2021

The Impact of Early Deprivation on a Child's Cognitive and Social/ Emotional Development

Hannah Grace Miller
Bethel University

THE IMPACT OF EARLY DEPRIVATION ON A CHILD'S COGNITIVE AND SOCIAL/EMOTIONAL DEVELOPMENT

A MASTER'S THESIS

SUBMITTED TO THE FACULTY

OF BETHEL UNIVERSITY

BY

HANNAH MILLER

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MASTER OF ARTS IN EDUCATION

APRIL 2021

BETHEL UNIVERSITY

THE IMPACT OF EARLY DEPRIVATION ON A CHILD'S COGNITIVE AND SOCIAL/EMOTIONAL DEVELOPMENT

Hannah Miller

April 2021

APPROVED

Thesis Advisor: Nathan Elliott, M.A.

Program Director: Lisa Silmser, Ed. D.

Acknowledgements

I would like to thank my parents, Gary and Noelle Miller, for instilling in me a love for learning, the capacity to dream, and the ability to continue on in difficulty. Their support throughout graduate school, and especially in this final step, was instrumental in making this paper happen. I could always count on their encouragement, their excitement for me in this, and the occasional meal that they insisted on making, to get me through. Anyone would be happy to know them, but I am truly blessed to be their daughter.

Abstract

This literature review seeks to answer the question of: “What effect does early deprivation have on the cognitive and social/emotional development of a child?” Education is constantly changing, and one part that has dramatically shaped and shifted since its inception in 1975 is the area of special education. Within special education is a vast spectrum of student needs and differences. In order to be effective, teachers need to know their students’ strengths, areas of need, and anything else that plays a role in how they learn. This paper seeks to bring more clarity to how trauma, specifically the trauma of early deprivation, changes the brain structure, neural pathways, and behavior of a child and how that can present itself in the classroom. Topics such as IQ, brain structure, neural development, attention, attachment, and executive function are all addressed as their connection to early deprivation and development is revealed. By examining the studies of researchers, scientists, and psychologists, a clear connection has been made between early deprivation and cognitive and social/emotional development. It is clear from these studies that deprivation plays a large and negative role in the growth of a child in these areas.

Table of Contents

CHAPTER I: INTRODUCTION

Deprivation is defined as the absence of the care and attention necessary for cognitive and social/emotional stimulation and growth (Morison & Ellwood, 2000). This literature review addresses the topic of early deprivation and what impact it has on a child's cognitive, neurological, and social/emotional development. Deprived environments are associated with those of some orphanages and institutions, and understandably, lead to stunted learning in many key developmental areas, which impacts academic attainment and behavioral performance in the school setting. Students whose backgrounds include deprivation often lack a stable caregiver and consistent time with others.

Context

The world of education is constantly evolving as we gain new insight and understanding into how the mind works and how learning occurs. Within this world is special education, which has undergone revolutionary changes since the Education for All Handicapped Children Act passed in 1975, later amended and renamed the Individuals with Disabilities Education Act. Students with disabilities previously weren't allowed in a school building, were institutionalized, or were segregated from others. The education system in the United States has come a long way from the isolation approach to an inclusion model, where students with disabilities are involved as much as possible with the general education class and curriculum (Francisco, Hartman, & Wang, 2020). We have come to realize the benefit of integration and how this gives us all an opportunity to appreciate the differences amongst us and to develop empathy and

understanding. However, although we have made progress, there is still much to do in this quickly growing section of education. Instructional strategies, curricula, and methods of education are continually under the microscope, even in special education, as research is constantly being done to assess what is most effective for learning. In the last ten to fifteen years, the brain, cognition, and neurology have become hot topics for researchers, an exciting area to dive into as new revelations about learning and connections to the brain are uncovered. In this pursuit of knowledge, there are still more questions to figure out, more unknowns to venture into. The mystery of what we still don't know spurs us on in this quest, with the desire to educate our students to the best of our abilities so that they can learn to the best of theirs.

Special educators often encounter students who are adopted, who have come from deprived settings, or who have experienced trauma on their caseloads. This may present in the disability they have or just in the way that they think and learn. This paper provides specific details about how children are impacted by deprivation and how this influences their brain, the way they think, and how we in response can teach. Educators need to know this because every child is different and the way to approach and teach a child who has come from a deprived background requires an educated and thoughtful method and plan. It is only in this way that we can truly teach and they can truly learn.

Theoretical Framework

The topic of deprivation fits into the context of several existing theories. Attachment Theory describes how humans are made for relationships. According to

Gündüz (2013), the relationship between a caregiver and a child greatly influences that child's self-esteem, the way they form relationships with others, and their overall psychological development. Secure attachment is one theory of attachment that is mentioned in this paper and in order to make sense of the overall thesis, readers need to understand this important concept. Secure attachment happens when a consistent caregiver is present and forms a safe and secure attachment with the child (Gündüz et al., 2013). This relationship grounds the child emotionally and socially and helps him/her to develop a positive self-concept and connect with those around him/her in a healthy way. Children who have not developed strong and nurturing relationships with their caregivers are more likely to form insecure attachments. There are three main kinds of insecure attachments: dismissing, preoccupied, and fearful/avoidant attachment. These various kinds of insecure attachments lead to difficulty in establishing a connection with others, in regulating one's social/emotional health and overall self-esteem and psychological development (Browne & Winkelman, 2007; Erozkan, 2016).

Rationale

Educators need to understand not only that students are different but the reasons for how and why they are different. Understanding a child's upbringing and the specific circumstances that can physically alter their brain and change their neural circuits helps teachers to adjust their instruction, care, and expectations to meet the student where he/she is at. This research is important because it highlights how deprivation affects a child's ability to learn. Understanding this specific kind of trauma

will help educators to be able to differentiate their instruction to meet the specific needs of their students who have come from such settings.

Definition of Terms

Specific terms need to be defined in order to understand this literature review. Juffer, Stams, and IJzendoorn (2004) state that ego resiliency is the ability to respond more flexibly to changing, challenging, or frustrating situations and ego control is the ability to contain or to express emotional and motivational impulses. Part of ego resiliency is having ego control and being able to use this in various adaptive ways. Adoption happens when a child, who cannot be cared for by their biological family because of different reasons, becomes a part of another family. Children are adopted at different ages, internationally, and from within the United States as well.

Deprivation, as it relates to development, refers to being deprived of or denied access to the stimulating and responsive care and attention that is so necessary for healthy and positive development to happen. The timing of everything is critical as well. As Almas et al. (2016) state, "…high quality care early in life has an impact on cognitive success through to late childhood" (p. 1865).

Institutionalization means that a child has experienced an upbringing for some length of time in an orphanage or similar setting where their needs were not completely met. Morison and Ellwood (2000) explain that:

> Studies comparing institutions to home environments have shown that orphanages offer fewer opportunities for children to acquire or practice new skills, provide inadequate motivational conditions involving reinforcement and

> praise, and offer little variation or adaptation to individual needs or differences. (p. 718)

It is because of this and studies on nutrition that they recommend removing children from these environments as early as possible.

Childhood trauma is defined by Browne and Winkelman (2007) in their study as, "a psychological result of an external blow, whether sudden or a series, that renders the child temporarily helpless and breaks past ordinary coping mechanisms" (p. 684). This definition includes both child abuse and neglect. Their study talks about how a common denominator of psychological trauma can be intense fear, helplessness, loss of control, and the threat of annihilation. Symptoms of psychological trauma may develop, such as personal and interpersonal dysfunction, dissociation, depression, and hypervigilance.

Adverse childhood experiences (ACEs) are defined as the prolonged exposure of a child to potentially traumatic events that may have an immediate and lifelong impact on that child (Blodgett & Lanigan, 2018). These traumatic events can occur to the child, the child's family, or the child's community and may include child maltreatment, family stress or dysfunction, community violence, or natural disasters. Blodgett and Lanigan's 2018 study discovered that increasing ACE exposure increased the rates of academic failure, attendance problems, and school behavior problems in the school setting.

Research Focus

There is a large body of research out there that talks about the brain and how it works in relation to learning; however, this is a broad topic that would take many more pages to fully cover. This research was narrowed to the realm of the brain and cognition,

specifically due to deprivation. The research question that guided this search was, "What affect does early deprivation have on the cognitive and social/emotional development of a child?" Educators are surrounded by the word "trauma," but rarely do they know what it means or what the different kinds of trauma actually are. Educators need to be aware of the nuances and the differences associated with each kind of trauma in order to identify them appropriately and effectively in the school setting with the students that they have.

