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Adverse Childhood Experiences (ACEs) and the effects on Child Development.

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Adverse Childhood Experiences (ACEs) and the effects on Child Development.

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Chapter 1: Introduction

For a child, the most crucial time in development, are the first five years of life. At a rapid pace, the brain is creating the foundations for all learning and development for later in life (Bick & Nelson, 2016). For a young child, "the conditions from the beginning form the basis for lifelong health through positive experiences that strengthen the developing biological system" (Andersson et. al., 2021, pg.1) Research has shown that early life stress has negative consequences on the developing biological system. Childhood exposure to "chronic stress leads to changes in endocrine, immune, and nervous systems by inducing physiological abnormalities" (Andersson, et. al., 2021, pg.2). Chronic stress is an important factor for the intergenerational transmission of ACEs (Andersson et. al., 2021). Adverse childhood experiences (ACEs) "are traumatic events of childhood that include physical, sexual, and emotional abuse, as well as the experience of household dysfunction, such as divorce/separation, domestic violence, or living with an adult experiencing mental illness, substance use/misuse, or incarceration" (Crouch, et al., 2019, para.5). Being that the first five years of life is when the brain is developing rapidly, exposure to adversities weakens the developing biological system and negatively influences age-appropriate developmental trajectories.

Background of the study

Adverse Childhood Experiences (ACES) is a term that first became popular in 1990 when the CDC-Kaiser Permanente began a study on the relationship between childhood abuse, neglect, household challenges and diseases in adulthood. During this study, medical interventionists created questionnaires regarding adverse childhood experiences. Within these questionaries' is how people received ACE scores. A high ACE score correlated with adults having experience more trauma and the more their mental and physical health was impacted. Upon reviewing the results from the questionnaires, medical interventionists discovered that the development of risk factors and disease

and well-being in adulthood are strongly related to adverse childhood experiences (Felitti et al., 1998, pg 249-251). Meaning the trauma, abuse and neglect an adult experienced early in life, correlates to the development of health issues as an adult. These findings further support the research for this starred paper and reiterate the importance for understanding how early adversities in negatively influence development and impact a person's health and well-being.

Importance of the Study

The importance of this study is driven by the increased awareness surrounding the concept of Adverse Childhood Experiences (ACEs) and the growing number of children who are exposed to adversities throughout childhood. Moreover, this study is meant to highlight how exposure to ACEs in the first five years of life negatively impacts the developing biological system, to uncover the ways early intervention services has a positive impact on the child, and what trauma informed strategies early childhood educators can use to better support the needs of their students who are exposed to ACEs.

Research Questions

This Starred Paper examines the ways in which ACEs impact child development. More specifically, how children are exposed to ACEs between the ages of birth through age five. As educators, it's crucial that we are informed on how ACEs impact the ways our students develop and to broaden our awareness on trauma informed strategies for the classroom. The following three questions guided the research for this Starred Paper:

1. How does exposure to ACEs in early childhood (Birth – 5) affect various areas of child development (cog, so/emo, , speech/lang, motor)
2. To what extent do Early Intervention services impact the effects of ACEs?

3. What trauma informed strategies can early childhood/ECSE staff use in their classrooms to support students affected by ACEs?

Literature Search Description

To find the most relevant research to address the three previously posed questions, I focused on referencing Books, Academic Journals, and National Health Organization studies from 2010 onward. The following Books, research databases and academic journals were accessed through the St. Cloud State Electronic Library, Google and Google Scholar; JStor, ResearchGate, ScienceDirect, ScienceDaily, National Library of Medicine, Journal of Child & Adolescent Trauma, The Journal of the American Academy of Child and Adolescent Psychiatry, The Center for Disease Control and Prevent, The American Academy of Pediatrics, The National Association of Education for Young Children, Council for Exceptional Children, The National Child Traumatic Stress Network, and The Minnesota Department of Education.

Definition of Terms

ACES: are trauma-based situations that children have experienced or witnessed directly or vicariously. Such experiences can cause lasting trauma and mental health issues throughout life (Center on the Developing Child, 2020-c)

Toxic Stress: "High doses of adversity experienced during critical and sensitive periods of early development, without adequate buffering protections, can become "biologically imbedded" leading to the toxic stress response (e.g., ACEs)" (The Science of Aces & Toxic Stress, 2022, pg.1)

Early Intervention: *"*Services and supports that are available to babies and young children with developmental delays and disabilities and their families." (Center for Disease and Control, 2022, para.1)

Trauma: “Trauma is an emotional response to a terrible event like an accident, rape, or natural disaster. Immediately after the event, shock and denial are typical. Longer term reactions include unpredictable emotions, flashbacks, strained relationships, and even physical symptoms like headaches or nausea.” (American Psychological Association, 2022, para.1)

Child development: “The sequential changes in the behavior, cognition, and physiology of children as they grow from birth through adolescence.” (American Psychological Association, 2022 pg.1)

Early childhood: “Early childhood is a pivotal period of child development that begins before birth through age eight. This is a period of rapid brain and body development.” (American Academy of Pediatrics, 2022, para.1)

Early childhood special education: *“*Early Childhood Special Education (ECSE) programs provide support and services to infants, toddlers and preschool children with disabilities and their families.” (Minnesota Department of Education, n.d.-a, para.3)

Social Emotional Learning: “Is the process of developing self-awareness, self-control, and interpersonal skills that are vital for school, work, and life success.” (Committee for Children, 2023, para.1)

