

PACIFIC OAKS COLLEGE

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The Impact of the November 2018 Alaska Earthquake on the Emotional Lives  
of Military Children

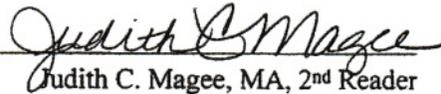
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## Table of Contents

<b>Abstract</b> .....	<b>v</b>
<b>Acknowledgements</b> .....	<b>vi</b>
<b>Dedication</b> .....	<b>vii</b>
<b>List of Abbreviations</b> .....	<b>viii</b>
<b>Chapter One: Introduction</b> .....	<b>1</b>
Introduction .....	1
Thesis Statement .....	3
Purpose Statement .....	4
Personal Statement .....	4
Problem Statement .....	8
Background Statement .....	8
Significance .....	13
<b>Chapter Two: Literature Review</b> .....	<b>15</b>
The Developmental Impact of Trauma for Children .....	15
The Impact of Natural Disasters on Children’s Emotional and Cognitive Development .....	23
Experiences, Needs, and Stressors of Military Children and Their Families .....	30
Conclusions .....	41
<b>Chapter Three: Methodology</b> .....	<b>42</b>
Introduction .....	42
Instruments .....	43
Time Frame and Data Collection .....	43

Participants .....	46
Data Analysis .....	49
<b>Chapter Four: Results .....</b>	<b>51</b>
Introduction .....	51
Results .....	51
Presentation of Data by Themes .....	52
Theme 1: Children’s Emotional Response to the November 20, 2018 Earthquake ....	53
Theme 2: The Connection between Child Well-being and Parental Emotional Regulation .....	60
Theme 3: Coping and Support Strategies Utilized after the Earthquake .....	63
Summary .....	69
<b>Chapter Five: Discussion and Analysis .....</b>	<b>71</b>
Introduction .....	71
Themes .....	71
Strengths and Limitations .....	73
Recommendations and Implications for Future Research .....	76
Conclusion .....	76
<b>References .....</b>	<b>78</b>
<b>Appendices</b>	
Appendix A: Informed Consent Form .....	86
Appendix B: Interview Questions .....	89
Appendix C: Demographics Questionnaire .....	90
Appendix D: Military Ranks in Order of Seniority .....	91

Appendix E: Demographics Summary .....93

## **Abstract**

Natural disaster like the earthquake that struck south central Alaska on November 30, 2018 may impact military children in unique ways due the high ambient level of family stress, lack of familiarity with the local environment, and lack of community connections. It is also possible that there are protective factors that can mitigate trauma and build resilience in this population. This study will explore the impact of the earthquake that occurred on November 30, 2018 on the emotional lives of military-affiliated children whose active duty parent is stationed at the large military base affected by the event.

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## **Dedication**

This thesis is dedicated to all military children, but especially to my own three children - Daniel, Rome, and Lina. Your courage, resilience, and compassion are a continuing inspiration for me. You didn't choose this life but you have made it yours, and in doing so, you have made mine complete. While it may be true that you will say goodbye to more people before your eighteenth birthdays than most people do in a lifetime, it is also true that you have said more hellos, too, and you are loved by people all over the world. May you always know that the whole world is your home. You are not from "nowhere" - you are from everywhere.

## **List of Abbreviations**

ACE – Adverse Childhood Experience

DoD – Department of Defense

PTSD – Post-traumatic Stress Disorder

PTSS – Post-traumatic Stress Symptoms

## Chapter One: Introduction

### Introduction

Natural disasters like earthquakes, floods, fires, and storms impact all geographic locations and human populations at one point or another and the intensity of the threat is on the rise. “Scientists predict that as the climate warms, certain weather-related extreme events may increase in frequency and magnitude” (Kousky, 2016, p. 73), leaving many groups more vulnerable to dangerous physical conditions and their emotional aftermath. In January 2019, the Pentagon released its *Report on Effects of a Changing Climate to the Department of Defense*, explaining climate change’s potential impacts for national security, mission success, and installation welfare (Department of Defense, 2019). It is at the installation level that these environmental changes and policies responding to them intersect with the lives of military-affiliated children. When natural disasters occur, the response of the military installation and the surrounding community can have a tremendous impact on the well-being and recovery of the families of active duty service members.

Whether in calm times or in the recovery after a natural disaster, the culture, structure, and demands of the military community are very different from the civilian world, and the gap between them has widened in the seventeen years the United States has been a nation at war. Most families operate independently, far away from their home, extended family, and community of origin, depending instead on a network of new friends to fill in the gaps. The burden is particularly heavy for military children who, it is said, will say goodbye to more people before their eighteenth birthday than most people do in a lifetime (Prentice, 2016). Military children also cope with the extended and regular absence of active duty parents, as well as the impact of physical and psychological injuries of war when those parents come home.

Deployment is more than just a period of parental absence – due to its unique demands, the deployment cycle is a near constant factor for most military families today, whether active duty parents are at home or away (DeVoe & Ross, 2012).

Despite children's high levels of resilience, there is a baseline level of family stress and trauma that is normalized in the military because of how common these experiences are. This consistently elevated stress level has the potential to magnify new traumatic events, as families find themselves stretched thin and in a near constant state of transition and readjustment. One recent traumatic event was the 7.1 magnitude earthquake that rocked south central Alaska on the morning of November 30, 2018, impacting a major military installation located there. The earthquake produced strong, frequent aftershocks that continued for months after the initial event (McGee, 2019), compounding the trauma for many people. For many families, this was their first experience with an earthquake and the individual emotional impact as well as the impact on the tenor of the family as a system was tremendous.

The aftermath of the earthquake was intense. Some parents with combat experience interpreted the earthquake as incoming artillery and responded accordingly with their children at home; others reacted similarly despite having no past experience to compare the earthquake to. Some children waited hours to be reunited with their parents due to road closures, gas and watermain leaks, and traffic gridlock. Public schools were shuttered for a week or more afterwards, leaving families scrambling for childcare while worrying about the structural safety of their homes. As the aftershocks continued, whole families slept together in their living rooms because they did not feel safe alone in their bedrooms, and nightmares were common for children and adults alike. Those who sought mental health care found wait lists months long to see local providers, who were overwhelmed by the demand (McGee, 2018a).

It is possible that the intersection of elevated daily stress levels and the trauma of the earthquake had a unique impact on the military children who experienced it. Because of their physical size and developmental stage, children may be naturally more vulnerable than adults when natural disasters strike. Further, with little historical connection to the local area, military children may be impacted differently than many non-military children, as their pool of supportive adults is more limited than children who live near extended family, their closest adult attachment figures have fewer resources to cope with the emotional and logistic impact, and many lack historical or cultural context that might help process the event more quickly.

However, the resilience of children in general, and military children specifically, has been well documented. There is good reason for this: “from a developmental ... perspective, resilience strengths are critical survival skills, intrinsically motivated or biologically driven, and culturally expressed – an apparently fail-safe adaptation system: Survival needs drive healthy development. Healthy development results in survival.” (Benard, 2004, p. 39). That said, appropriate mental health care is critical for children after a natural disaster occurs, especially if they are exposed to severe trauma, such as separation from their primary caregiver (Osofsky, Kronenberg, Bocknek, & Hansel, 2015). Supportive strategies used by parents, teachers, and other caregiving professionals can dovetail with clinical treatment to mitigate the impact of natural disasters like the November 2018 earthquake.

### **Thesis Statement**

Natural disasters like the November 30, 2018 earthquake that struck south central Alaska may impact military children in unique ways due the high ambient level of family stress, lack of familiarity with the local environment, and lack of community connections. It is also possible that there are protective factors that can mitigate trauma and build resilience in this population.

This study will explore the impact of the earthquake that occurred on November 30, 2018 on the emotional lives of military-affiliated children whose active duty parent is stationed at the large military base affected by the event.

### **Purpose Statement**

The purpose of this study is to learn more about how the earthquake impacted military children specifically. For many children and families, this was their first experience with an earthquake and the emotional impact was intense and long-lasting. “Serious stress and adversity in childhood are associated with risks for problems with health, memory, learning, behavior and risk-taking adolescence and in adulthood,” (Sumner, Boisvert, & Andersen, 2016, p. 247), but there is also strong evidence that supportive practices employed by adults can buffer negative experiences for children. This study aims to shed light on both the initial impact and the longer-term recovery for military children, as well as what factors may have contributed to resilience in children who experienced the event.

### **Personal Statement**

I have been the spouse of an active duty Air Force member for over 17 years. I currently live in south central Alaska, where my spouse has been stationed since the summer of 2017. Having been transient for most of my adult life, my community home is the military. As an educator and the parent of three teenage children, I have a special interest in the particular needs of military children. Since my first child was born in 2005, our family has moved eight times, with locations that include Germany, Alabama, Georgia, Alaska, two places in Texas, and two separate tours in South Dakota. My children have attended school in seven different districts, some well-equipped to meet the needs of military children and some totally unprepared to do so.

In that same time, my spouse has been deployed six times, ranging from two to twelve months at a time and totaling more than three years away since 2006.

Our situation seems far from uncommon in our community. Among military parents, the challenges our children face due to regular relocation and deployments are common topics of conversation. Almost every military family I know has sought mental health care for at least one of their children, often coinciding with either a move or a deployment. Outside of my personal relationships and interactions, I have spent ten years as a command-appointed volunteer in the Air Force's key spouse program, helping Air Force families connect to resources in our unit, at our duty station, and in the wider community (Air Force's Personnel Center, n.d.). This role has given me a lens into the family life of those with whom we serve. The challenges of moving and deployments are a near-constant factor in family systems and they impact everything from a dependent spouse's career to a young child's toilet training. Every family I know feels stretched thin, even under the best of circumstances.

When the earthquake hit at 8:30 a.m. on November 30, 2018, I was at home at my desk. At first, I mistook the initial rumbling and window-rattling for jets taking off at the nearby airfield, but as my house began to sway, I realized something else entirely was happening. I rode out the earthquake in the dark under my desk, as electrical power went out almost immediately and the Alaskan sunrise would not occur for another hour. My spouse was able to come home quickly, but it took hours for us to reunite with our children, who were already at school. We were fortunate that our electricity was quickly restored, but that was not the case for many, including a family from our squadron whose eight-year-old child is receiving chemotherapy to treat leukemia. Their home had no electricity and no heat, making it unlivable for a seriously ill child in Alaska. They spent the day with us until power was restored in their neighborhood and I

was able to see how deep the initial impact was for all of us. The children's mother so shaken she was barely able to eat and the youngest child, who was seven years old, was terrified by any noise louder than a speaking voice and could not even go to the bathroom without her mother in the room and physically holding on to her. That evening, my own two teenage sons acted cavalier but slept in the living room instead of on their loft beds. My daughter spent the night in her own room but reported getting very little sleep due to the frequent aftershocks that persisted through the night.

As we dealt with the immediate aftermath and subsequent recovery, it was clear that we as military community were on our own. There were no nearby grandparents to help with childcare, no family stories of previous earthquakes and recoveries, and no idea of what was "normal" for this kind of event. I grew up in south Louisiana, where hurricanes are frequent events. I have an almost intuitive sense of how to prepare when a hurricane is approaching, and I have a wealth of historic connections I can rely on to support me during recovery. None of those systems were available to me or to other military families I interacted with in the hours, days, and weeks after the November 2018 earthquake. Our families of origin were all in the contiguous United States, more than three thousand miles away, and few had any experience with this type of natural disaster. In the midst of our own recovery, we more often found ourselves reassuring our own home communities that we would be alright instead of receiving assurances from them.

At the time of the earthquake, I was in the middle of my fieldwork for Pacific Oaks College course focused on leadership and application. I had spent 45 hours in my neighborhood elementary school, studying the needs of military children in the school setting. The school, which exclusively serves the children of active duty members, experiences an average of 40% student turnover annually due to military moves, according to its principal. It is safe to assume

that at least a third of the student body is new this year, with many only having been in the local area for a few weeks at the time of the earthquake. My fieldwork focus at that time was understanding the needs of military children under typical conditions. The earthquake magnified many of those needs, illuminating existing weaknesses in the current military disaster response system.