CHAPTER II: LITERATURE REVIEW

Literature Search Procedures

Chapter Two reviews the literature on the effects of early deprivation on a child's overall cognitive and social/behavioral development. It will examine the impact that early deprivation has on the brain, how it presents, and what can be done in the home and the school setting to mediate such effects. This information will help educators in understanding students who come from backgrounds of deprivation in developing a classroom atmosphere and curriculum that will better meet their needs. This information will also benefit the adoptive families of such individuals in understanding their child better and in identifying what kind of support will best aid them in their social, emotional, and cognitive growth. The literature used in this thesis was located through searches of ERIC, EBSCO, and Google Scholar with publication dates of 2000-2020 and specified to only find empirical studies from peer-reviewed journals. These searches were narrowed using the following keywords: "early deprivation," "cognitive development and early deprivation," "early deprivation and special education," "the brain and early deprivation," "ACEs and school intervention," and "Effects of ACEs."

Early Deprivation and Cognitive Development

The world of developmental research has long been fascinated by the brain and by what hurts, hinders, or helps its growth. The amygdala, hippocampus, corpus callosum, and pre-frontal cortex have all been studied, with recent reports focusing on a brain-derived neurotrophic factor (BDNF) that plays a large role in the maturation and

plasticity of the brain structures involved in emotional regulation and executive function.

Brain Structure

One such part of the brain that has recently been under the microscope is the amygdala. The amygdala is a structure found at the base of the brain where emotional learning happens and is considered to be a part of the brain's limbic system. Mehta et al. (2009) showed in their study that there are volumetric changes in the brain following early deprivation. The purpose of this study was to examine the hippocampus, amygdala, and corpus callosum region of the brain and to see how early deprivation affects the development of each. They examined the size of each brain region using magnetic resonance imaging (MRI) and compared the results of a group of adopted adolescents who had experienced early deprivation prior to adoption in Romania to a group of non-institutionalized participants. Their results showed no difference in hippocampal volume or corpus callous area, but post institutionalized (PI) group had overall larger amygdala areas, mostly in the right amygdala. The left amygdala volume size was related to time spent in an institution, with longer periods of deprivation corresponding to smaller left amygdala volume, indicating that this region of the brain is especially sensitive to the deprivation experienced. This may be because the right amygdala is associated with negative emotions while the left is associated with both positive and negative emotions.

Another study by Tottenham et al. (2011) demonstrated how the amygdala is changed by early deprivation and how that change persists into childhood. Their study

focused on the behavioral outcomes associated with changes to the amygdala and what the long-term impact early adverse conditions have on socio-emotional development. They compared a group of previously institutionalized (PI) children who were adopted to a same aged comparison group of non-adopted children. The children were scanned using functional magnetic resonance imagining (fMRI) while performing an Emotional Face Go/No Go task. The results of the study indicated that the PI children showed a heightened activity of the amygdala and a decrease in activity in cortical regions of the brain involved in perceptual and cognitive function. Heightened levels of amygdala activity are associated with increased attention to emotionally significant stimuli and can lead to feeling more stress, fear, and anxiety.

Not only are there changes in brain structure and activity level, but a recent study by Cohen-Gilbert, Gunnar, and Thomas (2018) showed the role that brain-derived neurotrophic factor (BDNF) has in the brain development of a child who has experienced early adversity. BDNF is an important protein in the "development and plasticity of brain structures implicated in emotional regulation and executive functioning, including hippocampus, amygdala, and prefrontal cortex" (p.1267). Their study showed that inhibitory control during an emotionally distracting task is modulated by duration in an orphanage and the BDNF genotype, so resiliency may be a product of both nature and nuture.

Overall, these studies demonstrated that increased levels and longer periods of stress involved in early derivational settings are associated with overall poorer levels of

performance managing stress, regulating emotions, and controlling cognition and executive function.

Cognitive Development

Cognitive development is another aspect of early deprivation that has been intensely studied. Morison and Ellwood (2000) gave further information on this topic. In this study, the researchers examined the cognitive development between a group of children who had spent at least eight months in an orphanage (Romanian Orphanage, "RO group") and two comparison groups of children: a non-adopted group (Canadian Born, "CB group") and a group that was adopted from Romania before the age of four months (Early Adopted, "EA group"). The children's IQ was assessed using the Stanford-Binet Intelligence Scale, 4th Edition, and their home environment quality was assessed using the Caldwell and Bradley's Home Observation for Measurement of the Environment (HOME). The main purpose of this study was to see if a stable adoptive family and home environment had any mitigating impact on the cognitive development of the children that were adopted (demonstrated primarily through IQ and HOME scores). Two female doctoral students conducted this study by visiting each child and their primary caregiver and giving the child the intelligence test and recording an interview with the primary caregiver. The HOME assessment was a part of the interview. Overall, children in the RO group performed lower on the intelligence test than children in the CB and the EA group when matched at 54 months and then performed even lower compared to the two other groups at a later period after having lived with their adoptive families for 39 months. There was a positive relationship between RO

children's development status and HOME scores and a negative relationship between their developmental status and time in an institution. One problem with this study is that it was written in October of 2000. Generally, articles for a literature review should be written within the past 10-15 years; however, this study is based off of a landmark study following the fall of the Ceausescu regime in Romania and therefore contains vital information for this literature review. The main strength of this study is that it clearly showed the impact that early deprivation has on a child's cognitive development and that more time in an orphanage correlates to lower IQ scores.

Since it has been shown that early adverse conditions do impact IQ, the next question that researchers addressed was the length of time that cognition would continue to be affected by this early period of deprivation. The study by Beckett et al. (2006) focused on this question in their study. They specifically wanted to see if those effects lasted into early adolescence. Researchers looked at the association between duration and timing of deprivation and IQ scores as measured using the Wechsler Intelligence Scale for Children (WISC) II when the children were eleven years of age compared to when they were six years of age. This study was guided by several questions. First, do the effects of early deprivation persist into early adolescence? Secondly, does any significant catch-up happen between the ages of 6 and 11 years for the children who experienced institutional care in Romania? Third, if catch up does happen at the age of 11, is it a function of age on arrival or because of the severity of harm that happened at the age of six? Finally, what factors affect the cognitive outcomes for those children who have experienced early institutional care and are

therefore at risk in their cognitive development? The sample used for this study was a part of the English and Romanian Adoptees (ERA) study. This sample consisted of 128 (originally 131) children, 61 boys and 70 girls, adopted from Romania into families from the United Kingdom (U.K.) and compared to fifty children, 33 boys and 17 girls, who were adopted within the U.K. This sample was taken from the overall sample of 217 children studied as a part of the ERA study. Children completed an intellectual assessment at the ages of 6 and 11 years old. Adoptive parents filled out a screening upon the arrival of their child that asked questions about the child's development at the point of arrival. The McGarthy Scales of Children's Abilities was used to assess cognition at six years of age, and the WISC was used to assess intellectual ability at the age of 11. Background information on birth parents was gathered as much as possible. Researchers visited the families on two separate occasions to assess and interview them. There are several notable results of this study. First, the effects of early institutional deprivation last longer than what people initially thought. Based on this study, the effects of early institutional deprivation lasted up to the age of 11 years, even though children had spent at least 7.5 years of their lives in adoptive homes. Next, the researchers saw from their data that there was not as much cognitive catch-up between the ages of 6 and 11 years as they initially thought. There were other elements to this study, but overall, this study showed that the impact of early deprivation on cognitive development persists longer than what people originally thought.

