impact of employee training and empowerment on employee creativity through employee engagement: Empirical evidence from manufacturing sector of pakistan. *Middle-East Journal of Scientific Research, 19*, 593-601.
- Neff, L. A., & Karney, B. R. (2007). Stress crossover in newlywed marriage: A longitudinal and dyadic perspective. *Journal of Marriage and Family, 69*, 594-607.
- Noone, P. A. (2017). The Holmes–Rahe Stress Inventory. *Occupational Medicine, 67*, 581-582.
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: What can be done? *Assessment & Evaluation in Higher Education, 33*, 301-314.
- Phetrasuwan, S., & Shandor Miles, M. (2009) Parenting stress in mothers of children with autism spectrum disorders. *Journal for Specialists in Pediatric Nursing, 14*, 157-165.
- Olsaretti, S. (2018). The costs of children. In *Calder G, De Wispelaere J, Gheaus A, (Eds). The Routledge Handbook of the Philosophy of Childhood and Children. Abingdon-on-Thames (pp.25-37). UK: Routledge.*

- Ortega-Maldonado, A., & Salanova, M. (2018). Psychological capital and performance among undergraduate students: the role of meaning-focused coping and satisfaction. *Teaching in Higher Education, 23*, 390-402.
- Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). Parenting stress reduces the effectiveness of early teaching interventions for autistic spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 10-92.
- Östberg, M., Hagekull, B., & Wettergren, S. (1997). A measure of parental stress in mothers with small children: dimensionality, stability and validity. *Scandinavian Journal of Psychology, 38*, 199-208.
- Parent, J., McKee, L. G., Rough, J. N., & Forehand, R. (2016). The association of parent mindfulness with parenting and youth psychopathology across three developmental stages. *Journal of Abnormal Child Psychology, 44*, 191-202.
- Parish, S. L., Thomas, K. C., Williams, C. S., & Crossman, M. K. (2015). Autism and families' financial burden: The association with health insurance coverage. *American Journal on Intellectual and Developmental Disabilities, 120*, 166-175.
- Patterson, J. M. (2002). Integrating family resilience and family stress theory. *Journal of Marriage and Family, 64*, 349-360.
- Pearlin, L. I., Aneshensel, C. S., & LeBlanc, A. J. (1997). The forms and mechanisms of stress proliferation: The case of AIDS caregivers. *Journal of Health and Social Behavior, 38*, 223-236.
- Pemberton, J. M., Ellis, P. E., Pilkington, J. G., & Bérénos, C. (2017). Inbreeding depression by environment interactions in a free-living mammal population. *Heredity, 118*, 64-77.

- Pennefather, J., Hieneman, M., Raulston, T. J., & Caraway, N. (2018). Evaluation of an online training program to improve family routines, parental well-being, and the behavior of children with autism. *Research in Autism Spectrum Disorders, 54*, 21-26.
- Perera, M. J., Brintz, C. E., Birnbaum-Weitzman, O., Penedo, F. J., Gallo, L. C., Gonzalez, P., & Roesch, S. C. (2017). Factor structure of the perceived stress scale-10 (PSS) across english and spanish language responders in the HCHS/SOL sociocultural ancillary study. *Psychological Assessment, 29*, 320-328.
- Pines, A. M. (2017). Burnout: An existential perspective. In *Professional burnout* (pp. 33-51). New York: Routledge.
- Prilleltensky, I., Neff, M., & Bessell, A. (2016). Teacher stress: what it is, why it's important, how it can be alleviated. *Theory Into Practice, 55*, 104-111.
- Randall, A. K., & Bodenmann, G. (2017). Stress and its associations with relationship satisfaction. *Current Ppinion in Psychology, 13*, 96-106.
- Reitman, D., Currier, R. O., & Stickle, T. R. (2002). A critical evaluation of the parenting stress index-short form (PSI-SF) in a head start population. *Journal of Clinical Child and Adolescent Psychology, 31*, 384-392.
- Rivard, M., Terroux, A., Parent-Boursier, C., & Mercier, C. (2014). Determinants of stress in parents of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 44*, 1609-1620.
- Roberts, R., & Woodman, T. (2017). Personality and performance: Moving beyond the Big 5. *Current Opinion in Psychology, 16*, 104-108.