When local schools reopened a week later, I was fortunate enough to spend the morning assisting in a first-grade classroom in the elementary school on the military installation. The teacher led a group discussion with the children, allowing each child to tell where they were and what they did when the earthquake occurred. Most children were getting ready for school, which was scheduled to start thirty minutes later. Some children had parents who knew exactly what to do. Others reported that their parent was in the shower, and one child was at home alone with her older sister. One child described collecting her “crosses and angels” from her bedroom at her mother’s instruction so they could pray during the earthquake. Another child tried to catch his falling television before his parent instructed him to move to safety.

This discussion, along with my personal experiences after the earthquake, planted the seeds for my thesis question. As I listened to the way children were impacted by the wide range of knowledge, experience, and stress levels of their caregivers, I thought about the way that children experience these events differently from adults. I wondered what differences might exist for military children and families who lack historic connection to their place of residence when coping with natural disasters. My hope is that this thesis process will shed some light on this issue and perhaps uncover what resources and strategies were helpful to children, and what could be supplemented to ease recovery when these events inevitably happen again.

## **Problem Statement**

The problem addressed by this thesis is the lack of information on the specific impact of natural disasters on military children. Under conditions typical for most military families, many military children experience higher levels of individual and family stress and disruption which may leave them especially vulnerable to developmentally significant stress and trauma when new traumatic events occur. The unique needs, experiences, and vulnerabilities of this group may warrant special treatment and consideration after a natural disaster. As climate change impacts global weather patterns, the likelihood of serious future events is on the rise, making the need for in-depth understanding and relevant intervention policies even more urgent. Lack of information on the ways military children may be impacted differently from their civilian peers can make it difficult for parents, educators, and other caregiving professionals to understand how children are affected and respond appropriately. Incomplete data may also impede access to mediating factors that can support resilience and recovery. Data on this population's response to natural disasters could help develop new systems or improve existing systems meant to ease children's recovery after traumatic events.

## **Background Statement**

**The impact of natural disasters on children.** When a natural disaster like the November 30, 2018 Alaska earthquake occurs, children are a particularly vulnerable population, physically, emotionally, and developmentally. Their unique needs may require special attention that is not always built into emergency response plans (Kousky, 2016). Children are generally quite aware of their dependence on caregivers, and the feelings of helplessness that both the child and their parent or caregiver may experience can have long-lasting implications for a child's emotional development if left unaddressed (Osofsky et al., 2015).

Further, children are very attuned to the emotional tenor of their primary attachment figures. A calm, steady parent or caregiver serves as a signal that all is well, and “research has ...highlighted the potential buffering effect of parenting and the parent-child relationship for children in conditions of stress, danger, and trauma” (DeVoe & Ross, 2012, p. 184). Conversely, when a caregiver is upset, panicked, or expressing feelings of helplessness, children may struggle to cope with their own feelings without adult support to regulate their emotions.

In the days and weeks after the earthquake, many parents described being unable to sleep, worried that another major earthquake might occur. They also described feeling physically unsafe in their homes and expressed feeling helpless, anxious, and overwhelmed. In cases when parental post-earthquake anxieties did not subside within a couple of weeks, it is possible that the impact on children was even greater, given the correlation between parental mental health and the emotional well-being of children (Lester et al., 2010). Parents overwhelmed by their own trauma and anxiety have struggled to adequately support their children (Gomez & Yoshikawa, 2017), and the potential for measurable, negative impacts on children warrants further exploration.

Residents of south central Alaska were extremely fortunate that despite the 7.1 magnitude of the earthquake – the same magnitude as the earthquake that flattened the Port-au-Prince region of Haiti in 2010 (DesRoches, Comerio, Eberhard, Mooney, & Rix, 2011, p. 51) - the damage was remarkably limited and the community displayed tremendous resilience, with most businesses resuming services within twenty-four hours. There were no fatalities reported and only a handful of injuries requiring hospitalization. The local school district was closed for a week but resumed classes in all but two schools after that time. (The two buildings needing further repair are anticipated to be reopened for the 2020-2021 school year. Students have been relocated to other

facilities for the time being.) Since research shows that higher levels of earthquake impact on a family's day-to-day experiences corresponds with more symptoms of distress in children, (Proctor, Fauchier, Oliver, Ramos, Rios, & Margolin, 2007), the fact that most routine activities were able to resume so quickly may have provided a buffer for children who rely on routines to make sense of the world around them. The quick repair of infrastructure and return to normal daily operations in this city may have helped children maintain a sense of emotional equilibrium, especially when their parents were able to manage their own anxieties enough to engage with them in healthy ways. Even though there is an inevitable negative impact for all children and families when exposed to a natural disaster, research indicates that with appropriate support and protection from further harm, most children will recover in time (Osofsky et al., 2015). Examining what that protection and support looks like in practice may provide guidance for recovery after future similar events.

It is clear that children are vulnerable to natural disasters in a way that differs from adults due to their physical size and developmental stage. They rely on caregivers to help them feel safe, and when this sense of safety is shaken for the entire family, there can be negative impacts for the family system at large. However, when children receive adequate support and are able to return to their normal routines in a reasonable amount of time, their natural resilience may provide a buffer against long-term developmental consequences.

**The military child population.** Children do not exist in isolation – they are part of the overlapping systems in which they live (Bronfenbrenner, 1979). They construct their understanding about the world with information and input from their immediate family, their larger community, and the culture in which they are raised. The military offers a particular construct for children who are growing up within its cultural framework. “Being a military child

brings benefits and risks. Resilience, maturity, and adaptability are benefits of growing up in this culture” (Hamilton, Ling, & Rossiter, 2018, p. 635), but there are strains unique to this community that also impact children’s development.

While the military and civilian worlds operate largely in separation from each other, the number of children who are being raised by military parents is not insignificant, and there is reason to believe that this population may have unique needs and vulnerabilities. According to the Department of Defense’s 2017 Demographics Report, there are over one million children with active duty parents, and more than 40% of those children are in the crucial developmental window of ages zero to six (2017). The military installation referenced in this study is home to almost 20,000 military spouses, children, and other dependent family members (Joint Base Elmendorf-Richardson, n.d.). The burden of nearly eighteen years at war has been disproportionately absorbed by the military family unit, often with little support from or reliable, deep connection to the local civilian community. Combat impacts the entire family unit, and “for many military children in the last decade, an entire childhood has been defined by at least one parent leaving and returning in the context of dangerous duties” (Lester et. al., 2013, p. 838). Deployments can range from a month to over a year, and active duty members sometimes receive very little notice to prepare for these separations. These primary attachment figures miss key milestones and developmental stages in young children’s lives, and repeated deployments in ongoing and escalating conflicts limit how much parents can make up for that lost time later.

Further, research indicates that deployment-related stress has wide-ranging impacts on both individual family members and the family system as a whole (Lester et. al, 2013). The challenges of parenting while enduring long and stressful separations impact both the way a family operates logistically and its emotional health and resilience. The emotional work of

preparing for a deployment, managing the time apart and the stress that accompanies it, and what the military calls the “reintegration process” when the deployed member returns home, takes a toll on adults and children alike.

Another key factor of military life that impacts the well-being of children and the family system is regular relocation, as families follow the active duty member to assignments at new duty stations. These moves are necessary for career progression for most active duty members, but can be as challenging as deployments for families to manage, if not more so. Children growing up in the military can expect to attend up to nine schools by the time they graduate from 12<sup>th</sup> grade (Hamilton et al., 2018), and this regular upheaval has a lasting impact on the emotional development of many children. While aspects of military culture may provide a certain extend of buffering against the impacts of the stress associated with moving, there is no doubt that regular relocation takes a toll on children and families alike.

Further, both deployments and relocations influence a child and family’s connection to the larger systems around them. Families are often stationed far from their family and community of origin who would normally offer support during challenging times, and they may have little interaction with or connection to the local geographic area and community, particularly when newly arrived. A lack of understanding between military and civilian communities may lead families who are coping with deployments to avoid interfacing with civilian counterparts who they find uncompassionate or unaware of their unique struggles. On an individual family level, when co-parenting adults are separated from each other for extended periods, strains in their relationship and differences in parenting styles can be magnified. All of these challenges can impact the well-being of children and their own feelings of connection, which can be detrimental when they experience trauma.

There is strong evidence that a sense of connection is protective for children who experience trauma like the 2018 earthquake in south central Alaska. In one study exploring the impact of natural disasters, researchers found that children with a strong sense of connection were more than 10 times less likely to develop Post-traumatic Stress Disorder (PTSD) than children with a low sense of connection (McDermott, Berry, & Cobham, 2012). Military children and their families may be less connected due family strain, cultural differences, or perhaps simply because they have only recently arrived in the local area. The lowered sense of connection and elevated baseline of family stress may leave military children particularly vulnerable to lasting, negative impact of unavoidable traumas.

It is clear that the needs of the military child and family are different from their civilian counterparts due to the specific, ongoing demands of the military lifestyle. Multiple deployments, frequent relocations, a lack of connection to the community where they live combine to create chronic stress for many military-affiliated children and adults. Research on the intersection of military life and other events like natural disasters can help to create a more complete understanding of the impact of these stressors and perhaps support the development and improvement of supportive systems.

### **Significance Statement**

Research has shown that all children are impacted at some level when natural disasters strike the places where they live. Preventing developmentally harmful impacts of stress and trauma requires prompt, appropriate responses by family, community caregivers, and service providers that help to ease children's distress and allow them to feel safe again (National Scientific Council on the Developing Child, 2014). Due to the unique life experiences and circumstances of military-affiliated children, it is possible that a more nuanced response tailored

specifically to this population could be beneficial, as, “identifying pre- and post- disaster factors that influence children’s response to a natural disaster is imperative for understanding children’s responses to acute traumatic stressors” (Proctor et al., 2007, p. 941). It is hoped that this study will add to the body of knowledge about the responses of military children to the earthquake that occurred in Alaska on November 30, 2018 so that families, educators, and other caregiving professionals will have more information to draw upon when other disasters occur in the future.

The literature review in the following chapter will explore the research related to this study, including the developmental implications of trauma in children, the impact of natural disasters on children’s emotional and cognitive development, and as well as stressors and challenges that are unique to military children and may impact their response and recovery to new traumas like the 2018 Alaska earthquake.

## **Chapter Two: Literature Review**

When considering the emotional impact of the 2018 Alaska earthquake on military children, it is important to understand the ways that this population is unique. First, their age and developmental stage leaves military children particularly vulnerable to trauma of all kinds and research shows that trauma experienced in childhood has potential consequences across the lifespan (National Scientific Council on the Developing Child, 2014). Children are also uniquely vulnerable to natural disasters, as they depend on adults initially to keep them physically safe and then to make sense of the event afterwards. Due to the stressors of relocation, parental deployments, and parental combat injuries, military children make up a unique group that may need different kinds of intervention after a traumatic event like a natural disaster occurs. This literature review will explore the developmental impacts of trauma for children, the impact of natural disasters as a specific trauma on children's emotional and cognitive development, and the experiences, needs, and stressors specific to military children and their families that may influence how they cope with traumatic events.

### **The Developmental Impact of Trauma for Children**

It is widely known by those who study child development that in addition to the immediate impact of a traumatic event on children, trauma and stress can have long-lasting – even lifetime – implications on children's health and well-being, with pervasive consequences that can touch all parts of an individual's life (Sumner et al., 2016). Children are uniquely vulnerable to trauma in part because although they are aware of threats and danger; they are not developmentally ready to manage their emotional response or keep themselves physically safe (National Scientific Council on the Developing Child, 2010b). They depend on adults to protect

them from traumatic events and to mitigate the impact when unavoidable trauma occurs. When adults fail to do this important work, research shows the consequences can be devastating.

One way that researchers have conceptualized childhood trauma is through the development of the Adverse Childhood Experiences (ACE) scale, which draws connections between adverse childhood experiences and adult health outcomes (Finkelhor, Shattuck, Turner, & Hamby, 2013). In this study, researchers grouped adverse experiences into the following categories: emotional abuse, physical abuse, sexual abuse, mother treated violently, household substance abuse, mental illness in household, parental separation or divorce, incarceration of parent, emotional neglect, and physical neglect (Boulier & Blair, 2018). The original ACE study found strong correlations between childhood trauma and adult health – the more ACEs an individual had, the more negative health outcomes were seen in participants. Subsequent research confirms this phenomenon and continues to explore how ACEs impact individuals over the lifespan.