Almas, Degnan, Nelson, Zeanah, and Fox (2016) showed in their study the impact of early psychosocial deprivation on cognitive performance at the age of 12. Their study

followed the Bucharest Early Intervention Project (BEIP) and assessed participants' IQ at the age of 12. The authors of this study wanted to extend on previous studies done on early deprivation and its affect on cognitive, social, and emotional domains in childhood by seeing what impact it has on the cognitive development of a child in late childhood to adolescence. The participants for this study were 107 twelve-year-old children, originally recruited to be a part of this longitudinal study when they were less than 30 months of age and living in an institutionalized setting. These participants were randomly assigned to be in one of two groups: Care As Usual (CAU) or Foster Care (FC) group. The FC group was taken from their institutional setting and placed in a project supported foster family setting, whereas the other group continued to be "in care as usual." A comparison group made up of 72 children from the community was recruited for this study. Data on physical characteristics and placement stability was gathered, IQ was assessed when the children were 12 years of age using the WISC-IV, and attachment security was assessed using the preschool version of the Strange Situation Procedure when children were 42 months of age. An adapted version of the Observational Record of the Caregiving Environment was used to assess the child's relationship with his/her primary caregiver at the age of 42 months. The results of this study show that children who received foster care intervention scored higher on both the full-scale IQ and the Verbal Comprehension subscale compared to the children who remained in institutional care. This study also shows that the negative impact of early institutional experiences has an impact on IQ that continues into late childhood. They stated, "These results are consistent with previous work showing the lasting effects of

early experience on cognitive performance in adolescence" (p. 1864). This study showed the impact that high quality care early in life has on cognitive success through to late childhood.

Early Deprivation, Neurodevelopment, and How it Presents

There are neural vulnerabilities and negative influences that happen in a child's neurodevelopment when they experience early adverse conditions. Their motivational, regulatory, and attending systems are compromised, along with their executive function and ability to form healthy, positive attachments. Furthermore, specific attention needs to be given to the timetable for all of these events.

As mentioned previously, various structures in the brain are affected by deprivation. The basal ganglia, located at the base of the brain, has also been found to have abnormalities following such conditions. This structure is located at the base of the brain and plays a role in the motivational system, as a study by Mehta et al. (2010) demonstrated in their findings. The purpose of this study was to look at the brain's motivational system and to assess if early institutional deprivation compromised the neural pathways that make it up. The researchers examined the idea of motivation by looking at the ventral striatum through a monetary incentive delay (MID) task. The ventral striatum is associated with the limbic system and is responsible for the neuro-circuitry that makes decisions and has reward-related behaviors. The authors wanted to find out what impact deprivation has on the ventral striatum and how that affects the motivational ability of an adolescent. The authors predicted, based on current literature, that activation in the reward-predicting stimuli in the ventral striatum would be reduced

in individuals who have experienced early deprivation. The researchers recruited twelve Romanian adoptees from the 165 children that were a part of the English and Romanian Adoptees (ERA) group for this study. They used a sampling approach in deciding which adoptees to include so that a broad range of impairment levels would be included in the study. This group was compared to another group made up of 11 UK born, non-adopted adolescents that were matched in age and sex. The adolescents were given a monetary incentive delay (MID) task and the neuroimaging data was analyzed following the task. Anticipation of reward is a highly critical element in the motivational processing of the brain. This study showed that compared to a healthy comparison group, adolescents who have experienced early deprivation in their lives have reduced circuitry for the recruitment of reward anticipation. Reduced ventral striatum activation on a MID task has been seen after the administration of amphetamine, antipsychotic medication, in patients with schizophrenia, detoxified alcoholics, and patients with Attention Deficit/Hyperactivity Disorder (ADHD); however, in this study, there was an absence of ventral striatum activity across all reward levels for the Romanian adoptees. Ultimately, this means that there is a lack of sensitivity to reward, or differences in reward value, for these adolescents. This could possibly lead to substance abuse and other risk behaviors associated with poor decision-making or mood disorders.

The hippocampus, talked about earlier as a brain structure that is compromised by early deprivation, plays a role in memory processing. Evren Güler et al. (2012) studied the association between early deprivation and memory functioning in 9-11 year old children. The purpose of their study was to examine the connection between prior

institutional care and memory functioning on a task dependent on structures in the medial temporal lobe. The medial temporal lobe and midline diencephalic structures, such as the hippocampus, play a large role in recognition memory. In situations of survival, stress-sensitive neurobiological systems are activated, releasing the production of cortisol and corticotrophin-releasing hormones. In animal studies it has been shown that chronic activation of these stress mediators impairs the functioning of the hippocampus. The participants for this study consisted of 87 children ages 9 to 11, 42 females and 45 males. These children were divided into three groups: children who had experienced prolonged institutional deprivation before being adopted, children that were adopted early from foster care, and children who were not adopted (raised in birth families). Memory functioning was measured using the Paired Associates Learning task from the Cambridge Neuropsychological Test and Automated Battery (CANTAB), and a continuous recognition memory task during which ERP's were recorded. Children who had experienced prolonged institutionalization had deficits in both behavioral memory measures and their parietal memory was affected as well. These results show that early deprivation does play a role in memory function, impacts later social, emotional, and cognitive development. This was one of the first studies to examine brain function during a memory task for children that have experienced early deprivation from living in an institutionalized setting. The authors admit that it is possible that the recognition memory deficits seen in post-institutionalized children could also be due to difficulties with attention, as PI children are more likely to have problems with inattention and

impulsivity and to develop symptoms of ADHD; therefore, more research needs to be done on this topic.

Regulation (Social/Emotional Development)

The social deprivation that occurs in institutions leads to stunted social/emotional development in post-institutionalized children, which is a contributing factor in their regulation difficulties. In a study by Hostinar, Johnson, and Gunnar (2015), PI children do not have the normal stress response system that is typical of peers their age. The goal of the study was to investigate the role of early social deprivation in shaping the effectiveness of parent support to alleviate hypothalamic-pituitary-adrenal (HPA)-axis-stress responses of children. Researchers specifically wanted to know if children use their caregivers as a buffer against stress despite experiencing social deprivation in their early history. Previous research has shown that parental support is a regulator of stress responses and can dampen the HPA reactivity of typically developing children, whereas strangers do not have the same effect. The sample was equally divided between children who had been adopted internationally from orphanage care by age five and an age- and gender-matched group of non-adopted children. The researchers experimentally manipulated the provision of parent support during the five-minute speech preparation period before a modified Trier Social Stress Test (TSST) and examined its effect on levels of salivary cortisol secreted in response to this laboratory stressor. All participants were assigned to receive support from their parent or a stranger. The findings from this study showed that parents helped alleviate stress levels in non-adopted children compared with getting support from a stranger, whereas the

cortisol levels in PI children did not change between parent and stranger support. This suggested that social deprivation in the early years may shape the neurobehavioral HPA response system in the way that selective responses to caregivers versus strangers are formed. More research is needed to understand the potential mental and physical health consequences of not exhibiting preferential responses to parents versus strangers.

Attention (executive attention, theory of mind (ToM), executive function)

Research has shown that children who have experienced institutional settings at an early age struggle with attending and regulating their bodies; however, the neurobiology specifically associated with attending needs to be understood better. The goal of the study by Loman et al. (2013) sought to bring more clarity to this topic. The researchers examined executive attention in order to see if there was a correlation between neurobiological processes and attention problems following institutional deprivation. The authors defined executive attention as a "… multifaceted construct involving inhibitory control, response monitoring, and conflict resolution" (p. 37). There were 82 participants for this study, divided into three groups: post-institutionalized children (PI) internationally adopted at 12-78 months of age, post foster care children (PF), and internationally adopted at two months or less and non-adopted children (NA). Results were collected from the performance and event-related potentials (ERPs) of the participants on two executive attention tasks. The results of each group were then compared with each other. Overall the findings from the study indicated that

internationally adopted PI children had more problems with sustained attention and deficits in processes underlying inhibitory control and error monitoring.

A study by Colvert et al. (2008) attempted to see if there was a relationship between early deprivation and Theory of Mind (ToM) and Executive Function (EF) and if ToM and EF mediates the effects of institutional deprivation on three main deprivation related syndromes: quasi-autism, disinhibited attachment, and inattention/over-activity. In one article, Charles Nelson defines quasi-autism as persistent social difficulties or repetitive behaviors that are autistic like in nature (Nelson, 2017). Disinhibited attachment is described by Erozkan as being "socially indiscriminate." Colvert's study was done using a group of 165 adopted children from Romania, 144 of which were adopted before 43 months of age. These children came from an institutional setting and had experienced early deprivation. They were compared to a group of 52 children that were adopted within the UK, all before six months of age. Both groups were assessed at 6 and 11 years of age. A combination of tasks was done to assess ToM and EF. The Strange Stories task was used to assess ToM, and the Stroop task was used to assess EF, both done at the age of 11. The children adopted from Romania showed deficits in both ToM and EF compared with the group of children adopted from within the UK. There were more deficits in the children who had experienced more than six months of institutional deprivation. The study suggests that ToM and EF play a mediating role in quasi-autism, a partial mediating role for EF in inattention/overactivity, and no mediating role for either ToM or EF in the case of disinhibited attachment. Therefore, ToM and EF are associated with some of the deprivation-specific difficulties seen in

institutionally deprived Romanian adoptees, but neither one accounts for the overall pattern of deprivation-related difficulties.