- Ryan, C., & O'Connor, S. (2017). Single session psychology clinic for parents of children with autism spectrum disorder: A feasibility study. *Journal of Child and Family Studies, 26*, 1614-1621
- Samios, C., & Baran, S. (2018). Couple adjustment to a stressful life event: A dyadic investigation of the roles of positive reframing and perceived benefits. *Anxiety, Stress, & Coping, 31*, 188-205.
- Salomone, E., Charman, T., McConachie, H., & Warreyn, P. (2016). Child's verbal ability and gender are associated with age at diagnosis in a sample of young children with ASD in Europe. *Child: Care, Health and Development, 42*, 141-145.
- Saloviita, T., Itälina, M., & Leinonen, E. (2003). Explaining the parental stress of fathers and mothers caring for a child with intellectual disability: A double ABCX model. *Journal of Intellectual Disability Research, 47*, 300-312.
- Sapolsky, R. M. (1996). Stress, glucocorticoids, and damage to the nervous system: The current state of confusion. *Stress, 1*, 1-19.
- Sbarra, D. A., Hasselmo, K., & Bourassa, K. J. (2015). Divorce and health: Beyond individual differences. *Current Directions in Psychological Science, 24*, 109-113.
- Schall, C. (2002). A consumer's guide to monitoring psychotropic medication for individuals with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 17*, 229-235.
- Schönfeld, P., Brailovskaia, J., Bieda, A., Zhang, X. C., & Margraf, J. (2016). The effects of daily stress on positive and negative mental health: Mediation through self-efficacy. *International Journal of Clinical and Health Psychology, 16*, 1-10.

- Seaward, B. L. (2017). *Managing stress*. Burlington: Jones & Bartlett Learning.
- Selye, H. (1950). *The physiology and pathology of exposure to stress*. Oxford, England: Acta, Inc.
- Sepa, A., Frodi, A., & Ludvigsson, J. (2004). Psychosocial correlates of parenting stress, lack of support and lack of confidence/security. *Scandinavian Journal of Psychology, 45*, 169-179.
- Shawler, P. M., & Sullivan, M. A. (2017). Parental stress, discipline strategies, and child behavior problems in families with young children with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 32*, 142-151.
- Sheets, E. S., & Craighead, W. E. (2014). Comparing chronic interpersonal and noninterpersonal stress domains as predictors of depression recurrence in emerging adults. *Behaviour Research and Therapy, 63*, 36-42.
- Shepherd, D., Csako, R., Landon, J., Goedeke, S., & Ty, K. (2018). Documenting and understanding parent's intervention choices for their child with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 48*, 988-1001.
- Shere, M. O. (1957). The socio-emotional development of the twin who has cerebral palsy. *Cerebral Palsy Review, 17*, 16-18.
- Sicile-Kira, C. (2014). *Autism spectrum disorder: The complete guide to understanding autism*. New York: TarcherPerigee.
- Silva, L. M., & Schalock, M. (2012). Autism parenting stress index: Initial psychometric evidence. *Journal of Autism and Developmental Disorders, 42*, 566-574.