Positive Behavior Interventions and Support: “An evidenced- based, tiered framework for supporting *students*’ behavioral, academic, social, emotional, and mental health.” (Center on Positive Behavior Interventions and Supports, n.d., para.1)

Part C: “Part C of IDEA the Program for Infants and Toddlers with Disabilities—is a federal grant program that assists states in operating a comprehensive statewide program of early intervention services for infants and toddlers ages birth–2 with disabilities, and their families.” (Early Childhood Technical Assistance Center, 2011, para.1)

*Individualized Family Service Plan(IFSP): "*The Individualized Family Service Plan (IFSP) is a written plan created to meet the individual needs, concerns, and priorities of individual children, from birth to age 3, and their families. The plan states the family's desired outcomes for their child and themselves and lists the early intervention services and supports that will help meet those outcomes. It also describes when, where, and how the services will be delivered." (Early Childhood Learning & Knowledge Center, 2019, para.1)

*Individualized Education Plan (IEP): "*The IEP outlines the unique needs of the student and the specialized goals and objectives that will help the student make educational progress. Parents are a critical partner in every phase of identifying a student for special education and in establishing the IEP." (Minnesota Department of Education, n.d.-b, para.3)

Pyramid Model: "The Pyramid Model is a framework of evidence-based practices for promoting young children's healthy social and emotional development." (Child Care Council, 2023, para.2)

Trauma informed(TI): "TI is to recognize the pervasiveness of trauma in the world and seek to be responsive to this unfortunate reality. It means becoming aware of trauma's many personal and societal consequences, anticipating how trauma survivors may respond to our words and actions, and doing our part to create a world that does not cause further harm." (King, 2021, para.1)

*Collaborative for Academic and Social Emotional Learning (CASEL): "*A non-profit organization that has helped grow social and emotional learning in education." (Collaborative for Academic and Social Emotional Learning, 2021-b, para.1*)*

Chapter 2: Literature Review

The aim of this paper is to gain a greater understanding of what adverse childhood experiences are and how children are affected by them. This literature review examines relevant research regarding ACES and how they affect the developing biological system, how early intervention programs mitigate the effects of ACEs and what programs teach trauma informed strategies for educators to better support their students who are exposed to ACES. Below are the key findings from research that helped outline chapter two.

Adverse Childhood Experiences

Adverse Childhood Expeirnces (ACEs) is a term coined by Vincent Felitti and Robert Anda. It's a term used to define the traumatic events of childhood like including physical, sexual, and emotional abuse (Felitti et al., 1998). These are adversities experience in childhood that pose serious threats to a child's development. Research studies have found that the positive and negative experiences happening in early childhood have serious consequences, especially when they happen early in life, are chronic or when ACEs accumulate over time. ACEs can become biologically embedded during sensitive periods of development (Birth through age 5).

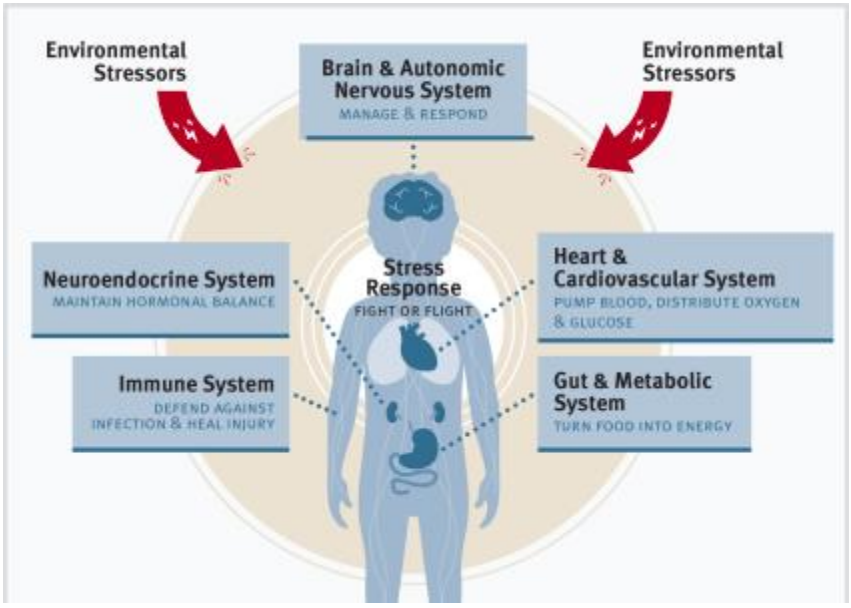
Effects on Development

As a child is exposed to ACEs, it greatly impacts their development as all the biological systems within the body are interconnected. Each system interacts and responds to one another and influences each other's development and function. The body's stress response is always active when continually exposed to traumatic events. Wear and tear is put on the body as it's in a constant state of stress. Due to the constant stress put on the body, chemical changes are made within the brain to help

adapt to its environment (Center on the Developing Child, 2020b). This is known as the Fight or Flight response, which is a chemical response that is triggered when the brain feels threatened. *Figure 1* illustrates the different biological systems within the body and how environmental stressors impact each system (Center on the Developing Child, 2020b). Moreover, this image outlines how all the systems in the body are working together. When one system becomes compromised, the whole body becomes compromised as the biological systems are all interconnected (Center on the Developing Child, 2020b).