Some of the most commonly seen attention-related processes from children who have spent their early years in a deprived setting are inattention, overactivity (I/O) and impulsiveness, which make up the main components of ADHD. A study by Stevens et al. (2007) seeks to examine the persistence and presentation of inattention/overactivity (I/O) in children raised in deprived settings. The sample was a group taken from the 324 children adopted into UK families between February 1990 and September 1992. This group consisted of 165 Romanian children adopted before the age of 43 months. The sample was assessed at ages 6 and 11 using a combination of standardized tests, investigatory-based interviews, qualitative interviews, questionnaires, and observations. Findings from this study suggest that I/O is a pretty stable impairment for PI children and that the risk for I/O continues into early adolescence.

Attachment

The idea of attachment and its role in forming healthy relationships is an idea that has been explored and pursued by numerous educators, psychologists, and researchers. It has been found that attachment does indeed have an impact on how relationships are formed and that traumatic events experienced at a young age continue to be felt for many years to come. In a study by Erozkan (2016), the relationship between childhood trauma and how trauma influences attachment type and predicts future types of attachment was investigated. This

study wanted to know if there is a relationship between childhood trauma, trauma type, and the future role of attachment. In other words, can childhood trauma predict the kind of attachment that the individual will form later on and is there a predictive relationship between the two? The subjects for this study were 940 male and female university students who were randomly selected from various education departments at the Mugla Sitki Kocman University, located in Turkey. A cross-sectional model was used to collect data for many participants at the same time. The instruments used to conduct this study were two questionnaires. The first was called the *Childhood Trauma Questionnaire-Short Form* (CTQ-SF) and was used to assess childhood experiences of maltreatment. There were 28 items in this form, which asked students to self-report negative childhood experiences. These items covered physical abuse, emotional abuse, physical neglect, emotional neglect, and sexual abuse. Participants used a scale to respond to each statement, with 1 being "never true" and 5 being "very often true." The second questionnaire used was the *Relationship Scales Questionnaire (RSQ)*. This self-report form was used to assess the current attachment style of participants by having them rate their agreement on a list of thirty items. The results of this study show that there is a relationship between negative childhood experiences and attachment styles and that the sub dimensions of childhood trauma do play a role in predicting future attachment styles. There is a negative relationship between physical abuse, emotional abuse, physical neglect, emotional neglect, and sexual abuse and the

secure attachment style, but a positive relationship with the fearful, preoccupied, and dismissing attachment styles. This study, along with other empirical research articles before it, continued to emphasize the importance of forming positive and healthy relationships for children. Traumatic experiences trigger the development of insecure attachments, which is in essence a fear that other people will not meet one's emotional needs. In summary, trauma indeed plays a large role in the development of a child, especially in how attachment forms.

Cognitive Control

Early-life stress (ES) has been connected to different kinds of psychopathology. Mueller et al. (2010) believed that these connections reflect the effects of stress on the neural circuits that help to support cognitive control, however, few studies have looked into the association between ES, cognitive control, and underlying neural architecture. The purpose of this study is to compare adolescents with a documented history of ES to typical adolescents on a cognitive control task using functional magnetic resonance imaging (fMRI). The researchers hypothesized that adolescents with a history of ES would display deficits in their performance on a cognitive-control task, specifically on a *change* task. They guessed that the reaction time (RT) on trials requiring a switch from a prepotent to a non-prepotent response would be slower in the ES group than the control group. Twelve adolescents aged 13, 9 females and 3 males, who had experienced early life stress and were adopted (ES group) were compared to a

group of 21 adolescents who had not experienced early life stress and were not adopted (living with birth parents). The participants took part in a *change* task, a variant of the stop task, during fMRI. ES adolescents took longer to switch from a prepotent response ("go") to an alternative response ("change") than the control group. Differences in activation levels and regions involved in activation were noted as well. Overall, their results suggested that cognitive control is impaired in youth who have experienced early-life stress.

Timetable

Many developmental theories have talked about a critical period of development where the brain is especially sensitive to positive or negative influencers. This is seen in a study by Kreppner et al. (2007), where the authors originally wanted to examine normal versus impaired functioning across seven domains following profound early institutional deprivation. For this study, 144 Romanian children adopted before the age of 43 months into the UK were compared to a group of 52 children born and adopted within the U.K. before the age of six months. None of the children in this second group had experienced early deprivation, neglect, or abuse. Of the seven domains that were investigated, four are strongly and specifically associated with institutional deprivation: cognitive impairment, quasi-autistic patterns, inattention/overactivity, disinhibited attachment, and three are noted as areas of psychopathology, including conduct, emotional, and peer relationships. Longitudinal analyses were taken on each domain through various measures,

including parent information, parent interviews, behavioral and family relationship questionnaires given, teacher questionnaires, and comprehensive social, cognitive, and physical assessments. In addition to this, standardized cognitive and neuropsychological testing was administered as well as behavioral observations. The results of this study supported the idea that profound institutional deprivation lasting longer than the first six months of life has major effects on patterns of pervasive impairment at age 11. The authors stated, "The pattern of normality and impairment is mainly established by six years of age, with considerable continuity at the individual level between 6 and 11 years" (p. 943).

A study by Beckett et al. (2007) supported the idea that there is a period of critical brain development. In this study, children from Romania who had spent six months or more in an institution had much lower attainment scores than those who had spent less than six months in an institution. These findings suggest that there is no additional risk for low attainment associated with longer institutional care after six months.

Early Deprivation, Psychopathology, and the Classroom

It has been established that early deprivation disrupts attachment, which can contribute to various forms of psychopathology and impact on the classroom. The following paragraphs address this and ways that educators are mitigating the effects of early deprivation in their classrooms.

Psychopathology/Mental Health

A study by Browne and Winkelman (2007) reinforced how attachment is disrupted by negative childhood experiences. Child abuse and neglect in particular have been connected to insecure attachment in both childhood and adulthood. They wondered if attachment patterns and cognitive distortion indirectly affect the relationship between childhood trauma and later psychological adjustment, with psychological adjustment being defined as the expression of trauma-related symptoms. There were 219 participants for this study, 40 men and 179 women, with the average age being twenty years old. The participants were all enrolled in undergraduate psychology classes at an Australian university. Participants reported a fairly low levels of abuse, but among the most common for abuse/neglect was emotional. This study was conducted using a survey design in which adult attachment, childhood trauma, cognitive distortions, and psychological adjustment were all measured. The Relationship Scales Questionnaire (RSQ) was used to assess adult attachment, the Childhood Trauma Questionnaire (CTQ) was used to assess childhood trauma, the Cognitive Distortions Scale (CDS) was used to assess cognitive distortion, and the Trauma Symptoms Inventory (TSI) was used to assess psychological adjustment. In addition, the participants reported on their primary caregiver experiences growing up and if they had experienced infant separation. Their results showed partial support for the idea that attachment and cognitive distortion mediates the relationship between childhood trauma and trauma

symptoms. The purpose of this study was to examine the psychological adjustment in adults with a history of childhood trauma. Childhood trauma is anything that does not meet the emotional, physical, and psychological needs of a child and interrupts the healthy development of each of these areas. Cognitive distortions are psychological processes whose development is largely influenced by childhood experiences, positive or negative. Cognitive distortions in the areas of safety, controllability, and internal attribution are related to child abuse. These cognitive distortions in turn are associated with symptoms of post-traumatic stress, depression, and anxiety. Their study showed that model-of-self and cognitive distortion were related constructs and that cognitive distortion is strongly related to trauma symptoms.