- Sim, A., Vaz, S., Cordier, R., Joosten, A., Parsons, D., Smith, C., & Falkmer, T. (2018). Factors associated with stress in families of children with autism spectrum disorder. *Developmental neurorehabilitation, 21*, 155-165.
- Sinclair, R. R., & Cheung, J. H. (2016). Money matters: Recommendations for financial stress research in occupational health psychology. *Stress and Health, 32*, 181-193.
- Sladek, M. R., Doane, L. D., Luecken, L. J., & Eisenberg, N. (2016). Perceived stress, coping, and cortisol reactivity in daily life: A study of adolescents during the first year of college. *Biological psychology, 117*, 8-15.
- Sommers-Flanagan, J., Polanchek, S., Zeleke, W. A., Hood, M. H., & Shaw, S. L. (2015). Effectiveness of solution-focused consultations on parent stress and competence. *The Family Journal, 23*, 49-55.
- Stang, J., & Loth, K. A. (2011). Parenting style and child feeding practices: potential mitigating factors in the etiology of childhood obesity. *Journal of the American Dietetic Association, 111*, 1301-1305.
- Story, L. B., & Bradbury, T. N. (2004). Understanding marriage and stress: Essential questions and challenges. *Clinical Psychology Review, 23*, 1139-1162.
- Su, R., Murdock, C. D., & Rounds, J. (2015). Person-environment fit. *APA handbook of career intervention, 1*, 81-98.
- Sumra, M. K., & Schillaci, M. A. (2015). Stress and the multiple-role woman: Taking a closer look at the “superwoman”. *PloS one, 10*, 12-95.

- Tehee, E., Honan, R., & Hevey, D. (2009). Factors contributing to stress in parents of individuals with autistic spectrum disorders. *Journal of Applied Research in Intellectual Disabilities, 22*, 34-42.
- The *Diagnostic and Statistical Manual of Mental Disorders 5* (2013). Washington DC: American Psychiatric Pub.
- The American Institute of Stress. (2018). Stress Research. Retrieved from <https://www.stress.org/stress-research/>
- Thomson, M., & Stoll, L. (2017). Moving together: A partnership approach to improvement. In *Improvement Through Inspection?* (pp. 33-47). UK: Routledge.
- Tomeny, T. S., Baker, L. K., Barry, T. D., Eldred, S. W., & Rankin, J. A. (2016). Emotional and behavioral functioning of typically-developing sisters of children with autism spectrum disorder: The roles of ASD severity, parental stress, and marital status. *Research in Autism Spectrum Disorders, 32*, 130-142.
- Trute, B., Benzies, K. M., Worthington, C., Reddon, J. R., & Moore, M. (2010). Accentuate the positive to mitigate the negative: Mother psychological coping resources and family adjustment in childhood disability. *Journal of Intellectual and Developmental Disability, 35*, 36-43.
- Tse, C. A., Pang, C. L., & Lee, P. H. (2017). Choosing an appropriate physical exercise to reduce stereotypic behavior in children with autism spectrum disorders: A non-randomized crossover study. *Journal of Autism and Developmental Disorders, 48*, 1666-1672
- Um, M. Y., & Harrison, D. F. (1998). Role stressors, burnout, mediators, and job satisfaction: A stress-strain-outcome model and an empirical test. *Social Work Research, 22*, 100-115.

- Underhill, G. R. (2018). Global money and the decline of state power. In *Strange power: Shaping the parameters of international relations and international political economy* (pp. 137-158). UK: Routledge.
- Vaessen, B. E., van den Beemt, A., van de Watering, G., van Meeuwen, L. W., Lemmens, L., & den Brok, P. (2017). Students' perception of frequent assessments and its relation to motivation and grades in a statistics course: a pilot study. *Assessment & Evaluation in Higher Education, 42*, 872-886.
- VanVoorhis, R. W., Miller, K. L., Miller, S. M., & Stull, J. C. (2015). Impact of stepping stones triple p on parents with a child diagnosed with autism spectrum disorder: Implications for school psychologists. In *School Psychology Forum, 9*, 121-142
- Venkateswaran, V., & Wright, R. (2014). Pledgability and liquidity: A new monetarist model of financial and macroeconomic activity. *NBER Macroeconomics Annual, 28*, 227-270.
- Verschuere, B., Crombez, G., De Clercq, A., & Koster, E. H. (2004). Autonomic and behavioral responding to concealed information: Differentiating orienting and defensive responses. *Psychophysiology, 41*, 461-466.
- Vliegthart, J., Noppe, G., Van Rossum, E. F. C., Koper, J. W., Raat, H., & Van den Akker, E. L. T. (2016). Socioeconomic status in children is associated with hair cortisol levels as a biological measure of chronic stress. *Psychoneuroendocrinology, 65*, 9-14.
- Waldréus, N., Jaarsma, T., van der Wal, M. H., & Kato, N. P. (2018). Development and psychometric evaluation of the thirst distress scale for patients with heart failure. *European Journal of Cardiovascular Nursing, 17*, 226-234.