Figure 1

Connecting the Brain to The Rest of The Body



Note. How environmental stressors and all biological systems are interconnected. From the Center on the Developing Child, By Harvard University, 2020 https://harvardcenter.wpenginepowered.com/wp-content/uploads/2020/06/InBrief-Connecting-the-Brain-to-the-Rest-of-the-Body.pdf

These changes affect all areas of development, such as such as cognitive functioning, social and behavioral development, the immune, endocrine, and nervous systems. Which leads to chronic health issues, mental illness and puts one at greater risk for substance misuse in adulthood (Center

for Disease and Control, 2020b). All the systems are responsible for lifelong health and well-being and when those early life experiences are compromised it has a resounding impact on each area of development.

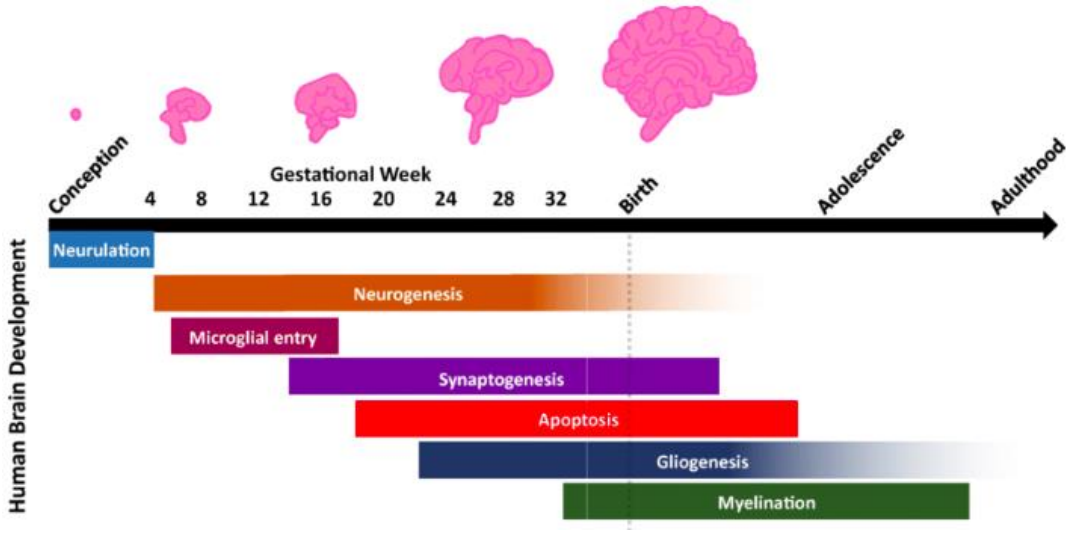
Cognitive Development

In 2016, Johanna Bick and Charles Nelson conducted a study on adverse childhood experiences and the developing brain. The study explored a growing body of evidence regarding early life exposure to adversities specifically involving compromises in the parent-child relationship and how it affects brain development (Bick & Nelson, 2016). Brain development is mainly predetermined by genetics with some influences relating to prenatal stress or substance misuse. While, postnatally, environmental influences provide input to the brain, affecting the patterns that guide neural development. Meaning, a child's life is heavily impacted through the establishment or lack thereof, early care giving relationships, which support attachment to a primary caregiver. Secure attachment to a caregiver provides a responsive and stable environment for the child. This security drives normative brain and behavioral development (Bick & Nelson, 2016).

Furthermore, Bick and Nelsons research highlights how the onset of environmental influences also play a role. *In figure 2,* the image dissects the 7 stages of brain development by creating a developmental timeline. Being that the brain develops in 7 stages, with each stage developing at a certain period, it further adds to the complexity, importance and the timing of environmental influences and early life experiences (Bick & Nelson, 2016).

Figure 2

Human Brian Development Stages



Note. Overview of human brain developmental process. From "Evaluating Neurodevelopmental Consequences of Perinatal Exposure to Antiretroviral Drugs: Current Challenges and New Approaches," by, J.Schnoll, B.Temsamrit, D.Zhang, H.Song, G.Li Ming, & K.Christiain, 2019, *Journal of Neuroimmune Pharmacology, 16(1),* Copyright 2019 by the Journal of Neuroimmune Pharmacology.

Maturity of the brain is derived from genetic and environmental factors (Bick & Nelson, 2016). The full genetic potential of the brain cannot be reached when there is an absence of positive environmental influences during the sensitive periods of brain development. As children are exposed to early adverse rearing, neurodevelopment alterations are being made which increase the risk for cognitive and emotional maladjustment (Bick & Nelson, 2016). If children are reared outside of

normative and responsive caregiving relationships, the development of the brain becomes compromised (Bick & Nelson, 2016).

Social Emotional Development

Social emotional development is extremely important. Positive early life experiences influence the body in many ways. “Social and emotional development means how children start to understand who they are, what they are feeling and what to expect when interacting with others” (Help Me Grow MN, n.d.-a, para.1). Children learn how to build relationships, manage, express, feel emotions and how they explore and engage with the environment around them (Help Me Grow MN, n.d-a). To support typical social emotional development, parents and primary caregivers play the biggest role. Having consistent quality experiences, living in a nurturing environment, and providing a safe space for a child to learn and grow helps establish a foundation that will support the child throughout development. When a child is reared in a positive environment and is provided with responsive care, they are set up for the most success.

On the contrary, research shows when children have experienced chronic stress and trauma, they are at an increased risk for having difficulty identifying, expressing and managing their emotions. “Atypical emotional development is also often observed in children reared in adverse contexts. Problems involve difficulties with stress, sensitivity to reward, and emotion and behavioral regulation, which lead to increased rates of psychiatric disorders, interpersonal problems, and engagement in high-risk antisocial activities” (Bick & Nelson, 2016, para.1). As children grow up in neglectful environments, the body’s developing immune and neuro-endocrine stress response systems are disrupted (Peterson, 2018).