A study published in 2017 sought to explore how ACEs might impact adult education levels, employment status, and economic success (Metzler et al., 2017). The researchers involved surveyed 27,834 adults in ten states and the District of Columbia, asking participants to identify ACEs along with outcome measures including high school noncompletion, unemployment, and poverty status. They found that compared to adults without any ACEs, those with three ACEs were more likely to have dropped out of high school and to be unemployed, with the level of likeliness increasing the more ACEs an individual had (Metzler et al., 2017).

While this is a tremendously important finding, the study had some limitations. ACEs are reported from childhood memory and reporters may have varying levels of accuracy in their recall. Also, the sensitive nature of the topics addressed in the survey may have caused some

potential participants to self-exclude to avoid revisiting traumatic memories. Finally, this study did not address supportive factors that may have buffered the long-term impact of ACEs on individuals, leading to improvements in outcomes. Future research might aim to explore how buffering factors might help build or improve supportive systems for those who have experienced multiple ACEs.

Despite its limitations, this study adds nuance to the discussion on the lifetime impact of early adverse experiences. Education, employment, and income influence almost all aspects of an individual's life, as well as the lives of any children they may have. The intergenerational impact is particularly salient. Parental knowledge, skills, financial resources, and social capital that accompany higher education, sustained employment, and higher income, benefits children in many aspects of their growth and development. Since the majority of those born into poverty will never even reach middle-class level earnings, lack of education, employment, and income has tremendous impact on future generations (Metzler et al., 2017). From a social justice perspective, it is important to be aware that this phenomenon has more serious consequences for African American children, as they are even more likely to remain in poverty than their white peers born into similar circumstances (Metzler et al., 2017), providing evidence that some populations may be disproportionately impacted by early adverse experiences.

Because of the lifetime, intergenerational implications for education and economic achievement as well as for other health outcomes, early intervention for children who experience adversity is critical in changing lifetime outcomes (Metzler et al., 2017), as well as for the life trajectory of future generations. While poverty is sometimes approached as a failure of self-discipline or work ethic in policy-level conversation, the data in this study demonstrates that “the choices a person makes are shaped by the choices a person has, which are themselves shaped by

structural policies and processes” (Metzler, 2017, p. 142). Early intervention can change children’s futures, allowing them the ability access different choices that can lead to healthier, more economically stable adulthood.

The Adverse Childhood Experiences scale is an important tool to understanding the cumulative impact of ongoing stress and trauma over the lifespan. The increased likelihood of clinical mental health diagnoses, such as PTSD, is another part of that cumulative impact, and is more prevalent in populations with higher ACE scores. However, there have been concerns about a PTSD diagnosis being a limiting factor in the understanding of the wide-ranging impacts of trauma. It is possible that only considering the clinical diagnosis may constrain treatment and research to a narrow set of symptoms described in diagnostic tools (Coulter & Mooney, 2018), neglecting the global impacts of the traumatic event on a patient’s family and wider community. As the ACEs study indicates, the medical diagnosis of PTSD might not adequately cover the range of experiences, overlooking the complex needs of children in recovery.

To explore this question, researchers in Ireland interviewed ten mothers of children who had been impacted by a traumatic event in a way that compelled the family to seek specialist care. (The specific nature of the traumatic event varied widely, ranging from witnessing violence to experiencing a sexual assault.) Researchers chose to focus on mothers because of their central caregiving role and because they are often children’s main point of support in the wake of a traumatic event (Coulter & Mooney, 2018). This study’s format and focus make it particularly relevant to this thesis which also centers on interviews with a small number of parents about the experiences of their children during and after a traumatic event.

The mothers included in this study were asked only one overarching question – to tell the story of how the traumatic event had affected them and their families. Researchers felt that this

format allowed participants to choose their own emphasis, wording, and order of events, illustrating how they made sense of the event that impacted their family (Coulter & Mooney, 2018). Researchers then analyzed transcripts of the interviews, organizing the data around recurring themes in individual interviews and across all interviews.

The findings included that PTSD symptoms represented a minority of mothers' description of the impact of trauma, making up only 6% of total narrative content. Dominant themes were family and relationship distress, the child's individual distress, history of adversity that preceded the traumatic event in question, and factors related to the resilience of both the children and the family as a whole (Coulter & Mooney, 2018). They also found that high levels of maternal distress acted as risk factors for the well-being of both the child and the family. Because of these results, researchers concluded that limiting the understanding of the impact of a traumatic event to the clinical diagnosis of PTSD is insufficient for capturing the complexity of trauma and recovery in a family system. In fact, the strong correlation between a mother's distress and her child's recovery indicates the need for a holistic, family approach to trauma mediation, even when only one member has been directly impacted by the initial traumatic event. Although each case study included a child with the same clinical diagnosis, it is clear that different family circumstances warrant individualized approaches for treatment.

The study does have some significant limitations, including its small sample size and the fact that the ten participants spoke about many different types of traumas, potentially limiting the possibility of generalization in a wider context. Further, fathers' voices were not included in this study, and it is possible that their narratives might have a different focus than that of mothers. Finally, it is not possible to be certain that the number of times a theme was mentioned correlates directly with how significant it is in either the mother or the child's experiences. However, this

study provides an important step towards understanding the unique and varying ways that trauma impacts both the child and the family unit beyond the discrete diagnosis of PTSD, leaving open questions for future research to address.

As both the ACEs study and the study on the impact of trauma beyond PTSD show, one of the complicating issues when it comes to addressing trauma in children is the accumulating affect of multiple traumas. When natural disasters strike, they can produce widespread trauma in the communities who are impacted, further complicating recovery for children who experience them. When Hurricane Katrina struck the Gulf Coast of the United States in 2005, there was a disproportionate impact on already socio-economically disadvantaged children, particularly on those whose families lacked the resources to evacuate before the hurricane made landfall. The impact of the hurricane had the potential to increase those children's ACE scores, with possible lifetime implications.

As the two previous studies examined in this literature review showed, when children's experiences include multiple traumas, as many children who survived Hurricane Katrina did, the negative effect on long-term outcomes is greater. Unfortunately, there are few screening tools to assess which children might have the highest level of need for intervention post-disaster based on their life experiences prior to the event. In an effort to fill this knowledge gap, researchers in the hurricane-affected region collected data on over 400 elementary school-aged children three to seven months after the hurricane, and again 13 to 17 months post-disaster, in hopes of learning more about how previous traumatic events impact children's recovery. In this instance, the focus was on children's exposure to community violence prior to the hurricane, exploring the link between levels of exposure and subsequent Post-traumatic Stress Symptoms (PTSS) (Lai et al., 2018). PTSS is considered a normal reaction to a traumatic event, and is characterized by intense

distress, intrusive thoughts, avoidance of reminders of the event, and changes in reactivity.

However, PTSS is a symptom of PTSD, and prolonged, intense symptoms are a key element for PTSD diagnosis (Biggs et al., 2019). Evaluating post-disaster PTSS is important as an indicator of either recovery or need for additional intervention.

The study on post-Hurricane Katrina stress symptoms in children is relevant to this thesis as it also seeks to understand overlapping factors that may influence how children recover after a natural disaster. It has the added value of data collected directly from children themselves, which is useful for creating a more complete picture of children's experiences. Further, its longitudinal nature offers an understanding of how children recovered over time, as the first major study that considers the interaction between PTSS and somatic symptoms (e.g. stomach aches, headaches, and fevers) more than six months after a natural disaster (Lai et al., 2018).

For this study, children enrolled in six different schools in the Gulf Coast region were given questionnaires about their exposure to Hurricane Katrina, their PTSS, as well as their exposure to community violence before the hurricane occurred. Information about somatic symptoms experienced by children was collected through a questionnaire given to their parents. Researchers found a strong correlation between prior exposure to community violence and PTSS symptoms associated with the hurricane that remained clinically significant a year or more after the disaster (Lai et al., 2018). They also found that non-white children reported experiencing both high levels of community violence and PTSS at greater levels than white children. Somatic symptoms were associated PTSS in the shorter term (3-7 months post-hurricane) but did not seem to be directly related in the data collected 13-17 months after, perhaps indicating the beginning stages of recovery for many children.

The limitations of this study are particularly pertinent to the somatic symptoms, as the data was collected from parents' reports. The researchers were not able to assess whether or not the symptoms were associated with psychological distress or with ongoing health issues, and there were no measures for parents' mental health or parenting capacity (Lai et al., 2018), which could be complicating factors. Further, the screening only accounted for two points in time, and different results might emerge over a longer term or with more points of data collection. Factors that may have buffered children from trauma or aided in recovery, such as supportive school or community programs, were also omitted from the study.

Despite the limitations, the results of this study show a real need for further screening for prior trauma when assessing the needs of children in recovery from a natural disaster or other traumatic event. Stress and trauma have cumulative effects that can be toxic to the developing brain and body (National Scientific Council on the Developing Child, 2010a), and adults in supportive roles need to be aware of compounding factors that may impact a child's recovery. At this time, exposure to community violence is not typically screened for after natural disasters, leading to a one-size-fits-all approach to response that may not adequately address the needs of the children most in need of support. A better understanding of children's previous traumas and their cumulative impact could help educators, parents, and caring professionals provide more targeted support for children in recovery.

In conclusion, it is critical for those working with children to understand that trauma has a profound, cumulative impact on development. Multiple traumas experienced in childhood have measurable, negative impacts on health and well-being over the lifespan, and medical diagnoses such as PTSD may not adequately cover the range of ways these traumas impact the individual child, their family unit, and their learning environments. A deeper understanding of the trauma

endured by children can help to create more effective systems to aid recovery and help children overcome its impact as they move into adolescence and adulthood.

### **The Impact of Natural Disasters on Children’s Emotional and Cognitive Development**

Given the wide-ranging impact of trauma on children’s development, it follows that children would make up an especially vulnerable population when natural disasters occur. The potential impact is tremendous, manifesting in many ways, including problematic behaviors, ongoing emotional distress, and PTSD (Gomez & Yoshikawa, 2016). A more complete and nuanced understanding of how natural disasters impact children could help parents, educators, and other helping professionals include care plans in disaster preparation and respond appropriately when they occur.

The important role of the family unit in children’s response to natural disasters is difficult to overstate. Children rely on their key attachment figures to provide context for the event, guiding both their immediate reaction and their recovery (Ainsworth, Blehar, Waters, & Wall, 1978). Examining that relationship can provide a better understanding of children’s unique needs. A study published in *The Journal of Child Psychology and Psychiatry* took this approach, exploring the interaction between parenting behaviors observed before a disaster occurred, parental stress reported after the disaster, and the levels of distress shown by young children following the 1994 earthquake in Northridge, California (Proctor et al., 2007). Researchers hoped to tease out the connection between positive parenting strategies already in place with outcomes for children after a sudden natural disaster – in this case, an earthquake. While this study is slightly older than what is typically reviewed in the context of a thesis literature review, its purpose and findings align so closely with the research undertaken for this thesis that it remains relevant.

In this study, researchers used pre-disaster data gathered for another unrelated purpose as a baseline to evaluate parenting behaviors. Participants included 117 two-parent families whose child was either four or five years old at the time of the initial assessment. The pre-disaster study was conducted in a lab setting where parents were asked to help their child with the challenging task of assembling a complex toy without actually touching it themselves. Both mothers and fathers were assessed for positive behaviors like responsiveness, positive reinforcement, and warm affect, as well as negative behaviors like impatience and negative affect. (Proctor et al., 2007).

The post-earthquake portion of the study collected data about how the earthquake affected the family. Researchers looked at objective impacts such as physical injuries, loss of employment, displacement from pre-earthquake homes, and increased expenses, as well as signs of parental distress after the earthquake, including PTSD, depression, and marital issues. They also took two surveys on distress experienced by the child, one taken a month after the earthquake and another eight months after the event (Proctor et al., 2007).