- Walsh, E., Holloway, J., & Lydon, H. (2017). An evaluation of a social skills intervention for adults with autism spectrum disorder and intellectual disabilities preparing for employment in Ireland: A pilot study. *Journal of Autism and Developmental Disorders, 48*, 1727-1741.
- Watkins, L., Kuhn, M., Ledbetter-Cho, K., Gevarter, C., & O'Reilly, M. (2017). Evidence-based social communication interventions for children with autism spectrum disorder. *The Indian Journal of Pediatrics, 84*, 68-75.
- Wells, J. C. (2012). A critical appraisal of the predictive adaptive response hypothesis. *International Journal of Epidemiology, 41*, 229-235.
- Weitlauf, A. S., Vehorn, A. C., Taylor, J. L., & Warren, Z. E. (2014). Relationship satisfaction, parenting stress, and depression in mothers of children with autism. *Autism, 18*, 194-198.
- Westman, M., & Vinokur, A. D. (1998). Unraveling the relationship of distress levels within couples: Common stressors, empathic reactions, or crossover via social interaction? *Human relations, 51*, 137-156.
- Whalley, M. (2017). *Involving parents in their children's learning: A knowledge-sharing approach*. Thousand Oaks: Sage.
- Wright, K. B. (2005). Researching internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services. *Journal of Computer-Mediated Communication, 10*, 10-34.
- Zaidman-Zait, A., Mirenda, P., Zumbo, B. D., Wellington, S., Dua, V., & Kalynchuk, K. (2010). An item response theory analysis of the Parenting Stress Index-Short Form with parents

- of children with autism spectrum disorders. *Journal of Child Psychology and Psychiatry*, *51*, 1269-1277.
- Zaidman-Zait, A., Mirenda, P., Duku, E., Szatmari, P., Georgiades, S., Volden, J., & Fombonne, E. (2014). Examination of bidirectional relationships between parent stress and two types of problem behavior in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *44*, 1908-1917.
- Zaidman-Zait, A., Mirenda, P., Duku, E., Vaillancourt, T., Smith, I. M., Szatmari, P., & Zwaigenbaum, L. (2017). Impact of personal and social resources on parenting stress in mothers of children with autism spectrum disorder. *Autism*, *21*, 155-166.
- Zan, H., & Scharff, R. L. (2015). The heterogeneity in financial and time burden of caregiving to children with chronic conditions. *Maternal and Child Health Journal*, *19*, 615-625.
- Zhang, W., & Baranek, G. (2016). The impact of insurance coverage types on access to and utilization of health services for US children with autism. *Psychiatric Services*, *67*, 908-911.
- Zuckerman, K. E., Lindly, O. J., Reyes, N. M., Chavez, A. E., Cobian, M., Macias, & Smith, K. A. (2018). Parent perceptions of community autism spectrum disorder stigma: Measure validation and associations in a multi-site sample. *Journal of Autism and Developmental Disorders*, *48*, 3199-3209.

Appendix A

The Social Readjustment Rating Scale

The Holmes-Rahe Life Stress Inventory

The Social Readjustment Rating Scale

INSTRUCTIONS: Mark down the point value of each of these life events that has happened to you during the previous year. Total these associated points.