Being that normal biological function is partly determined by environment, it highlights the importance behind attachment and relationships. As children grow, a child’s environment and

primary caregiver influence development. When a child feels safe, loved, and nurtured they learn to trust others, develop a sense of self, and regulate their emotions. If those relationships are compromised and unpredictable, the child learns they cannot rely on others or trust them (Peterson, 2018). As the child continues to develop, they lack the ability to manage and express their emotions, form healthy attachments to people, sustain relationships, behave in an unpredictable way and can even engage in high-risk behaviors. The social emotional needs of the child become increasingly difficult as they grow due to their early life experiences being filled with trauma, neglect, and instability. Their ability to thrive, and become productive members of society is comprised.

Speech/Language Development

"The foundations for the development of speech and language begin in utero, with the growth of the anatomical structures and physiological processes that will eventually support sensory, motor, attention, memory, and learning skills" (Rosenbaum & Simon, 2016, pg. 44). While speech and language skills are often thought of as one process, there is a distinct difference; "Speech is how we say sounds and words, whereas language refers to the words we use and how we use them to share ideas and get what we want" (American Speech-Language Hearing Association, n.d., pg.1). Expressive and receptive language are two components of language that are essential to communication. When sharing thoughts and ideas, one is using expressive language skills. To encode one's thoughts and ideas refers to receptive language skills. Both expressive and receptive language skills work together to process information and produce responses.

While speech and language skills work together to help people communicate, there are genetic and environmental influences that change how communication skills develop. Research shows there are pre-and post-natal influences that impact speech and language development, causing either speech disorders, language disorders or both. During prenatal development, "a fetus is

influenced by every factor that threatens prenatal development—from genetic abnormalities, to nutritional deficiencies, to exposure to environmental toxins—is associated with an increased risk of developing speech and/or language disorders" (Rosenbaum & Simon, 2016, pg. 44). Meaning, that while the fetus is in utero, the environment in which the mother is living in has a direct effect on how the baby's language skills develop as well as genetics and the passing of traits from the parents to the child through biological inheritance.

Furthermore, this research supports how biology and environmental influences affect brain development. Toxic, and traumatic environments contribute to deficits or delays in all areas of development, including speech and language development (Center on the Developing Child, 2020a). Adverse Childhood Experiences are the traumatic events of childhood, whether that be what the fetus experiences in utero or through the external influences once being born. As negative experiences occur, the more likely one is to develop speech or language disorders. These deficits in communication have a widespread and adverse effects on the developing child. Without intervention, the negative consequences cascade and build on one another over time (Rosenbaum & Simon, 2016).

Motor Development

Motor development is essential for a person's physical strength and movement. Motor skills are used every day and help with following everyday tasks like; sitting, crawling, walking, jumping, eating, dressing, writing, cooking, driving, etc. "Whenever they emerge, motor skills lay the foundation for development by opening new opportunities for learning" (Adolph & Hoch, 2020, para.1). Proper motor development allows a person to move, complete tasks more efficiently, and helps with independence as one can learn to perform tasks on their own. The cerebellum and the frontal lobe are the two parts of the brain that affect how a body moves. The frontal lobe controls

movements, whereas the cerebellum fine tunes the movements. When damage occurs to the cerebellum, a person can lose control of motor movements (Center for Neuro Skills, 2023). If trauma or injury occurs to the frontal lobe, the affects can be detrimental, causing personality, and behavioral changes (National Center for Mental Health, 2023). The overall result of chronic stress on the brain affects the formation, "causing wide spread developmental impairments like cognitive delays, stunting of physical growth and impairment in executive functioning and self-regulation skills" (Center on the Developing Child, 2017-d, para.2).

Motor development is a crucial part of a person's overall health, and physical strength. As the brain is put through chronic stress, the body's ability to meet typical developmental trajectories is stunted. Furthermore, the research has shown that when trauma occurs, the brains stress response system halts the brain from learning and processing new information, causing delays in all developmental areas. When put in stressful and traumatic environments, the body is unable to learn and grow, meaning a personas ability to appropriately function cognitively, socially, emotionally, and physically are compromised.

Early Intervention

Early intervention are services and supports that are offered to families for their children who are showing signs of developmental delay. Each state has early intervention programs available to families. Early intervention is important as it can help change a child's developmental path and provides the families with extra support. By offering more support to families it helps build parents' caregiver confidence and skills which can positively influence the development and relationships with their children. Caring, responsive, nurturing relationships are critical for a child's development. The environment in which they grow up also directly influences their development. For families who have experienced ACEs, such as trauma from abuse, neglect, or from living in poverty, they benefit

extremely from programs like early intervention as these services are created to help teach parents to better meet the needs of their child. The prevalence of future problems in children's learning decreases when receiving early intervention services. During the first five years of life, the brain is most capable of change, which further reinforces the need, and importance for early intervention services.

In 2004, a study was done surveying family outcomes at the end of early intervention. The National Early Intervention Longitudinal study worked on uncovering the experiences of families who participated in early intervention. This study gathered information on how well the system was meeting the family's needs and their satisfaction with the system (Scarborough et.al., 2004). Most families indicated a high degree of satisfaction when practicing in early intervention. The data gathered from this study showed that most parents felt the services were individualized based on the needs of the child. Parents also felt more competent about their parenting role and that early intervention had a positive impact on their child's development (Scarborough et.al., 2004). Although most families report a high degree of satisfaction, the findings from this study are limited and biased, as its based-on opinions. It's important to note that most families were satisfied and felt their child needs were met through early intervention but it also highlights how more research regarding early intervention and its effectiveness needs to be done.