Antisocial behavior is another mental health issue that has been examined by developmental researchers. Smith, Park, Ireland, Elwyn, and Thornberry (2013) questioned if maltreatment history was associated with educational experiences later in life when children were adolescents and if educational experiences mediated or moderated the impact of early maltreatment. This study used the information from the Rochester Youth Development Study (RYDS), a longitudinal panel study of 1,000 adolescents, to answer their research questions. The participants in this study and their caregivers were first interviewed every six months, and then just the participants at three specific times afterward. Participants were originally selected from the student population of Rochester, NY, public schools, with high-crime areas being

over-sampled to get a sufficient number of at-risk youth. The measures used in this study were the youth and caregiver interviews conducted during the RYDS longitudinal study and public records from the school, police, and country Child Protective Services (CPS) data. Overall results showed that positive educational experiences were associated with reduced crime and violence in early adulthood. This study also showed that performance in school matters. Getting good grades, achieving at reading, or graduating from high school all serve as factors that mediate the impact of maltreatment on adult crime. However, it is important to note that school measures taken in the first or second year of high school do not appear to have a large affect on mediating or moderating this relationship. Therefore, it is vital that interventions specifically for students who have experienced some kind of early life trauma is done early in a child's educational journey. Otherwise, it may be too late as non-normative negative behaviors have already been formed and are difficult to change.

School Setting: Academic Achievement and Behavior

In the school setting, the oral and written language development of children may be impacted by adoption. The purpose of a study by Scott, Roberts, and Krakow (2008) was to examine language development of internationally adopted children. They specifically looked at the oral and written language skills of children adopted from China. This study was done to see if school-aged, internationally adopted children experienced language difficulties and if age at the time of adoption related to subsequent oral and written language skills in

internationally adopted children. The participants were 24 children between the ages of seven and eight. Families that took part in this study were either recruited from a previous study or through the use of e-mail lists that they had subscribed to. Five children from the study had received early intervention services and three of those five had mild to moderate developmental delays that qualified them for services beyond 12 months post-adoption. No neurological delays, hearing impairments, or visual impairments were reported. Data was collected using two parent report questionnaires. The first questionnaire asked for parent and child information and the second questionnaire was done to assess if any outside academic support had been given to the child. The students' oral and written language skills were evaluated using standardized measured and a narrative retell task. The majority of students fell at or above the average range of performance on the standardized measure of oral and written language as compared to the data on the normative sample. However, two participants had low scoring profiles and many of the participants were receiving some kind of additional academic help. This study indicated that time of adoption does matter in regards to academic achievement in their oral and written language skills and that the younger a child is adopted the more likely they are to grow and develop to their potential. It must be noted that children who are adopted at younger ages not only spend less time in an institutionalized setting, but they also have more exposure to the new language post adoption, which all influence their language acquisition and written language skills.

Another study by Blodgett and Lanigan (2018) was done to examine the association between adverse childhood experiences (ACE) and school success in elementary school children. ACEs are the extended exposure of children to traumatic events that may have immediate and/or lifelong effect. ACEs can occur in child, family, or across communities and includes maltreatment (verbal, physical, or sexual abuse), family stress or dysfunction (e.g., a family member that is mentally or physically ill, incarcerated, substance abusing, or the absence of a parent because of death, divorce, or separation, domestic violence), community violence, and natural disasters. With ACEs becoming more and more widespread in the United States, the authors of this study sought to examine the relationship between ACEs and school success in elementary school children. The current study wanted to expand the literature on ACEs by looking at it from the perspective of school personnel rather than parents or the child's own self report and from there, seeing if there was an association between student ACE profiles and academic, behavioral, and attendance problems. The sample size was made up of 2,101 children randomly selected from K-6 classroom rosters given by ten elementary schools across four school districts in a metropolitan area. Of these schools, five were Title I schools and five were non-Title I schools. Half of the participants were male and half were female. In terms of ethnic make-up, 78% of the participants were white and the rest identified as more than one race, Native American, Hispanic, African American, Asian, Pacific Islander, and not reported or other. Of the participants, 55% of them qualified

for free and reduced meal (FRM) and thirteen percent were categorized as having special needs. School personnel were given a ten-item questionnaire to fill out for this report, as well as training regarding the survey and how to give factual knowledge. Academic achievement was assessed using school records such as report cards. Attendance and school behavior concerns were reported by school staff. ACE risk was positively related to student's race, special education enrollment, and FRM enrollment. ACE exposure also positively correlates to behavior concerns, especially for internalizing and externalizing behaviors. As predicted, this study showed that as ACEs increase, so too does the risk of a variety of school-related problems. This shows that educators need to understand ACEs, their impact, and be responsive to the needs of children impacted by ACEs, even if that child is not formally referred for services. There are already different trauma based programs created and ready to be implemented in schools. Schools need to make sure that they take advantage of these resources and incorporate them into their teacher training and curricula programming.

A study by Beckett et al. (2007) specifically looked at the scholastic attainment of children who have been previously institutionalized. Most studies on children who are adopted have shown that although there are initial deficits in cognitive performance these generally diminish after being brought up in an adoptive home. However, these studies have not focused specifically on children who have experienced profound institutional deprivation (PID). Evidence from

longitudinal studies that looked into this has shown that there is both major initial cognitive deficit and then substantial, but still incomplete cognitive recovery. In all of this, no studies have been done to see how children who have PID in their background achieve scholastically following adoption. That is the focus of this study. The sample for this study included 127 eleven-year-old children who were a part of the wider English and Romanian adoptee study. Of this year there were 68 girls and 59 boys. They were compared to the attainment of 49 children (17 girls and 32 boys) that were adopted within the UK from a non-institutional background. The measures used for this study included two attainment scores taken at age eleven from the Wechsler Objective Reading Dimensions (WORLD) basic reading and reading comprehension and one from the Wechsler Objective Numerical Dimensions (WOND) for mathematical reasoning. These three tests were standardized to a mean of 100 and a standard deviation of 15 and were validated at the same time as the Wechsler scales. Deprivation was measured upon arrival for the children from Romania and a short form of the WISC III was used to assess the children's cognitive level at the age of eleven. The revised Rutter teacher scales (B) for school age children were used with additional questions from Behar and Stringfield at both ages 6 and 11 to assess level of I/O and of emotional and conduct problems. Overall children who were adopted from Romania had significantly lower attainment scores than those adopted within the UK. Children from Romania who had spent six months or more in an institution had much lower attainment scores than those who had

spent less than six months in an institution. Their findings suggest that there is no additional risk for low attainment associated with longer institutional care after six months. Again, this shows a critical period of brain development. Lower scholastic attainment was mediated by IQ, and to a lesser degree, I/O.

There have been many (Guss et al. 2020; Mishra et al. 2020; Srivastav et al. 2019; Woods-Jaeger, 2018) articles documenting the negative effect that adverse childhood experiences have on individuals, families, and societies as a whole. Recently there has been more interested in the timeline of impact. Researchers wondered “Does the influence of early adverse experiences remain stable or diminish as the individual develops?” A study by Raby, Martin, Roisman, Labella, et al. (2019) investigated this question. This study used data from the Minnesota Longitudinal Study of Risk and Adaptation (MLSRA) where 265 individuals were tracked from birth to adulthood (32-34 years of age). These participants were recruited through local health departments in Minnesota. All mothers were having their first child, 48% of them were teenagers, 65% were single, and 42% had completed less than a high school education. Data was collected at multiple points through rubrics, interviews, standardized tests, and participant records. Consistent with research, abuse and neglect during the first five years of life continued to be associated with difficulties with peers and poorer performance on tests of academic achievement during childhood and adolescence. Early abuse and neglect also led to less effective involvement with romantic relationships and lower educational attainment during adulthood.

Therefore, going through abuse and neglect at a young age was constantly connected to more interpersonal problems and lower academic achievement from childhood through adulthood (32-34 years).

In another study by Merz and McCall (2010), the behavioral functioning of children adopted from institutions characterized by psychosocial deprivation was investigated. The authors wanted to see the connection between behavior problems and children adopted from psychosocially depriving institutions. The participants for this study were 342 children between the ages of 6-18 adopted from psychosocially depriving Russian institutions that provided for the children physically, but not in a manner that would be labeled as responsive caring. This psychosocially deprived group (PDG) was compared to a non-deprived (ND) group of children born in the U.S. who were adopted within their first six months of life, an internationally adopted group with various levels of deprivation (VLD), and a globally deprived (GD) group from Romania. Data collection was done through questionnaires and surveys that included assessments and behavior checklists. Results showed that attention and externalizing problems were the most common type of behavior problem from this sample and that behavior problems increased with age at adoption.