Life Event	Mean Value
1. Death of spouse	100
2. Divorce	73
3. Marital Separation from mate	65
4. Detention in jail or other institution	63
5. Death of a close family member	63
6. Major personal injury or illness	53
7. Marriage	50
8. Being fired at work	47
9. Marital reconciliation with mate	45
10. Retirement from work	45
11. Major change in the health or behavior of a family member	44
12. Pregnancy	40
13. Sexual Difficulties	39
14. Gaining a new family member (i.e.. birth, adoption, older adult moving in, etc)	39
15. Major business readjustment	39
16. Major change in financial state (i.e.. a lot worse or better off than usual)	38
17. Death of a close friend	37
18. Changing to a different line of work	36
19. Major change in the number of arguments w/spouse (i.e.. either a lot more or a lot less than usual regarding child rearing, personal habits, etc.)	35
20. Taking on a mortgage (for home, business, etc..)	31
21. Foreclosure on a mortgage or loan	30
22. Major change in responsibilities at work (i.e. promotion, demotion, etc.)	29
23. Son or daughter leaving home (marriage, attending college, joined mil.)	29
24. In-law troubles	29
25. Outstanding personal achievement	28
26. Spouse beginning or ceasing work outside the home	26
27. Beginning or ceasing formal schooling	26
28. Major change in living condition (new home, remodeling, deterioration of neighborhood or home etc.)	25
29. Revision of personal habits (dress manners, associations, quitting smoking)	24
30. Troubles with the boss	23
31. Major changes in working hours or conditions	20
32. Changes in residence	20
33. Changing to a new school	20
34. Major change in usual type and/or amount of recreation	19
35. Major change in church activity (i.e.. a lot more or less than usual)	19
36. Major change in social activities (clubs, movies,visiting, etc.)	18
37. Taking on a loan (car, tv,freezer,etc)	17
38. Major change in sleeping habits (a lot more or a lot less than usual)	16
39. Major change in number of family get-togethers ("")	15
40. Major change in eating habits (a lot more or less food intake, or very different meal hours or surroundings)	15
41. Vacation	13
42. Major holidays	12
43. Minor violations of the law (traffic tickets, jaywalking, disturbing the peace, etc)	11

Now, add up all the points you have to find your score.

150pts or less means a relatively low amount of life change and a low susceptibility to stress-induced health breakdown.

150 to 300 pts implies about a 50% chance of a major health breakdown in the next 2 years.

300pts or more raises the odds to about 80%, according to the Holmes-Rahe statistical prediction model.

Appendix B

Daily Stress Inventory

Below are listed a variety of events that may be viewed as stressful or unpleasant. Read each item carefully and decide whether or not that event occurred within the past *24 hours*. If the event *did not* occur, place an “X” in the space next to that item. If the event *did* occur, indicate the amount of stress that it caused you by placing a number from 1 to 7 in the space next to that item (see numbers below). Please answer as honestly as you can so that we may obtain accurate information

- X = did not occur (past 24 hrs.)
- 1 = occurred but was not stressful
- 2 = caused very little stress
- 3 = caused little stress
- 4 = caused some stress
- 5 = caused much stress
- 6 = caused very much stress
- 7 = caused me panic

1. Performed poorly at task
2. Performed poorly due to others
3. Thought about unfinished work
4. Hurried to meet deadline
5. Interrupted during task/activity
6. Someone spoiled your completed task
7. Did something you are unskilled at
8. Unable to complete a task
9. Was unorganized
10. Critically or verbally attacked
11. Ignored by others
12. Spoke or performed in public
13. Dealt with rude waiter/waitress/salesperson
14. Interrupted while talking
15. Was forced to socialize
16. Someone broke a promise

17. Competed with someone
18. Was stared at
19. Did not hear from someone you expected to hear from
20. Experienced unwanted physical contact (crowded, pushed)
21. Was misunderstood
22. Was embarrassed
23. Had your sleep disturbed
24. Forgot something
25. Feared illness/pregnancy
26. Experienced illness/physical discomfort
27. Someone borrowed something without your permission
28. Your property was damaged
29. Had minor accident (broke something, tore clothing)
30. Thought about the future
31. Ran out of food/personal article
32. Argued with spouse/boyfriend/girlfriend
33. Argued with another person
34. Waited longer than you wanted
35. Interrupted while thinking/relaxing
36. Someone “cut” ahead of you in line
37. Performed poorly at sport/game
38. Did something that you did not want to do

- 39. Unable to complete all plans for today
- 40. Had car trouble
- 41. Had difficulty in traffic
- 42. Money problems
- 43. Store lacked a desired item
- 44. Misplaced something
- 45. Bad weather
- 46. Unexpected expenses (fines, traffic ticket, etc.)
- 47. Had confrontation with an authority figure
- 48. Heard some bad news
- 49. Concerned over personal appearance
- 50. Exposed to feared situation or object
- 51. Exposed to upsetting TV show, movie, book
- 52. "Pet peeve" violated (someone fails to knock, etc.)