Help Me Grow

A part of early intervention, is where it starts. In Minnesota, when someone has concerns surrounding a child's development, Help Me Grow is the early intervention referral system that connects families to resources within their communities. According to the Help Me Grow website, Help Me Grow was created to "address the need for early identification of developmental and/or behavioral concerns, and then to link children and their families to local services that promote

healthy development and support safe, stable and nurturing homes" (Help Me Grow MN, n.d.-b, para.1). Once a referral is made, it is then sent the local school district. The school either conducts a screening or an evaluation to determine if the child is eligible for early intervention/special education (Help Me Grow MN, n.d.-c). To receive early intervention, the child must be found eligible under IDEA Part C or B special education services. There are specific criteria for Part C and B that will determine a child's eligibility. For children ages 0-2, they are provided special education support under IDEA Part C. As that child grows and still requires special education services, they can transition to IDEA Part B. Part B provides special education services to school aged children ages 3 to 21 (Minnesota Department of Education, n.d.-c)

Help Me grow was created to help maximize and strengthen a communities' potential which starts with early childhood systems (Help Me Grow National Center, 2021.). The overall purpose of Help Me Grow is to provide families with resources to gain a greater understanding surrounding child development and age appropriate developmental milestones. It helps families take initiative in seeking help for their child when there are concerns about their development. Help Me Grow encourages parents to become more responsible and confident caregivers, and gives them resources to create a more loving, and nurturing environment.

Early Childhood Special Education

Through Help Me Grow is how families get connected to the early intervention services. Each service is unique to the family and the child to ensure the needs of the family unit are being met. Some families will receive only early childhood special education services (ECSE) where some families might get ECSE, speech therapy, occupational therapy, physical therapy, or vison therapy (Early Intervention Program for Infants and Toddlers with Disabilities, 2011). It is dependent on the needs of the child and what the family needs most support with.

Part C Early Childhood Special Education is a program designed for infants and toddlers with disabilities and their families (Minnesota Department of Education, n.d.-c). This form of early intervention is focused on providing specialized services to infants and toddlers with disabilities in their natural environments. To receive this service, a child must be evaluated. Once an evaluation is completed, and the child is found eligible, a plan of care is created; known as an Individualized Family Service Plan (IFSP). This plan is designed using observations, developmental history forms, evaluation results from standardized assessments and informed clinical opinion. The IFSP is tailored to address each unique need or related service the child and family will benefit from. The following related services can be provided; assistive technology, audiology, health/medical/nursing, occupational therapy, physical therapy, parent counseling, mental health therapy, social work, speech therapy, and transportation services (Early Intervention Program, 2011). The IFSP team is there to support and provide early intervention services required to meet the needs identified in the evaluation. As well as assist the parents of infants and toddlers with disabilities in understanding the early intervention services outlined in the IFSP (Minnesota Department of Education, n.d.-c).

Part B special education services is another form of early intervention. Part B is tailored for school aged children with disabilities. These services are provided through the public-school system in the district in which a child resides. Like Part C, a child who receives ECSE services under Part B, also have access to related services like occupational therapy, physical therapy, speech therapy, vision/hearing services, etc. But instead providing these services within a child's natural environment, they are provided in the school and grow them as they get older, i.e. preschool programs, elementary school, grade school, high school, transition programs. Etc.

Instead of an IFSP, Part B offers a plan of care called an Individualized Education Plan (IEP). With an IEP, the services provided to the student are more focused on the needs of the child

versus the family. IEP's are important documents for teachers, parents, and related services providers to collaborate on and work on improving the educational experiences for children with disabilities. Teachers use them as guided to collect and evaluate the progress a child is making on their goals. Which helps educators assess whether their intervention and teaching strategies are effective. This document is meant to set goals and state the services school districts are to provide. It is an outline of how, when, where and for long a child will being receiving special education services.

Early childhood special education is crucial for students with disabilities and their families. It's a large part of the early intervention process in how children and families get the support they need. "There is an urgent and substantial need to identify as early as possible those infants and toddlers in need of services to ensure that intervention is provided when the developing brain is most capable of change" (Individuals with Disabilities Education Act, 2019, para.1). Without early intervention, there can be a resounding impact on the developmental trajectories for a child. This further supports what research says on the benefits of early intervention. When a child is not provided a healthy, stable, nurturing, safe, household, the developing is negatively impacted. Negative early life experiences are associated with negative health outcomes later in life. Early intervention is there to prevent/mitigate the detrimental impact adversities can have on our earliest learners.

ACEs Screening

Screening tools are used by professionals like doctors, teachers, therapists, etc. who are working on uncovering the potential presence of a problem. They are typically in the form of check lists and questionnaires and are the preliminary steps in assessments. Screening tools also help to determine if a more comprehensive assessment is needed (Center for Disease and Control, 2023).

Depending on the setting, each screening tool is tailored to uncover answers regarding specific information that is research and data based. The information collected form the screens are used to formulate what steps are needed to mitigate the problem from occurring.