Researchers found that over 80% of families in the initial study were impacted in some way by the earthquake, with the largest number reporting home damage, lost possessions, and earthquake-related financial expenses. They found that over 90% of children showed signs of distress a month after the earthquake, and 71.8% still showed signs of distress eight months after, most commonly through recurring thoughts of the earthquake, difficulty sleeping, and fearfulness (Proctor et al., 2007). However, at eight months post-earthquake, the severity of those symptoms had declined significantly for most children. There was a strong correlation between levels of reported parental stress and ongoing child distress – the more stress parents reported, the more severe the symptoms of stress in their children tended to be. However, researchers also

found that high levels of positive parenting behaviors before the earthquake also had a mediating impact on children's distress. The more positive behaviors shown by parents in the toy experiment, the less severe children's post-earthquake symptoms appeared to be, indicating that strong attachment may serve as a mitigating factor for trauma.

The study has some limitations which are relevant to its results, future studies, and the study undertaken in this thesis. First, the initial study of parental behaviors was conducted in a lab with results obtained by trained researchers, and it included both parents as well as the child. The follow-up surveys were completed only by mothers who self-reported their experiences and stressors, as well as symptoms of stress in their children. Since there is research to support that parents sometimes underestimate their children's levels of distress after a disaster (Proctor et al., 2007), the reliability of this reporting should be met with a measure of objectivity. Second, this study only addressed children who were four and five years old at the time of the earthquake, and results may not be generalizable to other stages of development. Finally, parenting styles are so individualized and nuanced that more study is needed to find out which parenting behaviors either support or delay recovery for children, as well as the relationship between those styles and innate temperament and circumstances of both child and parent (Rothbart, 2007).

The importance of the parent-child relationship in children's response to natural disasters is underscored in another study that focused on children impacted by Hurricane Katrina, specifically considering how children's attachment combined with natural disaster exposure contributed to their long-term outcomes. Because it examined outcomes for over 900 hurricane-impacted children over the course of four years, its longitudinal nature makes this study valuable in understanding broader developmental implications of a wide range of natural disasters.

Furthermore, it is one of few longitudinal studies focusing on American children recovering from natural disasters, making it particularly relevant to this thesis.

The data for this study was collected as part of a screening and intervention effort undertaken by schools serving students impacted by Hurricane Katrina (Osofsky et al., 2015). The impact of the hurricane is hard to overstate, with tens of thousands of residents of the Gulf Coast evacuated and over 1,500 reported deaths. Almost 5,000 children were reported missing or separated from their families in the week after the hurricane, highlighting the vulnerability of this population in the aftermath of such an extreme event. Those tasked with responding to the aftermath of Hurricane Katrina found “the degree of loss and disruption associated with this unprecedented natural disaster effectively changed the face of mental health needs for young children and their families in the Gulf Coast region” (Osofsky et al., 2015, p. 494).

Researchers collected initial data for this study from families whose children were preschool aged (three to five years old) in the 2006-2007 school year following the hurricane. They gathered subsequent data each school year for three years, ending in 2009. Parents and other caregivers were asked about children’s distress symptoms, non-human losses, and the child’s primary exposure to storm-related trauma, including evacuation, being injured, witnessing injury or death in others or being a witness to violence. Noting the cumulative impact of trauma, parents were also asked if their child had experienced unrelated trauma either before or after the storm (Osofsky et al., 2015).

Researchers found that most children, even those who had the highest level of trauma exposure during the storm, showed a decrease in trauma symptoms over time. Predictably, those who had the highest levels of direct exposure to the hurricane had more negative outcomes after four years than children with lower levels of exposure and trauma. As the study on hurricane-

impacted children referenced in the previous section of this literature review corroborated, children with additional, unrelated traumas also had worse outcomes and more ongoing symptoms of distress. However, overall, even highly traumatized children showed predictable improvement over time. There was one exception: researchers found that children whose trauma involved the disruption of their relationship with their primary caregiver, such as the death of a parent, did not show improvement in their symptoms in the same way that other children did, indicating the crucial role of healthy attachment in children's development and well-being. This particular trauma had lasting, ongoing consequences for those children.

The study has some limitations that impact conclusions that can be drawn from it. First, the data on symptoms and hurricane experiences for each child was collected by a single reporter – the child's parent or primary caregiver. The reporter's bias or his/her own trauma could influence how children's experiences were perceived and how the report was made (Gomez & Yoshikawa, 2016). Second, the mental health of children's parents was not included in this study and it likely has a strong impact on children's attachment and recovery. Finally, there are very few studies like this one, examining the emotional impact of natural disasters over a longer period of time, with which one could compare findings, making it difficult to control for biases, errors, or event-specific phenomena.

However, this study adds important information to the body of knowledge related to children's vulnerabilities to and recovery from natural disasters. The reduction in trauma symptoms over time for the majority of children speaks to their resiliency. The correlation between intensity of exposure and long-term outcomes indicated in this study and corroborated in others means that it may be prudent to focus limited resources on children with the highest levels of exposure and risk factors, especially when the disruption or loss of a primary

attachment figure is involved. Further, focus on the well-being of primary caregivers may also be of value, given the dependent nature of children's recovery on a secure, stable relationship with the important adults in their lives.

While the emotional impact of a sudden, traumatic natural disaster like an earthquake is somewhat intuitive to predict, it is harder to predict the developmental impacts in other domains, such as cognitive skills and executive function. A study published in 2016 examined the impact of the 8.8 magnitude earthquake that occurred near Santiago, Chile on February 27, 2010, exploring the connection between disaster exposure and children's language development, academic outcomes, and executive functions (Gomez & Yoshikawa, 2016). Most studies of this kind do not afford a control group, but this one was able to compare standard testing results that were administered to a group of 698 preschoolers prior to the earthquake to the results of a group of 720 preschoolers from comparable demographic groups who *did* experience it. The schools attended by the children studied were located in low-income municipalities in Santiago, and the data sets were collected as part of school improvement efforts (Gomez & Yoshikawa, 2016). While the data related to cognitive function was collected directly from children in both groups, parents in the post-earthquake cohort were also given an "earthquake questionnaire" which gathered information on the earthquake's impact on family life, including stressors like housing or food insecurity, or loss of life or injury suffered by family members or neighbors.

The results showed that there was some impact in children's learning after the earthquake, but it was not as large as might be expected. The group of children who experienced the earthquake scored lower on literacy measures, and there was a correlation between the severity of the earthquake's impact on the family and a reduction in those same scores (Gomez & Yoshikawa, 2016). However, there was not a statistically significant difference in the

vocabulary, diction, mathematics, or executive function test results in children who experienced the earthquake when compared to children who did not. While children's language skills did show some impact, overall, experiencing an earthquake did not seem to have global impacts on cognitive development.

This is somewhat surprising given what is known about the impact of trauma on the developing brain (National Scientific Council on the Developing Child, 2010b), but it is important to consider that direct assessment of children is less common in research and can lead to different conclusions than expected when adult bias is controlled for. (It may also be an indication of a limitation.) Since the Chilean government had already undertaken efforts to improve preschool programs before the earthquake, the very presence of the programs may have improved outcomes for children, creating an overall positive trend that complicated some of these results. Also, it should be noted that the same children were not tested twice, nor was any group followed over time. Further, while the populations were demographically similar, differences within the two groups could also account for some of the outcomes (Gomez & Yoshikawa, 2016).

This study is particularly relevant to the study undertaken in this thesis because it highlights one of the challenges in studying children. Because past research has shown that parents' well-being after an earthquake often colors their perceptions of how well their children are coping, the researchers in the Chile study specifically excluded social-emotional development measures (Gomez & Yoshikawa, 2016). Since this thesis hopes to explore the emotional impact of an earthquake on children through interviewing their parents, this is a critical limitation to be aware of, as parents may not be able to completely understand or articulate their children's experiences, particularly after experiencing the disaster themselves.

However, the Chilean study does provide some hopeful indications that while children's development is likely impacted in some ways by natural disasters, the consequences are not necessarily catastrophic. When other supportive factors stay in place, such as stable connections to primary caregivers, high-quality schools, and economic and social supports for families in recovery, children's long-term cognitive outcomes after a natural disaster may be only moderately affected.

In conclusion, the research on the way that children are cognitively impacted by natural disasters aligns with what is known about the impact of trauma in general. Children who are exposed to natural disasters who receive appropriate support afterwards tend to recover over time, especially when their connection to their primary attachment figure remains reliable and other external stressors are minimized or mitigated. The following section of this literature review will explore the stressors particular to military children that may play a role in how they respond to and recover from a natural disaster like the earthquake studied in this thesis.

### **Experiences, Needs, and Stressors of Military Children and their Families**

There are many systemic factors that contribute to the unique set of needs common to many military children which may make them more vulnerable to trauma. As research has shown, stress and trauma have cumulative effects on development. This section will explore stressors specific to military children and their families which may be factors in the way children respond to traumatic events like natural disasters.

Regular relocation required for military career progression is one factor that impacts children tremendously. Research has shown that multiple moves correlate with worse outcomes in children growing up in civilian families (Spencer et al., 2016), and military children typically

move many more times before and during their school years than the average non-military child. The typical time between moves for the active duty member and his or her family generally varies from one to four years, depending on the service member's rank and career field (Spencer, Page, & Clark, 2016).

Despite the tremendous impact on families, this area of military life is one of the least studied and it was challenging to find current literature on this topic specifically. One of the few from recent years was study published in *School Psychology Review*, examining the impact of school transitions on military children. School transitions are an important aspect of relocating for children and their parents, often coloring how they feel about a location overall. While this study focused on the impact of relocation on high school students, it is relevant to the study conducted in this thesis as those students and families have the cumulative experiences currently impacting young military children and may offer insight into their future prospects, as well.

For this study, over one hundred teenagers were gathered in eleven focus groups at military installations all over the country. These teens reported an average of more than five moves over their lifetimes – a significantly higher average than most civilian children their age. The group is representative of the military at large, with the sample including participants from eight different military installations, all branches of the Armed Forces and with attention paid to ensure that a variety of ranks and career fields within the military were also represented. Parents of these students were also interviewed, recognizing the interconnected nature of the family and the ways that each family member's ability to cope with stress, crisis and transition impacts the well-being of the entire family unit (Bradshaw, Sudhinaraset, Mmari, & Blum, 2010). Adding further nuance to the study, the researchers also interviewed staff who were employed at schools that served students from the military installations where the focus groups were held.

Many of the findings from this study were unsurprising. Students reported that frequent relocations were stressful for both themselves and their families. They struggled with gaps in their education caused by lack of standardization between schools, and shared that basic tasks like finding their way to classes in a new building and choosing classmates to eat lunch with caused a great deal of stress and anxiety when acclimating to a new school (Bradshaw et al., 2010). There were also significant concerns about access to or exclusion from extracurricular activities like sports, particularly later in high school when teams become closer knit and less likely to welcome new members. Additionally, frequent moves may have a developmental impact on children's ability to make and sustain strong, stable relationships with their peers over time (Bradshaw et al., 2010), and this was a concern for students and adults alike. Parental concerns centered on how well schools were equipped to provide high-quality education for highly mobile students (Bradshaw et al., 2010). Teachers, guidance counselors, and other school staff expressed desire to help military students succeed but found it difficult to assess which students needed their support. Some students were eager to share their military status and experiences, while others preferred to blend in and maintain privacy, complicating efforts to provide widely available services for all military students (Bradshaw et al., 2010).

There were some surprising findings, however. Parents, school staff, and students themselves shared that military students seemed to have developed coping strategies that made it easier to adjust to frequent moves, suggesting that for military children, regular relocation was a normal part of their lives for which the appropriate skill set could be obtained (Bradshaw et al., 2010), as opposed to being a crisis that had to be endured. This aligns with other literature focused on military families, in which preliminary data shows that military children may not suffer the same negative consequences seen in civilian children who move frequently. Students

in this study reported feeling better able to handle transitions and other life challenges than their civilian peers, and teachers reported that military students were more involved with school programs and less likely to have conduct issues, as well (Bradshaw et al., 2010). Further, “the acculturation process experienced by military students, while likely stressful, appears to have resulted in greater tolerance for diversity” (Bradshaw et al., 2010, p. 96), potentially indicating that these students could be better equipped than their peers for life after high school. Some researchers theorize that military culture itself may provide some protective factors, but more data is needed for a complete understanding of this phenomenon.