- 53. Failed to understand something
- 54. Worried about another's problems
- 55. Experienced narrow escape from danger
- 56. Stopped unwanted personal habit (overeating, smoking, nail biting)
- 57. Had problem with kid(s)
- 58. Was late for work/ appointment

Any stressors that we missed?
(list below)

- 59. _____
- 60. _____

Appendix C

Parental Stress Scale

The following statements describe feelings and perceptions about the experience of being a parent. Think of each of the items in terms of how your relationship with your child or children typically is. Please indicate the degree to which you agree or disagree with the following items by placing the appropriate number in the space provided.

1 = Strongly disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly agree

1	I am happy in my role as a parent	
2	There is little or nothing I wouldn't do for my child(ren) if it was necessary.	
3	Caring for my child(ren) sometimes takes more time and energy than I have to give.	
4	I sometimes worry whether I am doing enough for my child(ren).	
5	I feel close to my child(ren).	
6	I enjoy spending time with my child(ren).	
7	My child(ren) is an important source of affection for me.	
8	Having child(ren) gives me a more certain and optimistic view for the future.	
9	The major source of stress in my life is my child(ren).	
10	Having child(ren) leaves little time and flexibility in my life.	
11	Having child(ren) has been a financial burden.	
12	It is difficult to balance different responsibilities because of my child(ren).	

13	The behaviour of my child(ren) is often embarrassing or stressful to me.	
14	If I had it to do over again, I might decide not to have child(ren).	
15	I feel overwhelmed by the responsibility of being a parent.	
16	Having child(ren) has meant having too few choices and too little control over my life.	
17	I am satisfied as a parent	
18	I find my child(ren) enjoyable	

Appendix D

Parent Stress Research Study (1): Survey

Dear Parent,

First, I would like to thank you for your consideration as a participant in my research study. I hope you find it to be informative and beneficial.

The purpose of this study is to investigate changes that occur in parent stress levels following the introduction and completion of an online training designed for parents of children with autism spectrum disorder (ASD) to further explore the concepts and principles of ABA.

Should you choose to participate in this study you will be asked to complete a brief survey (see link below), a brief parent stress assessment, then provided with access to an online ABA training program. After completion of the training videos (please complete within 7 days) you will be asked to answer a brief questionnaire and immediately complete the stress assessment a second time. A final copy of the parent stress assessment will be requested again 7-10 days later.

You will receive separate emails for each of the steps above, please complete them in the following order:

- 1) Follow the link below to complete the survey
- 2) Complete the parent stress assessment
- 3) Create account to access and complete the training videos within 7 days
- 4) Complete the follow-up questionnaire
- 5) Complete the second parent stress assessment
- 6) Complete the final parent stress assessment (which will be emailed 7-10 days after #5 is completed)

With the exception of the training (approximately 4.5 hours), each step will take less than 5 minutes to complete. Please disregard any mention of an exam throughout the training videos, you will not be asked to take any tests. I will receive completion emails for all assessments and questionnaires but please email or text me once you have finished the training videos.

This research will not only provide you with information regarding the ABA services your child is receiving, it will also provide a potential strategy that focuses on stress reduction techniques. Although this study is focusing on how the trainings relate to stress levels, prior research has concluded that similar trainings resulted in increased feelings of competence.

Participation is voluntary and all responses will be kept confidential using an online, secure database. Access to this data will be limited to the project investigator and project supervisor.