In regard to Adverse Childhood Experiences, health care professional have created multiple ACEs screeners. “The adverse childhood experiences (ACEs) screening instrument is a validated, accessible screening tool that can be used for early detection of common childhood traumas” (Watson, 2019, para.1). From the original ACE study, done by the Center for Disease and Control and Kaiser-Permanente, the ACE questionnaire is one of the tools health care professional can use to screen for childhood trauma. The questionnaire consists of 10 questions which produce an ACE score. A persons ACE score reflects the amount of trauma they have experienced throughout their life; the higher the score, the more trauma.

The Bay Area Research consortium, Center for Youth Wellness and Benioff Children’s Hospital developed the PEARLS screen (The Pediatric ACEs and Related Life-events Screener). This screen is used to screen children ages 0-19 for ACEs (Screening Tools, 2023). The ACEs Aware organization has conducted research with their screens and reports show that over the last 20 years, the exposure to ACEs has influenced adult morbidity and mortality (Benefits of Screening for ACEs, 2021). Meaning, the exposure to trauma and toxic stress as a child, directly influences and adults health and well-being as they get older. Research supports that annual ACE screening for adolescents can capitalize on critical opportunities for prevention, early detection and intervention. It can reduce exposure to adversity and the risk for negative health outcomes, and it improves assessment for and treatments of childhood health conditions (Benefits of Screening for ACEs, 2021). These screening tools are administered to parents and children to help clinical teams provide more effective and equitable health care (Benefits of Screening for ACEs, 2021).

Another screening tool used in professional health care settings is the Center for Youth Wellness' Adverse Child Experiences Questionnaire (CYW ACE-Q). Like the previous ACE screeners, this tool is given to parents/caregivers to fill out regarding their child's life experiences. "The purpose of this screening tool is to identify patients who are at an increased risk of chronic health problems, learning difficulties, mental and behavioral health problems and developmental issues due to changes in brain architecture and developing organ systems brought on by exposure to extreme and prolonged stress" (Bucci, et.al, 2015, pg.9). The CYW ACE-Q is meant to be a routine screen offered to families at each wellness check. After the screening tool has been administered and if the child receives an ACE score of 4 or more, the clinician then discusses the options available to the family to help support their child's development.

Pediatricians and Family doctors are in the best positions to evaluate if further assessments are needed on their patents who may be exposed to ACEs. "We're not saying the problem of exposure to chronic adversity to childhood trauma can be resolved in the doctor's office, but it's one of the places that I can be address. We believe it's a public health threat that has implications across sectors" said the CEO of the Center for Youth Wellness (Rinker, 2015, pg.1). Through Suzy Loftus research and direct experience in working with children exposed to ACEs at the Center for Youth Wellness, she has found ACE Screening tools are best used in doctor offices as they are the ones who have the first contact with families. The doctors can then make referrals and connect them with outside resources for families to find the right support for their child. This is a crucial part in the early identification, prevention and intervention of ACEs. Early Intervention means, early detection and intervention to mitigate the effects a potential problem may be causing. The earlier on a problem is found, may make it easier to treat and provide intervention services. Through resources like Help Me Grow, families get connected to school districts for Part C or B Early Childhood

Special Education services. This form of early intervention provides families with education and resources surrounding child development. Strategies and coaching families through their child's development allows parents to become more competent and confident caregivers. Screening tools are a preventive measure used in early intervention for identifying potential risk factors associated with ACEs. Screening tools help professionals uncover the potential presence of a problem and help to determine if more comprehensive assessments are needed. Targeted interventions are developed through information received from comprehensives assessments. The earlier the interventions are identified, that faster families and children can receive services.

Trauma Informed Strategies

Trauma Informed (TI) Strategies in schools refer to a comprehensive approach that acknowledges and addresses the impact of trauma on students' lives and learning experience. In the field of education, it has become increasingly evident that the impact of trauma on students' lives can profoundly influence their learning experiences and outcomes. TI strategies are essential in creating a supportive and nurturing environment for young learners who have experienced trauma. These strategies aim to foster resilience, build trusting relationships, and address the unique needs of children who face challenges due to their early life experiences.

Schools can adopt TI teaching strategies through systems like Positive Behavioral Interventions & Supports(PBIS) and Social Emotional Learning (SEL) programs. Educators can use techniques and approaches outlined in PBIS and SEL programs to cultivate a classroom culture that is trusting, safe and supports the individual needs of students and promotes educational and emotional success. By incorporating TI informed strategies in early childhood settings, educators can positively impact the cognitive, social and emotional development of their students.

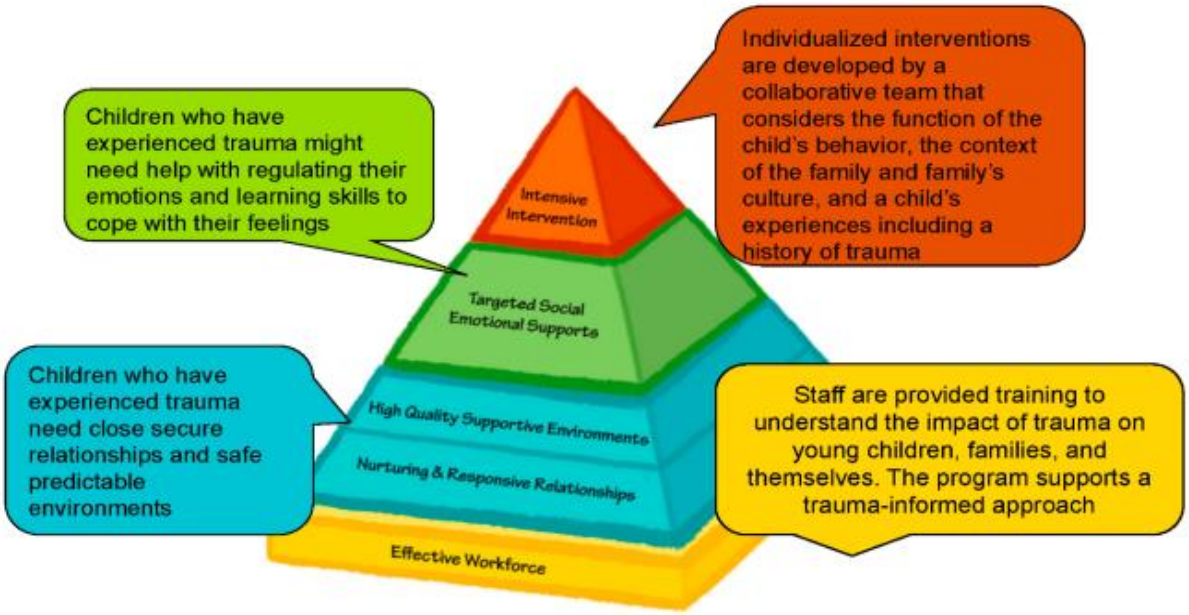
Positive Behavioral Interventions & Supports (PBIS)