Besides the need for more data on military relocations in general, this study has other limitations. It focuses only on adolescents who may be more likely to have developed a skill set over time to cope with transitions. These children also may have the ability to independently access support systems in place for them, without any necessary intervention from their parents, teachers, or other school staff. A similar study exploring the experiences of younger children, as well as adults who have grown up in the military and are now living independently, would help to create a more complete picture of the military child experience. There would also be tremendous value in a longitudinal study of military students, exploring their experiences from preschool through high school and beyond. As relocations are a constant part of military life and relatively consistent across Armed Forces branches, career fields, and rank, a deeper understanding of how this aspect of military life impacts all sorts of children at each developmental stage would help to create a useful body of knowledge that parents, teachers, and other care providers could use to develop and improve supportive programs and systems.

In addition to frequent relocations, deployments are another phenomenon that sets the military family experience apart from the civilian world. The number of children impacted is not

insignificant: *Military Medicine* reports that approximately two million children have experienced the deployment of at least one parent since the terror attacks of September 11, 2001, and the nature of the conflicts has resulted in both an increased number of deployments and a higher exposure to combat for active duty parents (DeVoe & Ross, 2012). The almost eighteen years since United States military operations began in Afghanistan has resulted in an entire generation of children growing up with deployments as a regular part of their childhood. Tremendous developmental changes occur during early and middle childhood, and stress and trauma experienced during that time can have life-long impacts (Mustillo, Wadsworth, & Lester, 2016), magnifying the effects of repeat deployments on young children. Perhaps for this reason, it is one of the most studied aspects of military family life.

In a study published in *The Journal of Emotional and Behavioral Disorders* in 2016, researchers cast a broad net among military families to attempt to understand the impact of the timing and duration of deployments on children under the age of ten, with a particular focus on social-emotional development and emotional and behavioral problems. As military families with young children, this sample group aligns with the participants in this thesis study, making it particularly relevant. Over 300 families completed the research survey process, which included a phone interview followed by a web-based survey to measure children's social-emotional development, their anxiety, and to assess emotional and behavioral problems. Researchers also asked about recent long deployments, whether the active duty parent was deployed at the time of the child's birth, and what percentage of the child's life had included coping with a deployed parent (Mustillo et al., 2016). Highlighting the pervasive nature of this issue for military children, it is striking to note that on average, children whose parents participated in the survey were deployed between 1/6 and 1/5 of the children's lives (Mustillo et al., 2016).

Much like the research on military child relocations, results of this research were mixed, and it varied among developmental stages. Overall, the deployment of a parent was associated with higher levels of anxiety in children, as was the relative proportion of the child's life that their parent had spent deployed (Mustillo et al., 2016), and older children (ages 6-10) whose parent was deployed at the time of their birth had more problems with behavior and with their peers, leaving open the question of the impact of prenatal and postnatal maternal stress. Children under six had higher levels of anxiety, however they showed no decreases in social and emotional competencies compared to a community sample of non-military peers. In fact, overall results only showed a moderate increase in problems for military children, which reflects attachment theory's conclusion that strong bonds with primary caregivers can serve as a buffer against many adverse experiences.

In short, while it is clear that military children are impacted by the stress of deployments, from a wide lens, the impact of deployment uncovered in this study was relatively modest, indicating that in spite of this ongoing stressor, military children are doing well (Mustillo et al., 2016). This echoes the findings of the study on the impact of relocations, further indicating that there may be buffering factors supporting military children and families. The authors of this study offer two ideas. The first is that the financial and logistical stability of the military, including secure housing, access to medical care, and dependable pay for active duty parents, may negate some of the stresses of deployment when children's behaviors are compared to children experiencing parental separation in the non-military community. The second possibility offered is that due to ongoing development, the long-term impact of deployments may not have manifested, highlighting the need for more longitudinal studies on this topic (Mustillo et al., 2018).

Along with the need for studies on deployment impacts over time, there are other limitations and unanswered questions. The researchers point out struggling families might be less likely to have the time, energy, or desire to participate in a this kind of study, biasing the sample towards higher functioning families (Mustillo et al., 2016) The parenting capacity of both the at-home parent and the deployed parent was not assessed in this study, and “an ecological approach contributes to an understanding of how the same lived experience, the cycle of deployment, may result in different outcomes within families and in part the ability of caregivers to support the children” (DeVoe & Ross, 2012, p. 184). Like relocation, the experience and impact of deployment can vary widely based on family circumstances, coping skills, and outside support. Taken in a positive light, it may also be worth considering what factors help military children thrive in spite of ongoing stressors, in hopes that some of those supportive factors could be extended to children in the wider non-military community who are experiencing separation from a parent for reasons other than deployments.

As deployment rates have skyrocketed for active duty service members, so have combat-related injuries. New lifesaving techniques and innovations have greatly improved survival rates for those injured in combat, but the impact of trauma and recovery of a parent on the family unit remains significant. Combat injuries, such as the loss of a limb or a traumatic brain injury, can come with a lifetime of challenges for the service member and permanent changes for their family. PTSD is another invisible, yet pervasive, combat injury that can drastically impact family life and the well-being of children in the home. According to the U.S. Department of Veterans Affairs, over 15% of veterans deployed to either Iraq or Afghanistan went on to be diagnosed with PTSD (Dursa, Reinhard, Barth, & Schneiderman, 2014), and it is clear that the clinical diagnosis does not cover the full range of ways that combat trauma can manifest (Coulter &

Mooney, 2017). Further, research shows a range of negative outcomes for children whose parents were diagnosed with PTSD, including increased behavior problems, child neglect, and attachment issues, (Hisle-Gorman, Harrington, Nylund, Tercyak, Anthony & Gorman, 2015).

In 2015, *The Journal of the American Academy of Child & Adolescent Psychiatry* published a study examining the effects of parental deployment and combat injury on their children's mental health, injury rate, and rates of maltreatment (Hisle-Gorman et al., 2015). Using data extracted from the military health care system, researchers examined the records of 5,405 children between the ages of three and eight whose parent had suffered a combat injury, following them over the course of the year after their parent returned from deployment. To ascertain whether a child's parent had been injured in combat, researchers used military records of both mental and physical combat injuries received in Iraq and Afghanistan "including fractures, PTSD, traumatic brain injury, spinal injury, vision loss, battle injuries, shrapnel injury, and amputations, as well as other mental health issues" (Hisle-Gorman et al., 2015, p. 295). This extensive conceptualization of combat injuries is worth noting as it illustrates the wide range of ways in which a service member may be injured and how varied the experience of recovery can be for both the veteran and his or her family. Researchers then compared rates of mental health care need, accidental injuries, and child maltreatment reported to healthcare providers to the rates of children whose parents had not deployed and with those whose parents had deployed but were uninjured (Hisle-Gorman et al., 2015).

Unlike the mixed results of relocation and deployment, the impact of combat injury on children's well-being is overwhelmingly negative. The researchers found that children whose parents were injured in combat had an 82% higher rate of mental health care related appointments compared to children whose parents did not deploy, and a 67% higher rate than

children whose parents deployed but were uninjured (Hisle-Gorman et al., 2015). Additionally, children of parents who were injured during deployments had a 45% higher rate of visits to health care providers for new accidental injuries, and 90% more visits related to maltreatment than children of deployed, uninjured parents (Hisle-Gorman et al., 2015).

While the study has some limitations, including dependence on doctors correctly coding reasons for visits, which is particularly significant in the case of potential maltreatment, and an inability to account for pre-existing conditions or families with two active duty parents, it makes clear that the impact of combat injuries extends well beyond the service member. Children whose parents are injured during deployments show an increased risk of mental health issues, accidental injuries, as well as maltreatment, and children whose parents deploy more than once may be at even greater risk. Contradicting previous studies' findings that younger children may have fewer negative consequences from deployments, this study's findings are consistent with other attachment research and show that separation from a primary attachment figure during this critical period of development seems to have even greater consequences for the youngest children (Hisle-Gorman, 2015). Given the cumulative effects of stress shown in other research, the risks may be even more significant for children whose parents who deploy multiple times.

Since there are significant risks to both mental and physical health of young children, longitudinal studies of risk factors as well as supportive resources would be extremely valuable. On a positive note, this research does show that children are in fact receiving health care for both mental and physical issues through the military health care system (Hisle-Gorman et al., 2015), so more information about the efficacy of these resources in the short and long term, as well as resources for health care providers, could be positive for children. Because deployment and resulting combat injuries are such a specific, serious, and unavoidable risk to the health, well-

being, and development of military children and families, more emphasis on post-injury prevention of harm could go a long way in protecting children over the long term.

While it is important to understand the ways that relocation, deployments, and parental injury adds to the vulnerability of military children, it is also important to also recognize that there are buffering factors within military systems and culture that seem to protect children from some negative impacts that otherwise would be predicted. In fact, research shows that military-affiliated children do quite well with regards to their adjustment, development, and behavior compared to children who are not growing up in military families, when exposure to stress and upheaval is accounted for (Sumner et al., 2016). Reliable access to healthcare, predictable financial circumstances, and a culture built around known stressors can lead to surprisingly positive outcomes in this group. Social connection, which mitigates many other stressors, large and small, (Sumner et al., 2016) is built into military life through both official and unofficial channels, and may provide the support children need to tolerate the challenges of military family life, as well as other traumas and struggles they may encounter. “The fact that military culture simultaneously promotes stress and social support may provide an ideal pathway towards making sense of contradictory expectations about the well-being of military youth” (Sumner et al., 2016, p. 250), a phenomenon warranting further exploration.

A 2016 study examined the effects of parental social support in military-affiliated parents on both parental stress and the behaviors of their children (Sumner et al., 2016). Researchers collected data through a web-based survey of 198 military families with a child over the age of six at home, asking participants about their perceived social support, their children’s behavior, as well as the level to which they accessed military services like medical benefits, child care programs, and religious services (Sumner et al., 2016). Results showed that boys growing up in

military families had higher levels of externalizing behaviors that ranged from impulsivity to bullying than girls did (Sumner et al, 2016). Children of enlisted service members had slightly higher rates of problematic behaviors than children of officers, but spouses of enlisted members also reported much higher stress levels than those who were married to officers (Sumner et al., 2016). Contrary to the researchers' expectations, there was no correlation between a family's use of military support services and a reduction of negative behaviors in children.

However, the study found a positive correlation between a parent's perceived sense of social connection and a reduction of problematic behaviors. Surprisingly, they also found that the more a family moved, the more social support they felt they had. This may be in part because, for military families accustomed to relocating, each new location offers the potential for new friendships and additional resources (Sumner et al., 2016), which may address long-standing stressors, such as inadequate schooling or a local climate that is not a good fit for that particular family. The reduction in stress associated with moving seems to be a phenomenon specific to the military as it is not seen in research on their civilian counterparts.

The study has some limitations, including relatively small sample size compared to the size of the Armed Forces and a lack of longitudinal data. Researchers acknowledge that each child in a family may be impacted differently by parental stress and social support, and this survey only accounted for the oldest child in the home. Further, the differences between the enlisted family experience and that of officers' families is significant enough to warrant further exploration. It is possible that programs tailored towards specific needs of different kinds of military families may be more effective in building social support systems (Sumner et al., 2016).

Overall, the findings suggest that social support of parents has a positive impact on children's well-being, if we consider behavior to be a primary indicator of children's emotional

development. Reducing parental stress through social support may be the best way to build resilience within the military family (Sumner et al., 2016), and since there is no indication that the demands on the military family will be reduced in the near future, a focus on building resilience for all members of the family is critical for supporting military children in general.

## **Conclusions**

All things considered, the challenges facing military children as a group are significant and may leave them more vulnerable in times of crisis than their civilian counterparts. Frequent relocations, repeat parental deployments, and risk of parental injury in combat are stressors that put children's emotional development at risk. However, there are strong indications that certain aspects of military culture provide buffers for children, pointing to the uniqueness of each person's experiences that may be more important for life outcomes than the number of stressful events that individual has endured (Sumner et al., 2016). Military children have proven to be remarkably resilient, even under consistently stressful family conditions. In fact, military culture itself may be a mitigating factor when it comes to managing stressors unique to the career field (Sumner et al., 2016), and this phenomenon is ripe for future research.