Combatting the Effects of Early Deprivation

It is concerning to think about how detrimental early deprivation is for a child and what long-term affects it has on the child and his/her future. However, we must remember that the brain is still growing and even after damage can still recover, to a

certain extent. Outside influencers such as home care and school response measures can mitigate such effects, as well as inside influencers such as resiliency. Understanding what role we can provide in combatting the effects of early deprivation will do more than we know in giving children a chance to learn and grow as they should.

Home Care

It has been well documented (Kreppner et al. 2007; McGoron et al. 2012; Rutter et al. 2007) that children who are raised in socially deprived institutional settings have an increased risk for psychopathology. These studies seem to agree that low caregiving quality and social deprivation are the main contributing factors to this. A study by McGoron et al. (2012) assessed if high qualify caregiving leads to decreased symptoms of psychopathology. The researchers of this study hypothesized that security of attachment mediates the association between caregiving quality and symptoms of psychopathology. Participants for this study were 136 children enrolled in the Bucharest Early Intervention Project (BEIP). These children met a certain criteria for being included in this study. Children were assessed at 30 months, 42 months, and 54 months and the present study used these assessments to form their conclusions. Assessments included observational procedures with children and their caregivers and interviews with caregivers. Researchers used the Observational Record of the Caregiving Environment (ORCE), developed by the NICHD Early Child Care Research Network, to assess the children in their setting. Researchers also used the Strange Situation Procedure (SSP), the Disturbances of Attachment Interview (DAI), and the Preschool Aged Psychiatric Assessment (PAPA) to gather and measure data. This study showed that quality of

caregiving when children were 30 months old was associated with symptoms of multiple domains of psychopathology at 54 months of age. Their ratings of security attachment at 42 months mediated the associations between quality caregiving at 30 months and fewer symptoms of psychopathology at 54 months. In summary, high quality care at 30 months predicted reduced symptoms of psychopathology and functional impairment at 54 months. High quality institutions with higher caregiver to child ratios and shorter durations of institutionalizations are all key, as research has shown that later adopted children show greater alterations in brain structure, social behavior, and executive function and early adopted children exhibit fewer and less severe internalizing and externalizing, social and attention problems than later adopted children (Cohen Gilbert et al. 2018).

Resiliency

In addition to home care quality, the question of resiliency has been brought up and if that makes a difference in the behavior of children who have been adopted. A study by Juffer, Stams, and IJzendoorn (2004) examined this question in their report. The authors of this study wanted to find correlations to the problem behavior of children who have been adopted. They stated that although the majority of children who are adopted have transitioned well to their new families and homes, there is a minority that have serious behavior problems. These behavior problems have been reported on, but not much else in relation to their behavioral development. The authors of this study wanted to find out what other correlations there are to behavior and what other kinds of development play a role in behavior. To do this, they looked into two

other aspects of personality functioning, specifically ego resiliency and ego control. The main question asked of this study is what other correlates of problem behavior presented in children who are adopted are there. The authors focused on personality functioning, peer group status, home environment, and racial and ethnic influences. The participants of this study were 176 adopted children who were seven years old. There were 81 males and 95 females who took part. All adoptive families were randomly selected through Dutch adoption organizations and not chosen based on present or future problems. The adoptive parents were Caucasian, the mother was the primary caregiver, and for most of them, the families were middle-class or upper-middle class. The children were adopted from Sri Lanka, South Korea, and Colombia. The adoptive families took part in a longitudinal study in which the authors followed the children's development starting at the age of five months. To conduct this study the authors visited the families when the children were seven years old. At this time, the adoptive mothers were interviewed and given a questionnaire and a Q-sort to complete. The authors also went to the child's school, interviewed his/her classmates, teacher, and had the teacher complete a questionnaire and Q-sort as well. Overall, what the authors had hypothesized would happen, did happen, in this study. They found that resilient children were almost behavior problem free, over-controlling children showed a high rate of internalizing behavior problems, and under-controlling children showed high rates of externalizing behavior problems. Adopted children who were seen as their peers as "controversial or rejected" had more externalizing behavior problems than "popular, average, or neglected" adopted children. Gender and country of origin also

had a significant association with behavior problems and adopted children who wished to be white also had significant association with mother-reported behavior problems.

School Response

As the study from Smith et al. (2013) showed, early intervention is incredibly important in mediating the symptoms of early deprivation in the school setting. A study by Hoover et al. (2018) looked into a statewide implementation of an evidence-based trauma intervention in schools. The main purpose of this study was to describe the implementation and outcome of an evidence-based trauma intervention program in schools. This program, called *Cognitive Behavioral Intervention for Trauma in Schools (CBITS)* was examined as a part of a two-year statewide collaboration effort. The guiding questions of the research were: what are the initial implementation outcomes of CBITS in terms of services provided and fidelity? The second question was: what are the child level outcomes of CBITS in terms of symptoms and functioning pre and post treatment? The participants for this study were 350 racially and ethnically diverse public school students where the average range was 12 years old. Of those participants, sixty-one percent were female. Three hundred and fifty students started the program and ninety percent of them completed the program (316). This study was conducted over two years in Connecticut across different communities. There were 73 CBITS groups and 20 clinicians that served them. The Connecticut Department of Children and Families (DCF) and the Child Health and Development Institute (CHDI) were a part of this program and involved district and school leadership. Students took part in ten group sessions and one to three individual sessions while parents did two parent psycho-educational sessions

and teachers did one teacher educational session. Students were screened using various checklists to determine the need and eligibility for this intervention. Overall, students who took part in this intervention showed improvement in Post Traumatic Stress Disorder (PTSD) symptoms, behavioral problem severity, and functioning. Caregivers reported that they were very satisfied with services, and fidelity ratings done by the clinicians reflected high fidelity to the model. These results showed the need for schools to implement trauma-based interventions.

Another study looked at a program implemented at the elementary level that is aimed at students with ACEs in their backgrounds and seeks to link the home environment as part of the action plan to make it comprehensive. This study by Rishes, Tabone, Hartnett, and Safran (2019) first sought to identify children with trauma in their background, secondly to create a school environment that is trauma informed, and third to link behavioral health services at school with the home environment. This program measured 51 classrooms from pre-K to first grade from eleven schools over two school years in West Virginia. First, trainings were conducted with schools and teachers in order to train them on the program. Next, each school was assigned a *Trauma Informed Elementary Schools* (TIES) support person. This liaison was a master's level licensed therapist and was present in each school at least two days a week and on call for TIES classroom teachers. These individuals also worked within the community and provided outreach and training to parents and other caregivers on trauma informed care giving. A scoring system called Classroom Assessment Scoring System (CLASS) was done at the beginning of the school year and at the end of the school year over the three domains of

emotional support, classroom organization, and instructional support being studied to assess growth. The results of this study showed that classrooms that participated in the TIES program showed improvement in two out of the three targeted domains and that comparison classrooms showed a decline.

Early deprivation indeed plays a role in the overall cognitive development of a child, leaving an imprint on the brain and altering the way neural pathways connect and exchange information. Being aware of the various ways this can present in a child's behavior and ability to learn will help educators in the way that they teach, the expectations they hold, and the care they serve to their students who come from such backgrounds.

CHAPTER III: DISCUSSION AND SUMMARY

Summary of Literature

Deprivation is like a dirty dog that leaves its dark prints all over a child's cognitive, social, and emotional growth and development. The physical ramifications are seen in the volumetric changes of the amygdala, how these changes persist into childhood, and how brain derived neurotrophic proteins (BDNF) are altered (Cohen, Gunnar, & Thomas, 2018; Mehta et al., 2009; Tottenham et al., 2011). Cognitively speaking, intelligence is compromised, with longer stays in such a setting correlating to lower IQ levels and its effects lasting far longer than what people originally thought (Almas et al., 2016; Beckett et al., 2006; Morison & Ellwood, 2000).

A child's neurodevelopment is also affected, with neural connections involved in motivation and memory processing being the casualties of a brain whose primary goal is survival (Evren Güler et al., 2012; Mehta et al., 2010). The social isolation that is characteristic of deprivation leads to stunted social/emotional development, which is seen in an inability to regulate, to attend to detail, in their deficits with executive function and theory of mind, and finally, in their inattention and overactivity, which make up the main components of ADHD (Colvert et al., 2008; Hostinar et al., 2015; Loman et al., 2013; Stevens et al., 2007). The natural way of creating relationship and forming attachments are negatively impacted by the trauma of early deprivation, as is cognitive control, which supports overall mental, social, and emotional health and wellness (Erozkan, 2016; Mueller et al., 2010). Even more devastating are the findings that point to a period of critical brain development, from birth to six months, where

following interventions or strategies of growth and development are not as effective in reversing these negative development trends and patterns (Beckett et al., 2007; Kreppner et al., 2007).