Positive Behavioral Interventions and Supports is an evidence-based and data-driven tiered framework that schools use to help students' behavioral, academic, social, emotional and mental health. In Early Childhood settings, PBIS is also known as the Pyramid Model or Program-Wide Positive Behavioral Interventions and Support systems. The Pyramid Model is an extension of the PBIS framework and is used in early childhood settings to address the needs and unique contexts of programs serving infants, toddlers, and preschoolers. Additionally, the Pyramid model was created to support children's social and emotional needs and to assist in offering behavioral support to children who are at risk or have ongoing social, emotional and behavioral issues (Center on Positive Behavioral Interventions & Supports, n.d.).

The Pyramid model is broken into three tires. Tier1, Tier 2 and Tier 3. *Figure 3,* is a visual representation of the tiers broken down and how they are aligned with TI strategies. Tier 1 supports ALL students and focuses on modeling, teaching and acknowledging positive social, emotional and behavioral skills; Tier 2 supports SOME students and focuses on supporting students who are more at risk for developing more unwanted behaviors; Tier 3 supports the fewest students and focuses on providing more intense individual interventions for behavioral and academic outcomes (Center on Positive Behavioral Interventions & Supports, n.d.). Each tier has designated team members to provide the correct support and intervention.

Figure 3

Integrating Trauma Informed-Care with the Pyramid Model



To ensure educators are using the Pyramid model with fidelity, The Pyramid Model Consortium - Supporting Early Childhood PBIS created a checklist for teachers. This checklist was designed for teachers to reflect on how they can support children who have experienced trauma. Outlined in this checklist are trauma informed strategies that are aligned with the PBIS Pyramid Model. Teachers are to use the checklist as a reference in relation to the environment created within their classrooms to ensure they are supporting of young learners experiencing trauma (Morris et al., 2021). “A trauma-informed approach is not a program model that can be implemented and then simply monitored using a fidelity checklist. Rather, it is a profound paradigm shift in knowledge, perspective, attitudes and skills that continues to deepen and unfold over time.” (The Pyramid Model Consortium Support Early Childhood PBIS, 2015, pg.1). Meaning, a trauma-informed approach to teaching cannot be adopted and only tracked with a checklist. Instead, it represents a fundamental change in one’s practices and skills that continue to evolve over time (National Center for Pyramid Model Innovations, 2021).

In 2016, Drs. Mary Hemmeter, Patricia Snyder and James Algina, conducted a trail on the classroom-wide teacher implementation of the Pyramid model practices. Within this trial, there were 40 preschool teachers, 20 received professional development (PD) on the Pyramid Model and 20 did not. Amongst the teachers who received PD, children of the intervention teachers were rated higher on social emotional skills and demonstrated fewer challenging behaviors compared to the students whose teacher did not receive PD on the Pyramid model. Children placed in intervention classrooms who are at elevated risk for behavior disorders, saw improvements in their social interaction skills like children in the control teachers' classrooms (Hemmeter et al., 2016).

With the growing evidence surrounding trauma and how children are affected through adverse early childhood experiences, further supports the need for trauma-informed programs and strategies used in schools. The Pyramid Model through PBIS is a framework used for promoting the social-emotional development of young children. Research continues to show that when PBIS is implemented in early education settings, children's social skills have improved and have led to a decline in problematic behaviors and improved classroom quality (Brovokich & Dirsmith, 2021). When PBIS is introduced in early childhood, it sets the foundation for positive behavior, social-emotional development and academic success. Laying this foundation early on provides children with the social, emotional and behavioral tools to be successful throughout their educational experiences.

Social Emotional Learning (SEL)

According to the Collaborative for Academic, Social and Emotional Learning (CASEL) Organization, Social and Emotional Learning (SEL) is defined as "the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for

others, establish and maintain supportive relationships, and make responsible and caring decisions" (Collaborative for Academic, Social and Emotional Learning, 2021-a, para.1). Self-awareness, self-management, social awareness, relationships skills, and responsible decision-making are all skills that form through the process of social emotional development (Collaborative for Academic, Social and Emotional Learning, 2021-b). SEL is vital for young children as it promotes emotional well-being, self-awareness and interpersonal skills. When schools implement SEL programs in early childhood, it equips children with the essential life skills needed throughout their development. Without these skills, children are left without the fundamental building blocks that support emotional literacy.