In conclusion, the literature shows that children are uniquely impacted by traumas of all kinds, and they are specifically vulnerable to natural disasters. Due to the unique circumstances faced by military children and families, this group of children may warrant special consideration when a traumatic event like a natural disaster occurs. This thesis hopes to add to the body of knowledge on the specific impacts of natural disasters on military children by exploring the ways that the 2018 earthquake in south central Alaska affected the children affiliated with the large military installation located there. Perhaps in the future, this data could be used to create or improve supportive programs to help children as they recover from these unavoidable events.

## Chapter Three: Methodology

### Introduction

Natural disasters of all kinds are an unavoidable aspect of life on planet Earth, and as populations grow and concentrate in urban and coastal areas, the impact on the human population is increasing. Damage done during natural disasters often has disproportionately severe impacts on under-resourced populations, including young children, transient groups, and populations already experiencing stress prior to the disaster. Military-affiliated children represent all three of these aforementioned vulnerable groups, due to their age and developmental stage, the likelihood that they are relatively new to the geographic area where they are living, and increased levels of family stress related to relocations, deployments, and combat exposure. Because of this, it is important to understand how natural disasters may specifically impact military children and what supportive strategies and systems may support recovery after a natural disaster occurs. While much attention is paid to the military at large in public policy conversations, the voices of military dependents are often underrepresented. There is also little research on the unique ways that natural disasters impact military children, and for these reasons, this study focused specifically on the experiences of these children.

This study was designed to learn more about the impact of the November 30, 2018 earthquake on the emotional lives of young children who are growing up in the military, as well as explore some factors that may have influenced those children's resilience and recovery. This information could be shared to contribute those children's voices to the conversation about policies impacting military families, especially in the wake of natural disasters.

## **Instruments**

The data for this study was gathered in an interview format. The interview questions were provided for the participants' review ahead of the interview and revisited in an in-person, face-to-face format. All participants provided written consent verifying that they were comfortable having the interview audio recorded. A sample consent form can be found in Appendix A.

Questions asked during the interview were designed to help participants create a narrative describing their experiences and the experiences of their children on the day of the earthquake, identify any behavior changes seen in children immediately after the event or in the weeks and months following, and explore steps taken to mitigate negative experiences or behaviors. There were additional questions to ascertain the participant's experience with earthquakes prior to November 2018 and what outside services they may have utilized after the earthquake to mediate the emotional impact of the event. A complete list of questions can be found in Appendix B. Interviews were recorded with an audio recording application on the researcher's code-protected smart phone and later downloaded to a password-protected computer for transcription.

## **Time Frame and Data Collection**

The data for this study was collected through personal interviews in May 2019, approximately six months after the earthquake. Research was completed over a span of three weeks, with interviews scheduled after Institutional Review Board approval was received. Digital recordings of interviews were sent to a professional transcriptionist via secure email as soon as they were obtained and downloaded.

**Procedure.**

The study was completed through qualitative case studies focused on in-person interviews of military-affiliated parents of young children who experienced the earthquake in November 2018. The interviews were conducted with parents instead of children for several reasons. First, adults are better able to objectively report changes in young children's behaviors and coping strategies, including changes in sleeping and eating patterns, behavior regression, and other indications of stress. "When children experience negative or threatening events, ... starting in the early preschool years, some individuals remember stressful events that are personally significant or have had a traumatic effect, whereas other individuals do not" (Goodman, Quas, Goldfarb, Gonzalves, & Gonzalez, 2018, p. 3), making it difficult to gauge how productive an interview with a child might be in this context. Second, there were concerns about re-traumatizing children by discussing the earthquake directly in this format. According to the National Scientific Council on the Developing Child, the repeated recall of a traumatic event like an earthquake can cause a surge in cortisol similar to the one experienced during the initial event, with possible negative physical and emotional consequences (2010). It was outside the scope of this study for the researcher to support children should they experience distress during or after a conversation about this earthquake. (Because of children's developmental stage, these conversations with children about traumatic events may be more appropriate to have in a therapeutic environment.) Adult participants were better equipped to assess their own mental state and could choose to opt out of the study should they feel participation was not in their own best interests.

**Potential risks and challenges for participants.** There were risks and challenges for participants that were important for awareness throughout the research process and were addressed in the researcher's Institutional Review Board approval process. One challenge was

associated with the emotional risks involved for those who decided to participate. As mentioned previously, the primary risk was that discussing the traumatic event of the earthquake might trigger feelings of distress or further re-traumatization of the research subjects. To mitigate this risk, participants received a list of free mental health resources available for military members and their dependents. Participants were also advised that they could take breaks as needed during the interview process should they become upset, and that they were free to end the interview entirely should they had felt their own well-being might be compromised.

Unfortunately, challenges with access to those mental health care resources could pose another potential problem. Wait times for appointments with both military and civilian providers can be long and those who have had negative previous experiences with the military healthcare system may be hesitant to access them. And while the stigma associated with seeking mental health care has reduced significantly in the last twenty years, negative associations may still exist for some individual members. This is another reason why it was important for participants to be informed about many different mental health resources, both military and civilian, so that they could find the right fit for themselves should the need arise.

**Protection of human subjects.** This study included clear plans for the protection of participants. All participants received a consent form in print and were given ample time to review it before signing and proceeding with the interview. The consent form included a description of the study, explanation of privacy protections and confidentiality of records, description of possible risks and mitigation efforts, and a request for consent to have an audio recording made during the interview process. Signed consent forms were scanned in order to be preserved electronically and saved in a designated file on a password-protected laptop or in a password-protected Internet cloud storage platform. The electronic files will be saved for seven

years and then deleted. Print forms will be destroyed after this thesis is accepted by Pacific Oaks College.

In order to ensure privacy and confidentiality, this study adhered to guidance provided in *How to Write a Master's Thesis*, which advised removing names and identifying information from collected data and assigning each participant a corresponding number kept on a list held separate from other data (Bui, 2014). During recorded interviews, participants were advised of these confidentiality guidelines and encouraged to leave out identifying data when practical. In written reports, identifying details such as home of origin, home of residence, children's schools, active duty service member's professional field, and names of adults and children were omitted. In transcriptions, all names inadvertently included in interviews were omitted in the final written product. As described previously, only the chairperson and the researcher had access to uncoded data.

## **Participants**

The sampling procedure used for this study was a nonrandom, purposeful group of people who met several important criteria. First, these individuals were military-affiliated, meaning they were co-parenting with an active duty service member assigned to the large military base in the urban center near the epicenter of the earthquake. Second, these adults were parenting children between the ages of zero and ten years old. Third, the participants and their children were in the local area at the time of the earthquake. (Families who were out of town at the time of the earthquake were excluded.) This study took into consideration the experiences of all children under age eleven in each family. Participants completed a demographics form asking the age of children living in the home, if the participant had any mental health diagnoses such as PTSD

associated with the 2018 earthquake, and how long the family has been stationed at this location. A copy of this form can be found in Appendix C.

This study included a total of six interviews, completed on an individual basis in person, in a face-to-face setting. The location was based on the participant's preference and planned to accommodate their needs, particularly with regards to childcare. Invitations to participate were made in person, by phone, or via digital communication. At the time of the invitation, a list of questions to be included in the interview was given to the participants for their review, shared either via email or in print form. It was important that potential participants review the interview questions before giving consent to participate in the study in order to give them the opportunity to assess if the interview process might negatively impact their mental health.

The demographics of participants for this study reflected the diverse racial and ethnic demographics of the United States Armed Forces, and drew from spouses of both the officer and the enlisted corps. Some participants lived on the military installation in privatized housing, while others lived in communities in or around the city nearest to the base. The children whose experiences were reflected in this study attend school and childcare in a variety of settings, including on-base public schools, off-base private and public schools, and in-home childcare settings

**Exclusions.** There were three primary factors that would cause potential participants to be excluded from this study. First, those with a mental health diagnosis (such as PTSD) related to the November 2018 earthquake were excluded, as were those who felt that the interview process might cause intolerable levels of distress. Second, spouses or parenting partners of junior enlisted service members in the researcher's spouse's chain of command were excluded. Because of the researcher's spouse's high rank, the risk of undue influence (real or perceived) was too great for

these individuals to participate in this study. Finally, all those employed by the Department of Defense, including military members and civilian employees, were excluded from this study due to DoD regulations related to research on this population.

**Setting.** The study took place in the local area that experienced the November 2018 earthquake in south central Alaska near the large military base located there. The base is a joint installation housing the Air Force and the Army, occupying almost 80,000 acres adjacent to the major urban center of that region. Over 13,000 active duty military members are stationed at this location, with upwards of 20,000 family members accompanying them (Joint Base Elmendorf-Richardson, n.d.). Despite being geographically adjacent to the nearby city, the base operates as an independent entity, with its own hospital, emergency responders, shopping centers, housing, recreational facilities, and schools. The general public does not have access to the base itself, and to enter the installation, one must have a military identification card that demonstrates affiliation, be accompanied by a person with military status, or have visitor permission granted by military authorities. Even residents of base housing must show identification at a guarded entry point each time they enter the base. Regulations prohibit research by those not affiliated with the Department of Defense (DoD) from completing research on DoD-controlled facilities, so for this reason, all research was completed in private homes or in locations off-base.

The specific location of the interviews varied. Depending on the preference and needs of each participant, they were completed in the participant's home or in a local coffee shop or restaurant that was conveniently located for that individual. Prior to the interview, participants were offered several options, allowing them to choose a setting that was most comfortable for them and met their needs regarding time, transportation, childcare, and other relevant factors, ensuring that participation was as easy as possible for them.

## **Data Analysis**

Data gathered through the interview process was recorded in an audio file using a smart phone application on a password-protected device. In raw form, the data was stored on the researcher's password-protected laptop and shared only with a professional transcriptionist who was unaffiliated with the study and not local to the area. The transcriptionist for all six interviews was vetted by the education department at the local university and has completed similar transcriptions for thesis work previously. She was familiar with standard privacy and confidentiality practices. Transcribed interviews containing uncoded data were shared only with the thesis chair. All recordings, transcriptions, and related files will be stored on a password-protected laptop or on a password-protected Internet cloud storage platform for seven years, at which point they will be erased.

Data obtained from interviews were coded into the following themes: the duration and intensity of children's responses to the event, the connection between child well-being and parental emotional regulation, and coping and support strategies. Results are discussed in Chapter 4.

### **Limitations and potential bias.**

Interviewing parents instead of children was a limitation of this study, since this method relied on parent perception of children's experiences which may be biased by the parent's own experiences and trauma. Among other challenges in reporting, "data suggests that parents tend to underestimate the distress of older children" (Proctor et al., 2007, p. 947) in particular. However, it would be inappropriate in this context to seek self-reported information from children about a traumatic event due to the risk of causing further distress in the child.

Personal bias of the researcher is another limitation. The rank of the researcher's spouse affords a certain level of both financial and social privilege and as a result, the perception of the researcher related to data collected from military families participating in this study may be somewhat skewed.

A final limitation is the researcher's trauma related to the earthquake. Ongoing aftershocks and the significant emotional labor involved in the research process could potentially impact the researcher's understanding and analysis. For this reason, the researcher has also ensured access to mental health support as needed.

In the following chapter, data obtained during the interview process will be explored, noting both predictable and surprising results. Organized around themes exploring children's emotional response to the earthquake, the connection between parental emotional regulation and children's well-being, and strategies employed by children and parents to manage the emotional aftermath of the earthquake, these results illuminate the ways that the earthquake impacted military children who lived through it.

## Chapter Four: Results

### Introduction

The purpose of this qualitative study was to learn more about the impact of the November 30, 2018 earthquake in south central Alaska on military-affiliated children living there. Through interviews with adults co-parenting with active duty military members stationed at the base most impacted by the earthquake, this research explored children's responses to the event and ways that parents supported them at the time of the earthquake and in the weeks and months that followed.

### Results

**Demographics.** The data for this study was collected in a series of six interviews completed in May 2019, six months after the earthquake occurred. Prior to the interviews, all participants received a digital copy of the informed consent form (Appendix A) and the interview questions (Appendix B) for review. At the time of the interview, participants completed a demographics form verifying eligibility which asked participants to share the ages of their children and time at this duty station. A demographics form can be found in Appendix C. Children whose ages were outside the range of this study were not included in the interview process, with the exception of one child who had just turned eleven. All six participants were eligible to complete the interview based on the criteria identified in the informed consent form. Participants were assigned a number to protect their confidentiality. Children were assigned a corresponding letter under their parent's number (for example, the children of Participant 2 are identified as Child 2a and Child 2b).