Thank you for your help,
Kristen Duffney, MS, BCBA

Doctoral Candidate

***This research is being conducted in order to fulfill the requirements for the degree of Doctor of Education in Educational Leadership at the University of North Florida. If you have any questions about the research study itself, please contact me directly at **Redacted** (call or text) or **Redacted** ***

Appendix E

Parent Stress Research Study (2): Stress Assessment #1

Dear Parent,

Please complete this assessment before you access the training videos. You will receive an email from Behavior Frontiers with instructions on how to create an account to access the videos.

The training's computer system will not show your progress so I will be sending another email with a video tracking log for you to use if you think it will be helpful.

Thank you again,

Kristen Duffney

Appendix F

Parent Stress Research Study (3): Training Videos

Dear Parent,

You should have received 3 emails so far: the survey, the stress assessment, and an email from Behavior Frontiers with instructions on how to access their training. If you did not receive all of them please check your junk mail or let me know if I need to resend anything. When creating an account for the training videos, if you are not automatically directed there, please click on "Training" and/or "Videos & Materials" on the website. Please disregard any mention of an exam throughout the training videos, you will not be asked to take any tests.

Once you input your access code and complete your account you will need your email address and password to access your account in the future.

I will receive completion emails for all assessments and questionnaires but please email or text me once you have finished the training videos. After I have received confirmation that you completed the trainings you will receive the second assessment.

Because the video's computer system does not show your progress I have attached a spreadsheet that you may find helpful to track it yourself. This is for your convenience to use if you choose and I do not need you to send anything back to me other than a quick email or text to let me know once you finish.

Please let me know if you have any questions.

Sincerely,

Kristen Duffney

Appendix G

Video Tracking Spreadsheet

Topics	Units	Sections	Date Started	Date Completed	Notes:
<i>Introduction</i>					
	1. Autistic Disorder				
	2. Applied Behavior Analysis (ABA)				
<i>Increasing Appropriate Behaviors</i>					
	3. Discrete Trial Teaching (DTT)	a. The Discrete Trial, SD, & Response			
		b. Reinforcement			
		c. Other Reinforcement Concepts			
		d. Motivation			
		e. Preference Assessments & Inter-trial Interval			
	4. Prompting, Fading, & Differential Reinforcement				
	5. Discrimination Teaching & Probing				
	6. Shaping, Chaining, & Task Analysis				
	7. Generalization				
	8. Data Collection for Discrete Trial Teaching (DTT)				
9. Verbal Behavior					
10. Naturalistic Teaching Strategies (NATS)					
<i>Decreasing Problem Behaviors</i>					
	11. Functional Behavior Assessment (FBA)				

	12. Reductive Interventions	a. Extinction			
		b. Differential Reinforcement Procedures			
		c. Antecedent Interventions			
	13. Other Restrictive Interventions				
	14. Data Collection for Problem Behaviors				
	15. Ethical Considerations				

Appendix H

Parent Stress Research Study (4): Follow-up Questionnaire

Dear Parent,

I hope you enjoyed the training videos and learned something new. Now that the hard part is over there are only a few more things I need you to do:

- 1) ~~Follow the link below to complete the survey~~
- 2) ~~Complete the parent stress assessment~~
- 3) ~~Create account to access and complete the training videos within 7 days~~
- 4) Complete the follow-up questionnaire – please use the link below
- 5) Complete the second parent stress assessment
- 6) Complete the final parent stress assessment (which will be emailed 7-10 days after #5 is completed)

Just like the other survey and assessment, I will get automatic notifications once they are completed so there is no need to send me anything.

Sincerely,
Kristen Duffney

Appendix I

Parent Stress Research Study (5): Stress Assessment #2

Dear Parent,

This is the same assessment that you completed before you started the training. 7-10 days after you complete this assessment I will send the third and final step.

Sincerely,
Kristen Duffney

Appendix J

Parent Stress Research Study (6): Stress Assessment #3

Dear Parent,

This is it, it's the last one! I would like to sincerely thank you for taking so much time out of your busy schedule to help me with my research. Due to the integrity of the study I won't be able to give you the results right now but once all surveys are collected and analyzed I would be happy to send you your scores if you'd like.

Thank you again, I hope you found it to be beneficial.

Sincerely,
Kristen Duffney