Children who have experienced early deprivation are more likely to struggle with their psychological adjustment and express trauma-related symptoms, antisocial behavior, and struggle academically in the school setting, from childhood into adulthood (Beckett et al., 2007; Browne & Winkelman, 2007; Blodgett & Lanigan, 2018; Roisman, Labella, et al., 2019; Scott et al., 2008; Smith et al., 2013). The negative impact on behavior functioning from psychosocial deprivation is primarily seen in the school setting through attention and externalizing problems, with studies showing that behavior problems are positively correlated with age at adoption (Merz & McCall, 2010).

Since low caregiving quality and social isolation are the main characteristics of early deprivation, studies have been done to see what interventions might be effective in reversing the effects of these conditions. High quality care, shorter durations of institutional stay, and resiliency all play a large role in reducing symptoms of psychopathology (Cohen Gilbert et al., 2018; Juffer et al., 2004; McGoron et al., 2012). School response in the form of early interventions are key in reducing the symptoms of early deprivation (Hoover et al., 2018; Rishes et al., 2019; Smith et al., 2013).

Limitations of the Research

The pool of research was limited specifically to the topic of deprivation and the impact that this kind of early trauma has on the cognitive, neurological, and social/emotional development of a child. Not only was the research limited to topic, but

also to age. Deprivation from birth to early childhood was addressed because those are formational years for development, and looking beyond that age would blur the results generated and answers given.

The body of research itself was limited by the ethics of such a topic, as studying how deprivation affects a child's growth can only be done in naturally occurring situations, not ones that are created or done as an experiment, therefore the bulk of results were based off of a landmark Romanian study where this was the case.

Implications for Future Research

This study has several implications for future research. First, more research needs to be done on the effects of deprivation on the brain, the long-term ramifications of such damage to development, and what neurological interventions or therapy might be done to alleviate the symptoms seen as a result of this kind of deprivation. There has been some research done in all of these categories, but we still don't know everything, therefore, more needs to happen. This information not only benefits the adopted families, who are central to how our country functions, but it also benefits teachers, other community workers, and even the government in terms of how they form international adoption policy. Secondly, trauma based interventions that are effective in the classroom setting need to be further examined and implemented. Next to adoptive parents, teachers are the next line of defense for these kids, therefore, teachers need to be trained in on how to best respond to and educate these children in a way that meets their functional needs and allows them to then learn to the best of their ability. Finally, research needs to be done at the policy level to make sure that the policies we are

Implications for Professional Application

The professional application of this literature review for a teacher is extensive. Effective teachers not only understand curriculum and the various strategies to creatively impart these thoughts and ideas, but they also understand their students. I would argue that understanding your students, knowing their strengths and areas of need, what they're passionate about, what gives them confidence, what makes them embarrassed, and so on, is the magical key that really opens the door of learning for them. Simply put, a teacher needs to know his/her students in order to reach them academically. Putting in the effort to truly get to know a child tells them that you care for them, and knowing that you care, opens them up in more ways than a book can. If a child does not feel cared for or known, then there is no way that they can truly achieve their full potential in the classroom. When you know a child, they trust you in the journey that you are taking them on, and you better know what academic journey to go on with them. If you know that a child has come from a deprived setting then you know the cognitive, neurological, and social ramifications of such a setting and can adjust your academic expectations and kind and type of intervention and intensity level to meet his/her needs. Seeing the whole child will help the whole child to grow, grow cognitively, socially, and emotionally. We need to teach to the whole child. There is simply no other option.

Understanding this research also enables educators to create interventions or know what kind of support to give to students who are struggling academically, behaviorally, or socially. At my current work place we do not have a trauma based

intervention program, therefore, being trained and reading various articles on this topic helps to inform the way that I informally set up interventions for the students in my classroom that need it. Being educated in the symptoms that present from growing up in a deprived setting will enable me to pick them out and know how to appropriately respond to them instead of either reacting to them or incorrectly diagnosing their origin. Doing either of the latter will only delay the help that the student so desperately needs. Understanding this research helps me to differentiate between needs and to see if a child needs extra support, a more rigorous intervention, or a referral to special education.

Not only am I better able to advocate for and appropriately provide programming for my students, but I am also better equipped to support their families. I can communicate more directly with them, teach them, and work with them to create expectations and routines that support their child in his/her learning across settings. In my years of teaching I have discovered that a student makes the most overall growth when the teacher and parent(s) are on the same team and work for the same things.

Overall, this literature gives me more of a heart of compassion and empathy for those students and their current families who have come from such backgrounds. These students and the needs they bring with them into the classroom means that teachers have more work and less time to give to other areas of their lives, but ultimately we are in the world of education to help all students, not just the easy ones. This research gives me a starting point to understanding students who come from deprived settings and adjust my understanding for those who are adopted or have endured adverse childhood

experiences (ACEs) in other ways, shapes, or forms. Last year I had two students in my classroom who received special education services, were adopted, and exhibited all kinds of academic, behavioral, and social needs. Although these two students did not come from a deprived setting (to the best of my knowledge) they had experienced some trauma from going through adoption, from experiencing the after-effects of the care that their biological mother had given them, and all of that had altered their ability to attend, regulate their bodies, and learn in much the same way as their grade level peers. These students exhibited a lot of physical and verbal behaviors and although they were my two hardest students, understanding their background and the current struggle they were in gave me the perspective that I needed to teach them and show them that they mattered and that I cared for them. From that foundation we were able to set academic, behavioral, and social expectations that they met with support. It was a privilege to witness them grow that year and overcome so many of the obstacles and difficulties that stood in their way. This would never have been possible without first understanding them, their history, and how their former experiences shaped their current choices.

Conclusion

The imprint of deprivation on a child's cognitive, neural, and social functions is real, and sadly, remarkable and long lasting. It is difficult to understand how this can even happen in the first place. However, even though the world we live in can be a cold and cruel place for many, it doesn't mean that light cannot shine. The darkness that we see and feel is there, but even the faintest bit of light can do wonders in pushing back

the blackness around us. In the same way, the needs that face us in the classroom can seem overwhelming, the life situations that our students come from, daunting, but we are the light, we are the bearers of a different story, one that can make all the difference for our students. It is therefore our responsibility to shine as bright as we can, to use the knowledge that we have, to bring hope to those around us that have none.

References

Almas, A. N., Degnan, K. A., Nelson, C. A., Zeanah, C. H., & Fox, N. A. (2016). IQ at age 12 following a history of institutional care: Findings from the Bucharest Early Intervention Project. *Developmental Psychology, 52*(11), 1858-1866. doi:10.1037/dev0000167

Beckett, C., Maughan, B., Rutter, M., Castle, J., Colvert, E., Groothues, C., Hawkins, A., Kreppner, J., O'Connor T.G., Stevens, S., & Sonuga-Barke, E. J. S. (2007). Scholastic attainment following severe early institutional deprivation: A study of children adopted from Romania. Springer Science and Business Media LLC. doi:10.1007/s10802-007-9155-y

Beckett, C., Maughan, B., Rutter, M., Castle, J., Colvert, E., Groothues, C., Kreppner, J., Stevens, S., O'Connor, T.G., & Sonuga-Barke, E. J. S. (2006). Do the effects of early severe deprivation on cognition persist into early adolescence? Findings from the English and Romanian adoptees study. *Child Development, 77*(3), 696-711. doi:10.1111/j.1467-8624.2006.00898.x

Blodgett, C., & Lanigan, J. D. (2018). The association between adverse childhood experience (ACE) and school success in elementary school children. *School Psychology Quarterly, 33*(1), 137-146. doi:10.1037/spq0000256

Browne, C., & Winkelman, C. (2016). The effect of childhood trauma on later psychological adjustment. *Journal of Interpersonal Violence, 22*(6), 684-697. doi:10.1177/0886260507300207

Cohen-Gilbert, J. E., Stein, E. R., Gunnar, M. R., & Thomas, K. M. (2018). Association of early stress and BDNF genotype with response inhibition during emotional distraction in adolescence. *The Journal of Early Adolescence, 38*(9), 1265-1285. doi:10.1177/0272431616675975