All six interview participants in this study were female. Three of the participants were married and co-parenting with service members who are officers, and three were married and co-parenting with enlisted service members. Half of the families live on the military installation impacted by the earthquake, while half live off base in surrounding communities. With the exception of one participant who had lived in the local area prior to marrying a service member and had been in the local area for 9.5 years at the time of the earthquake, the average amount of time on station at the time of the earthquake was 16.4 months.

The 12 children whose experiences were considered for this study ranged in age from five months to eleven years old at the time of the earthquake. While the initial age range planned for this study included only children ages ten and under, one participant had a child who had turned eleven two weeks before the earthquake, and the child's experiences were sufficiently compelling that the data regarding this child were also included in this section. Eight of the children considered are girls; four are boys. Their school and childcare arrangements varied widely. Five attend public schools on base, one attends public school off base, and three attend an off-base private school. Two of the youngest children are at home full time with their mother; one infant attends full-time childcare provided by the family's neighbor. Only one set of siblings had a parent who was deployed at the time of the earthquake. All other families had both parents in the local area at the time of the earthquake. A more detailed demographics summary can be found in Appendix E.

### **Presentation of the Data by Themes**

Three main themes emerged from the data, each with three to five sub-categories. The first theme relates to children's emotional responses to the earthquake. The subcategories for this theme were children's indications of fearfulness, changes in children's sleep patterns, duration of

changed behaviors, and behaviors that could indicate children's recovery after the traumatic event. The second theme relates to the connection between child well-being and emotional regulation in the parent. The sub-categories that emerged under this theme include the parent's knowledge and experience with earthquakes prior to the November 2018 event, symptoms of parental distress, and children's reactions to parents' perceived emotions. The third theme involves coping and support strategies utilized after the earthquake. The sub-categories in this theme include child-initiated strategies, parent-initiated strategies, unsuccessful strategies, and mental health resources employed by families.

**Theme 1: Children's emotional response to the November 30, 2018 earthquake.**

Unsurprisingly, with the exception of an infant who was five months old at the time of the earthquake, all of the children whose experiences were considered exhibited clear emotional responses to the earthquake. However, the specific responses, as well as the duration and intensity of those responses varied from child to child, even within the same family.

*Signs of fearfulness.* Crying, clinginess, expressed fears about safety, and behavioral regression were common signs of fearfulness in children of all ages. Four participants reported the phenomenon of their children taking cover under tables or trying to leave the house when aftershocks occurred in the days and weeks after the initial earthquake. Participant 2 said about her seven-year-old daughter, "She was way more skittish [after the earthquake]...for weeks, every little thing she felt she would run under a kitchen table" (2b, May 7, 2019).

Aftershocks, which were quite strong and continued with regularity for months after the initial earthquake, were consistently mentioned by all participants as an ongoing source of stress for their children and for themselves. Children over the age of five had many questions about

what caused earthquakes and if they could be predicted in the future. Many expressed worries about another “big event,” especially in response to strong aftershocks.

Age did not seem to be a predictor in how strong a child’s reaction to the earthquake might be. For example, Participant 5 reported few indications of fearfulness in either of her children, who were five and three-years-old. However, research indicates that even very young children can be impacted by traumatic events (National Scientific Council on the Developing Child, 2010b), and the reaction of Participant 4’s sixteen-month-old child supports that assertion. Her family lives outside the urban area where the military base is located and were much nearer to the epicenter. Their family sustained significant losses in household goods, as the shaking emptied the contents of their kitchen cabinets and bookshelves onto the floor and knocked framed pictures off the walls. The toddler was asleep in her parents’ bed when the earthquake happened and woke up to things crashing down around her. Participant 4 shared,

She was a mess, probably more so than [my] oldest because she can’t communicate well...she screamed pretty much the whole time until it stopped...Some of the aftershocks...really really freaked her out badly...She did not like that things were out of sorts. She didn’t like seeing everything broken. She was really sad about that. She’d go, “Oh no, oh no,” about everything broken (4c, May 15, 2019).

Some of the older children were also impacted strongly. Participant 1’s nine-year-old was described as “very scared,” and was unable to fall asleep without both of her parents after the earthquake. Participant 6’s eleven-year-old, who was the oldest child included in this study, exhibited some of the most intense and longest-lasting symptoms of distress. This child had previous traumatic experiences with tornadoes, which had touched down in her neighborhood in another location when she was three years old, and she had an ongoing fascination with and fear

of natural disasters prior to the earthquake. She was the only child who was reported to have been frightened by the tsunami warning which was issued after the earthquake, but was quickly canceled. Her mother said, “she was freaking out, just crying hysterically. She just wanted to go. She wanted to leave Alaska. [She said], ‘Can’t we just get on an airplane and go?’” (6b, May 22, 2019). At the time of the interview, which took place approximately six months after the earthquake, this child was still showing regular concern about future earthquakes, along with other symptoms of anxiety.

***Changes in sleep patterns and behavioral regression.*** All participants indicated some level of sleep disturbances in their children in the days and weeks following the earthquake. The earthquake occurred in the morning, but strong aftershocks continued through the night and into the following days. Five of the six participants elected to sleep with their children in a common room for at least one night after the event, with Participant 6 sleeping in her living room with her children for over a month and continuing to share a sleeping space elsewhere in the house for several months after that. Adults reported doing this for comfort as well as to ensure safety and the ability to evacuate should another large earthquake occur during the night.

Beyond the first few days after the event, sleep disturbances were common in children whose parents were interviewed. Five of the six interview participants reported that their children slept in the parents’ bed, bedroom, or with older siblings for time periods ranging from one week to several months. Participant 4, speaking about her seven-year-old son, said, “He was afraid to fall asleep for sure...he had to have a movie on the whole time and me next to him or he wouldn’t fall asleep” (4a, May 15, 2019).

The same participant also reported that her youngest child, who was sixteen months old at the time of the earthquake and had been sleeping independently at that time, returned to

sleeping in her mother's bed and was still sleeping there at the time of the interview, despite her parents' desire for her to return to her own bedroom.

Having an older sibling with whom children could share a room was reported by three participants as a comforting factor for their children that helped sleep patterns return to normal for both the child and the parents. Three sets of sisters either shared a room at the time of the event or chose to share a sleeping space after the earthquake as a way to manage their nighttime fears. It seems that the younger siblings, whose parents all reported had significant levels of distress, may have been able to transfer their need for parental intervention to their older sibling, a finding that is consistent with attachment research (National Scientific Council on the Developing Child, 2004). While all participants reported improvement in their children's sleep over time, four children still have some ongoing levels of sleep disturbances six months after the earthquake that their parents attribute, at least in part, to the event.

Behavioral regression outside of sleep was another common theme. Two parents reported a significant reduction in independence in their children, who were five and six-years old when the earthquake occurred. These participants reported strikingly similar regressions around their child being comfortable completing tasks out of the line of sight of a parent. Participant 3 explained, "He won't go to the bathroom without the door open. I can't send him upstairs to get something from his room unless I am at the foot of the stairs." (3a, May 14, 2019). It is relevant to note that this child was alone in a bathroom at his childcare program when the earthquake occurred. He fell to the ground and hit his head during the event, and trauma research supports the idea that it may take some time for him to feel comfortable alone in that setting again (Thomason & Maursak, 2017). This behavior was ongoing at the time of the interview.

Participant 6 reported very similar behavior in her six-year-old. She said,

She already clings to me. It is a hundred times worse, or at least it was for the longest time. She obviously doesn't want me to leave her side.... She doesn't like to go in her room and pick out her clothes, all that good stuff she used to do. I think this one... really traumatized her as far as doing things by herself (6b, May 22, 2019).

While this child has shown some reduction in anxiety about being separated from her mother, she still has not regained the level of independence she showed before the earthquake. The similarities in age and reaction to the earthquake between the two children may indicate the developmental nature of children's responses to traumatic event.

Toileting was an issue for another of the younger children considered in this study. While Participant 5 reported very little distress or changes in behavior in either of her children, she did share that her three-year-old daughter had an increase in toileting accidents:

The only big regression we think is just potty training, because she was completely potty trained, no accidents...After the earthquake [the accidents] seemed to be a little more frequent because she was scared an aftershock would happen (5b, May 16, 2019).

During conversation prior to the start of the official, recorded interview, Participant 5 also shared that she felt her daughter had some significant academic regression after the earthquake. Before the event, the child had some preliminary math and literacy skills that were somewhat advanced for her age. After the event, she could no longer demonstrate those skills. However, when asked directly about this concern during the recorded interview, Participant 5 changed her response and attributed the academic regression to her daughter being not socially or emotionally prepared for the preschool environment. (This is one of many inconsistencies seen across parental reporting in this research process, a phenomenon which will be discussed further.)

*Duration of changes in behaviors.* Duration of behavior changes was one of the more challenging areas to parse out of the data obtained in this research. In the interview, participants were asked directly how long changes in their children's behavior lasted. Parents' reports of duration of changes in behavior after the earthquake varied widely, from lasting merely hours to continuing for months. For three children, little or no changes at all were reported. For the other nine, changes in behaviors, including fearfulness, sleep changes, and regression, lasted for periods ranging from one to two weeks after the earthquake to changes that remained ongoing at the time of the interviews six months later.

This is one area with marked inconsistencies in parental reporting. Several participants said their children showed no initial changes in behaviors, but later reported those changes, either upon reflection or without connecting to their previous statements. Participant 3 and Participant 6 reported that changes lasted two to three months, but then shared that at the time of the interview, their children still ask many questions about the earthquake and act nervous when there are sounds or sensations that she feared might be an aftershock or another earthquake. Participant 4 initially reported that her child seven-year-old "bounced back" within about a week, but later shared,

Even if we have a small quake now, he still...kind of freezes and freaks out...His anxiety is elevated. He freezes and makes sure things aren't falling, [considers] where to run to, mentally preparing himself (4a, May 15, 2019).

The phenomenon of inconsistent reporting from parents could reflect a measure of self-protection in participants, who may be more comfortable believing that the earthquake had minimal impact on their children. Further, research shows that parents sometimes minimize distress both in older children and for very young children, and this could also be at play (Proctor

et al, 2007). Due to the prevalence of inconsistencies in reporting, it is difficult to assess trends in the data regarding duration of post-earthquake symptoms in these children.

*Potential indications of recovery.* As behavior changes varied widely among children, so did potential indications of recovery. Participant 1 reported that her nine-year-old daughter was able to move out of her parents' bedroom at night and into her older sister's bedroom after about a week, and within two months, she seemed mostly back to normal. As an example of her daughter's increased resilience and sense of safety, Participant 1 shared her daughter's reaction after a 4.0 magnitude aftershock occurred early in the morning about two months after the initial earthquake:

She actually handled it really well. There was no crying. She didn't come running to our room. She just stayed in bed when it happened. And she was awake when it happened. So we went in and checked on her and she was fine (1a, May 6, 2019).

Participant 2 shared her seven-year-old daughter's ability to mirror her older sister's apparent calm after the earthquake as an indication of recovery, as well, saying, "I think it was easier for the younger one to deal [with the aftershocks] because she saw her older sister being strong and unaffected...I think that helped her as well" (2b, May 7, 2019).

Participant 3 shared that her five-year-old, who was at childcare when the earthquake occurred, was not reticent about returning to the setting three days later when facilities reopened. Participant 5 also indicated that her children, who attend private school off base and were there at the time of the earthquake, also had no challenges with returning to school the following week. The ability to tolerate separation from their primary caregiver may indicate that these children had in fact achieved a certain level of recovery, even in such a short period of time.

The two children of Participant 6 seemed to have the longest lasting symptoms and some of the most intense reported reactions to the earthquake. However, after several months, they also showed signs of returning to many of their regular activities. Research on children who experienced other natural disaster has found that almost all children do recover from traumatic events over time, a finding which is supported by the data obtained for this study. (Osofsky et al., 2015).

**Theme 2: The connection between child well-being and parental emotional regulation.** Both attachment theory and ecological systems theory provide support for the idea that the way that the important adults in children's lives react to traumatic events is likely to impact how children react, as well as how they recover over time (Proctor et al., 2007). In this study, evidence of this phenomenon was found in many of the interviews.