Collaborative for Academic, Social and Emotional Learning (CASEL)

CASEL is a national non-profit organization that was founded in 1994 by Daniel Goleman, and Linda Lantieri who are leading experts in the field of Education and Psychology (Collaborative for Academic, Social and Emotional Learning, 2021-c). This organization was designed to be a guideline for educators to support students' social, emotional and academic learning. CASEL's framework emphasizes the importance behind equitable learning environments in settings like the classroom, school, parent caregiver relationships and within communities. As an evidence based SEL program, CASEL is aligned with 5 core concepts, self-awareness, self-management, social awareness, relationship skills, and responsible decision making. Research continues to show when schools have a systemic approach to SEL it directly correlates to students' academic, personal, social, and professional success as well as creating positive school environments, and helps schools coordinate diverse services and programs. (Collaborative for Academic, Social and Emotional Learning, 2022-d).

A critical part of utilizing the CASEL framework is how educators implement the core concepts into their classroom. With the goal of CASEL being a SEL program it also can be used as a TI strategy. As the framework emphasizes social emotional well-being, building positive, trusting relationships and fostering resilience in young children, the skills can support young students who have experienced ACEs. Being that SEL is how children are taught emotional literacy skills, implementing a framework like CASELs is how educators can support students who've experienced traumatic events. Incorporating SEL programs in educational settings is a crucial part in supporting people affected by trauma and provides students with tools and resources to cope and overcome the negative effects associated with ACEs.

Rapid brain development happens in the first few years of a child's life. Early life experiences are shaping the way the brain is formed. With the rapid development of the brain, also comes the brain's capacity to learn social emotional skills. Early life experiences affect how children react and respond and can either lay a weak or strong foundation for the development of social and emotional skills. This places emphasis on the ways in which educators choose to respond to students' trauma. How educators create safe, consistent, and nurturing environments, all influence the social emotional development of their students. "The active measures we take to improve classroom climate can be very effective and can support our trauma-exposed students" (Jennings, 2018, para.1). Students cannot learn if they do not feel safe. "When teachers are proactive and responsive to the needs of students suffering from traumatic stress and make small changes in the classroom that foster a feeling of safety, it makes a huge difference in their ability to learn" (Minahan, 2019, para.1). Having classroom environments that are aligned with SEL practices and implement TI strategies is how educators can build strong emotional literacy skills and provide coping skills to students affected by ACEs.

Chapter 3: Results

Adverse Childhood Experiences (ACEs) are trauma based situations that children have experienced or witnessed directly or vicariously through physical, sexual, emotional abuse, or through household dysfunction such as divorce, domestic abuse or a caregiver living with mental illness. (Felitti, et al., 1998). This review examined Adverse Childhood Experiences (ACEs) and the effects on child development. Based on the research presented throughout this starred paper, data supports that exposure to childhood adversities negatively impacts the developing biological systems in the body (Andersson, et al, 2021). Early life adversities can become biologically embedded into the brain throughout sensitive periods of development (Bick & Nelson, 2016). As the brain is rapidly developing in the first five years of life, exposure to adversities weakens the developing biological system and negatively influences age appropriate developmental milestones (Bick & Nelson, 2016).

Conclusion and Reflection

The research in this starred paper highlights the importance for early childhood educators to understand how ACEs impact child development. Without knowledge on ACEs and the impact of trauma, and Chronic stress on the developing brain, we cannot create trauma informed decisions or create a classroom environment that is trauma sensitive. Moreover, research goes on to show that when teachers and schools are trauma informed and implement practices and programs that support the Social Emotional needs of children, it provides students with tools and resources to cope and overcome the negative effects associated with ACEs (Collaborative for Academic, Social and Emotional Learning, 2021-d).

Recommendations for Further Research

Further research surrounding ACEs and child development can deepen our understanding of the long-term effects of adverse childhood experiences on children. More research can inform policy

makers, practitioners, therapists and educators, on effective prevention and interventions strategies. As more research is conducted, and as to what interventions and prevention strategies are successful for children exposed to ACEs, the recommendations for further research should start with resilience factors and trauma informed interventions. ECSE teachers should be determined to understand resilience factors and trauma informed interventions. They both play a large role in how we provide support to our children and families who are exposed/experience trauma.

Understanding resilience factors for children exposed to trauma can help educators, doctors and therapists identify factors that can promote resilience (Masten & Narayan, 2012). These factors can be more complex as each child's experience and response to ACEs is unique, and there is no one way to treat trauma. As those factors are identified, they can be integrated and used in prevention and interventions strategies. With the complexity surrounding childhood adversities, it further supports the continued research surrounding trauma informed interventions. Trauma informed interventions are how the effects of childhood trauma are treated. Continued evaluation on the effectiveness of the trauma-informed interventions is needed as systems who serve children with trauma are not always aware of the best interventions to support childhood trauma. In turn, this leads to the re-traumatization of children which fails to provide them with the mental, physical, and social emotional support needed for development (Oral et al., 2015).

Recommendations for Practice

ECSE teachers need to be aware of the way ACEs impact child development. As an ECSE teacher your job is to service infants, toddlers, and preschool children with disabilities (Hubel, et.al., 2020). Although not every child who has a disability is a child who has experienced trauma; there are children who we work with that have a disability that corresponds to trauma they experienced early in life. Having the proper education, and training regarding trauma, child development and

how to implement trauma informed prevention and interventions strategies is the best way we can support our students affected by ACEs and not contribute to re-traumatization.

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