Colvert, E., Rutter, M., Kreppner, J., Beckett, C., Castle, J., Groothues, C., Hawkins, A., Stevens, S., & Sonuga-Barke, E. J. S. (2008). Do theory of mind and executive function deficits underlie the adverse outcomes associated with profound early deprivation?: Findings from the English and Romanian adoptees study. *Journal of Abnormal Child Psychology, 36*(7), 1057-1068. doi:10.1007/s10802-008-9232-x

Erozkan, A. (2016). The link between types of attachment and childhood trauma. *Universal Journal of Educational Research, 4*(5), 1071-1079. doi:10.13189/ujer.2016.040517

Evren Güler, O., Hostinar, C. E., Frenn, K. A., Nelson, C. A., Gunnar, M. R., & Thomas, K. M. (2012). Electrophysiological evidence of altered memory processing in children experiencing early deprivation. *Developmental Science, 15*(3), 345-358. doi:10.1111/j.1467-7687.2011.01131.x

Gündüz, B., Çapri, B., Evin, S., , A., & Tunç, A. (2013). *Educational research and reviews attachment styles, abuse experiences and depression* doi:10.5897/ERR2013.1541

Guss, S. S., Morris, A. S., Bosler, C., Castle, S. L., Hays-Grudo, J., Horm, D. M., & Treat, A. (2020). Parents' adverse childhood experiences and current relationships with their young children: The role of executive function. *Early Child Development and Care, 190*(7), 1042-1052. doi:10.1080/03004430.2018.1513921

Francisco, M. P. B., Hartman, M., & Wang, Y. (2020). Inclusion and special education. *Education Sciences, 10*(9), 238. doi:10.3390/educsci10090238

Hoover, S. A., Sapere, H., Lang, J. M., Nadeem, E., Dean, K. L., & Vona, P. (2018). Statewide implementation of an evidence-based trauma intervention in schools. *School Psychology Quarterly, 33*(1), 44-53. doi:10.1037/spq0000248

Hostinar, C. E., Johnson, A. E., & Gunnar, M. R. (2015). Early social deprivation and the social buffering of cortisol stress responses in late childhood: An experimental study. *Developmental Psychology, 51*(11), 1597-1608. doi:10.1037/dev0000029

Juffer, F., Stams, G. J. M., & IJzendoorn, M. H. (2004). Adopted children's problem behavior is significantly related to their ego resiliency, ego control, and sociometric status. *Journal of Child Psychology and Psychiatry, 45*(4), 697-706. doi:10.1111/j.1469-7610.2004.00264.x

Kreppner, J. M., Rutter, M., Beckett, C., Castle, J., Colvert, E., Groothues, C., Hawkins, A., O'Connor, T. G., Stevens, S., & Sonuga-Barke, E. J. S. (2007). Normality and impairment following profound early institutional deprivation. *Developmental Psychology, 43*(4), 931-946. doi:10.1037/0012-1649.43.4.931

Loman, M. M., Johnson, A. E., Westerlund, A., Pollak, S. D., Nelson, C. A., & Gunnar, M. R. (2013). The effect of early deprivation on executive attention in middle childhood. *Journal of Child Psychology and Psychiatry, 54*(1), 37-45. doi:10.1111/j.1469-7610.2012.02602.x

McGoron, L., Gleason, M. M., Smyke, A. T., Drury, S. S., Nelson, C. A., Gregas, M. C., Fox., N. A., & Zeanah, C. H., M.D. (2012). Recovering from early deprivation: Attachment

mediates effects of caregiving on psychopathology. *Journal of the American Academy of Child and Adolescent Psychiatry, 51*(7), 683-693. doi:10.1016/j.jaac.2012.05.004

Mehta, M. A., Golembo, N. I., Nosarti, C., Colvert, E., Mota, A., Williams, S. C. R., Rutter, M., & Sonuga-Barke, E. J. S. (2009). Amygdala, hippocampal and corpus callosum size following severe early institutional deprivation: The English and Romanian adoptees study pilot.*Journal of Child Psychology and Psychiatry, 50*(8), 943-951. doi:10.1111/j.1469-7610.2009.02084.x

Mehta, M. A., Gore-Langton, E., Golembo, N., Colvert, E., Williams, S. C. R., & Sonuga-Barke, E. (2010). Hyporesponsive reward anticipation in the basal ganglia following severe institutional deprivation early in life. *Journal of Cognitive Neuroscience, 22*(10), 2316-2325. doi:10.1162/jocn.2009.21394

Merz, E. C., & McCall, R. B. (2010). Behavior problems in children adopted from psychosocially depriving institutions. *Journal of Abnormal Child Psychology, 38*(4), 459-470. doi:10.1007/s10802-009-9383-4

Mishra, A. A., Schwab-Reese, L. M., & Murfree, L. V. (2020). *Adverse childhood experiences associated with children's patterns of out of home placement over time and subsequent negative outcomes during adolescence.* Springer Science and Business Media LLC. doi:10.1007/s10566-019-09526-4

Morison, S.J. & Ellwood, A. (2000). Resiliency in the aftermath of deprivation: A second look at the development of Romanian orphanage children. *Merrill-Palmer Quarterly*, *46*(4), 717–737.

Mueller, S. C., Maheu, F. S., Dozier, M., Peloso, E., Mandell, D., Leibenluft, E., Pine, D. S., & Ernst, M. (2010). Early-life stress is associated with impairment in cognitive control in adolescence: An fMRI study. *Neuropsychologia, 48*(10), 3037-3044. doi:10.1016/j.neuropsychologia.2010.06.013

Nelson, C.A. (2017). Romanian orphans reveal clues to origins of autism. Retrieved from: https://www.spectrumnews.org/opinion/viewpoint/romanian-orphans-reveal-clues-origins-autism/

Raby, K. L., Roisman, G. I., Labella, M. H., Martin, J., Fraley, R. C., & Simpson, J. A. (2019). The legacy of early abuse and neglect for social and academic competence from childhood to adulthood. *Child Development, 90*(5), 1684-1701. doi:10.1111/cdev.13033

Rutter, M., Colvert, E., Kreppner, J., Beckett, C., Castle, J., Groothues, C., Hawkins, A., O'Connor, T. G., Stevens, S. E., & Sonuga-Barke, E. J. S. (2007). Early adolescent outcomes for institutionally-deprived and non-deprived adoptees. I: Disinhibited attachment. *Journal of Child Psychology and Psychiatry, 48*(1), 17-30. doi:10.1111/j.1469-7610.2006.01688.x

Scott, K. A., Roberts, J. A., & Krakow, R. (2008). Oral and written language development of children adopted from china. *American Journal of Speech-Language Pathology, 17*(2), 150-160. doi:10.1044/1058-0360(2008/015)

Smith, C. A., Park, A., Ireland, T. O., Elwyn, L., & Thornberry, T. P. (2013). Long-term outcomes of young adults exposed to maltreatment. *Journal of Interpersonal Violence, 28*(1), 121-156. doi:10.1177/0886260512448845

Srivastav, A., Davis, R. E., Strompolis, M., Crouch, E., Thrasher, J. F., & Spencer, M. (2019). *Responding to adverse childhood experiences: Understanding the role of safe, stable, and nurturing relationships in reducing alcohol and tobacco related risk behaviors*Informa UK Limited. doi:10.1080/1067828x.2020.1774027

Stevens, S. E., Sonuga-Barke, E. J. S., Kreppner, J. M., Beckett, C., Castle, J., Colvert, E., Groothues, C., Hawkins, A., & Rutter, M. (2007). Inattention/overactivity following early severe institutional deprivation: Presentation and associations in early adolescence. *Journal of Abnormal Child Psychology, 36*(3), 385-398. doi:10.1007/s10802-007-9185-5

Tottenham, N., Hare, T. A., Millner, A., Gilhooly, T., Zevin, J. D., & Casey, B. J. (2011). Elevated amygdala response to faces following early deprivation. *Developmental Science, 14*(2), 190-204. doi:10.1111/j.1467-7687.2010.00971.x

Woods-Jaeger, C. (2018). Promoting resilience: Breaking the intergenerational cycle of adverse childhood experiences. *Health Education & Behavior, 45*(5), 772–780. https://doi.org/10.1177/1090198117752785