*Parental knowledge and experience with earthquakes prior to the November 30, 2018 earthquake.* While three of the participants had experienced small, minor earthquakes in Alaska prior to November 2018, none had been through a major earthquake comparable to the one studied in this thesis, either in Alaska or elsewhere. Three reported no previous experience with earthquakes whatsoever. Three participants used their previous experiences with tornadoes to guide their initial reactions, a strategy which did not cause any physical harm but which objectively did not increase their safety. Participant 6 reported,

I didn't know what to do. I was like, well, in a tornado, we would go in the center of the house. But I don't know what to do in an earthquake. So we're going to...the center of the house, which I found out is what you're not supposed to do (6 a/b, May 22, 2019).

Feeling unprepared and helpless at the time of the initial earthquake was a common theme among the participants who had lived in Alaska for two years or less. In contrast, Participant 4 had lived in Alaska for almost ten years and had experienced a small earthquake a few years prior that “made the walls wiggle” (4a/b/c, May 15, 2019). Her experience seems to have served her, as she did not mention feeling unprepared, and instead spoke in detail about the measures she kept to keep her children safe in the aftermath, including dressing them in shoes and cold-weather gear to protect them from broken glass in the house and to keep them warm while the heat was out, and dragging a large table into the common area for them to shelter under during the subsequent aftershocks.

*Symptoms of parental distress.* As would be expected, all participants reported some level of distress at the time of the initial earthquake and in the days and weeks following the event. Reports ranged from feeling “shaken up” and “a little bit panicky” to experiencing anxiety that lasted for months after the disaster. Participant 3, who described being “in a constant state of hyperawareness,” on the day of the earthquake, broke into tears as she described the earthquake, a response which seemed to take her by surprise. She said, “I’ve talked about this ...a hundred times before and I’ve never gotten upset before, so I don’t know why I’m getting upset now” (3 a/b, May 14, 2019). Her reaction may point to the subconscious nature of trauma – those who have suffered traumatic events are not always completely aware of the ways in which they are affected (Gvozdanovic, Stampfli, Seifritz, & Rasch, 2017). Participant 4 initially reported no response to the earthquake other than initial fear during the actual shaking, but later said she only began to feel better about a week later: “I was finally able to calm down and breathe. And of course, it got better when the aftershocks slowed down.”

As was the case for the children whose experiences were studied, the adults expressed significant distress associated with the ongoing aftershocks, including fears that the aftershocks could be a precursor to another significant earthquake. However, only one participant mentioned fears about the tsunami warning which was issued immediately after the earthquake. (The warning was quickly canceled and there was no indication that the local area was ever in real danger of experiencing one.)

All participants expressed a desire to be close to their children in the aftermath of the earthquake. Participant 4 and Participant 6 were at home with their children at the time of the earthquake, while the other participants experienced various amounts of time separated from one or more of their children. Participant 2 has four children and was home with her two youngest when the earthquake occurred. She reunited with one other child within minutes, but her oldest child, who is a teenager attending school in a neighboring community, was not able to join them at home until many hours later. Participant 3 was able to reunite with her infant within a very short period of time, but it took several hours for her husband to be able to return home from the military installation with their five-year-old son. After reunification, many participants spoke about efforts to keep their children close, both to ensure their physical safety and because the participant themselves was comforted by having their children nearby, a sentiment that is in keeping with reciprocal nature of attachment theory (Ainsworth et al., 1978).

*Children's reactions to perceived parental emotion.* While not all participants spoke about the correlation to their own emotions and their children's responses, those that did related a level of connection significant enough to warrant reporting. Participant 2 shared this about her seven-year-old daughter:

I think she fed off my emotional state. I think she probably would have done a little better had she not seen me be so nervous about everything...when I started feeling better and only...showing my feelings to my husband, I felt like she was fine (2a, May 7, 2019).

Participant 6 said something similar about her six-year-old daughter: “I knew how I felt and I know we’re pretty much the same, me and her...because internally I was probably dying inside, so she was showing it, you know, on the outside, too” (6b, May 22, 2019).

However, it seemed that there were also positive effects for children that stem from the experience of mirroring their parent’s emotions. Participant 4 reported that her toddler was calmer when she was able to regulate her own emotions. When Participant 2 was still experiencing so much post-earthquake anxiety herself that she found it difficult to calm her daughter, she reported that her husband took over the role: “He would just hold her and have a calming voice and – not faking it, either – just sincerely saying, ‘Everything is going to be okay’” (2b, May 7, 2019). Participant 6 put it most succinctly: “They felt safe being with me; I felt safe being with them” (6a/b, May 22, 2019).

Other studies have confirmed that there is significant correlation between the level of natural disaster impact reported by parents and the well-being and recovery of children after the event (Proctor et al., 2007), and this trend seems to be supported by the research undertaken in this thesis.

**Theme 3: Coping and support strategies utilized after the earthquake.** The most significant results of this study for future research and action are the strategies uncovered that helped children recover after experiencing the trauma of a natural disaster. Highlighting the resilience of the population studied, this research made clear the many efforts parents and

children undertook to help children manage their emotions immediately after the earthquake and to their support recovery in the time following the event.

*Child-initiated strategies.* Children sometimes have a strong awareness of what makes them feel better in times of stress and can often offer strategies of their own for managing their emotions during recovery (Wong, 2015). The children whose experiences were explored in this study employed a variety of these strategies in the aftermath of the earthquake. Maintaining close physical proximity was a chief strategy for many children, who sought a significantly higher level of line-of-sight contact with their parents after the earthquake than they did before the event. Seven of the twelve children chose to sleep with their parents for at least two nights after the earthquake, and some maintained that sleeping arrangement for much longer, with one child still sleeping with her parents at the time of the interview and several still sleeping with siblings. Participant 4, said about her youngest child, who was sixteen months old at the time of the earthquake,

She needed that closeness and skin-to-skin contact. She kept her hand on my chest the whole time to calm herself down [on the day of the earthquake]. She started sleeping in bed with me again and she's still in bed with me now (4c, May 15, 2019).

As described previously, three children showed a reduction in independent behaviors, including toileting, in order to remain physically close to their parents. While this behavior likely reflects a measure of regression due to trauma, it also functions as a stress management strategy, allowing children to stay close to their most important caregivers.

There were other ways that children took steps to manage their own sense of safety after the earthquake. Calling on the drills many of them practiced in school, several children

independently sought shelter under tables or tried to go outside during aftershocks or other events that made them fearful aftershocks were taking place. (As several children live on a military installation, jet noise and artillery are common phenomena that both sound and feel like the initial rumbles of an aftershock, so uncertainty about the source of these sensations was common for children and adults alike.) While some children expressed alarm as they sought shelter in their homes, others were more matter of fact. Participant 5 shared her five-year-old son's approach:

He would sometimes wait to see how bad [the aftershocks] would shake, then he would go and get his shoes and then he would tell us, "Alright, Mom. It is time to go outside now" (5a, May 15, 2019).

Other children sought more understanding about the cause of earthquakes as a way to manage their emotions about the event. Participant 3 said this about her five-year-old son: "He wanted to know more about earthquakes, and he wanted to know if they could happen at any time" (3a, May 14, 2019). Participant 1 and Participant 6 also shared that their children had many questions about what had happened and how they might know if it would happen again.

Distraction using entertainment media was another strategy children initiated to manage their emotions. Both Participant 1 and Participant 4 both described their children being calmed by watching movies, something that the children involved asked for or participated in on their own. Participant 6 shared that her eleven-year-old daughter used her love of video games to scaffold her confidence in being upstairs in their home away from her mother in the weeks after the earthquake.

One child continues to utilize self-talk as a way to manage her ongoing response to aftershocks or fear of aftershocks. Her mother reported,

She'll even say when she hears the kids playing next door, she'll say to herself out loud, "That's just the kids next door." It's like she's talking herself out of being scared. She'll go, "That's just the kids next door," and she looks at me for acknowledgement (2b, May 7, 2019).

Two other children who are siblings are described by their mother as "playing earthquake," recreating the earthquake and the safe response to it with their toys, providing another example of ways that children use their internal worlds to make sense of what happens around them.

***Parent-initiated strategies.*** Reflecting children's need for closeness, parents also listed increased physical proximity and physical affection as primary strategies used to comfort their children after the earthquake. Hugs, cuddles, and activities that kept children close, like watching movies together, were listed by participants as ways they helped their children feel better. Participants also described a willingness to accommodate children's increased need for closeness. Participant 6 said, "As long as she needed, I was there for her, following her everywhere she went. Wherever she needed me to be, mom was there" (6b, May 22, 2019). This parent even created a game with her six-year-old daughter to help her begin to tolerate small amounts of separation. When her child is in the bathroom alone, she calls out to her mother asking what time it is. Her mother responds from wherever she is with the time, and the two repeat this interaction until her child is finished and able to be in the same room with her mother again. Hearing her mother's voice seems to help the child stay calm as she works towards the level of independence she had prior to the earthquake.

Another strategy parents utilized was reminding children that they had already survived the earthquake, pointing to lack of injuries or damage to their surroundings as evidence that, despite how scary the event was, it was not as dangerous as children might perceive it to be. Participant 2 shared, “I would tell her... ‘We are all safe together...nothing happened to our house. We lost one vase and that was it’” (2a, May 7, 2019).

Participant 4 told her children,

the steps we had taken as parents to keep him safe. We have the generator to help with some light if we needed; we have food, blankets, gear. We also at the time had our motorhome and could have turned on the propane and stayed there for a night if we needed to (4a, May 15, 2019).

Participants also described discussing emergency plans for possible future events as a way to help children feel more equipped. Participant 1 said, “I talked to her...[I told her] we know what to do. There is a plan in place if there are aftershocks or anything else coming. We have a plan to be safe” (1a, May 6, 2019). Participant 2, Participant 4, and Participant 6 all reported similar conversations with their own children. In the interview, these parents also mentioned feeling unprepared themselves, so creating and discussing emergency plans may have served as a coping strategy for adults, as well.

Beyond education about safety plans, five of the six study participants shared that they had taken steps to educate their children specifically on the cause of earthquakes, using books, documentaries, and YouTube videos to help children understand what had happened. Participant 5, who reported the fewest changes in her five-year-old and three-year-old children’s behavior and felt they returned to normal almost immediately, credited this strategy specifically:

We were really open with him about what happened. We even pulled up some YouTube...and showed him what an earthquake was because he felt it, but he didn't necessarily see what damage they can do... just being open and actually teaching him what it was....I think might have helped and why he didn't have any issues with it. (5a, May 16, 2019).

All participants described talking with their children about the event and their experiences as a necessary part of helping them recover.

Finally, several participants described the necessity of time in the healing process. Parents seemed to understand intuitively that their children would likely recover in time, a belief supported by other research (Osofsky et al., 2015). Participant 6 said, "I just let them heal on their own time, in their own ways" (6a/b, May 22, 2019). Understanding and accommodating temperamental difference between children and individualizing their approach based on children's reactions and history of other trauma were other important themes uncovered in this research.

*Unsuccessful strategies attempted.* Although participants were asked directly about the strategies they found ineffective in helping their children cope with the disaster, there was little data found on this topic. Participant 3 described her husband using humor ineffectively and accidentally frightening their five-year-old son, and Participant 4 felt that perhaps she tried too hard to maintain routines in the immediate aftermath, when power outages and lack of heat made any sense of normalcy nearly impossible to attain. However, the other four participants could not think of any strategies they had tried that did not work. It is possible that this is a function of memory, rather than a testament of parental efficacy. Parents simply may not remember strategies that were ineffective because they continued to try different ones until something

worked. Because the brain encodes memories best when they have emotional meaning (Greenspan & Shanker, 2004), failed strategies may not have been important enough to commit to long term memory.

*Mental health resources employed by families.* Only one family reported using official mental health resources to support their children's recovery. Participant 2 explained that her nine-year-old child is undergoing treatment for leukemia. Due to the stress of the cancer diagnosis and treatment, this child and her sister were already in counseling prior to the earthquake. Participant 2 did feel that the mental health services her children received were helpful to both children in coping with the earthquake specifically, although she was not certain she would have sought those services out if they had not already been in place.

However, it is possible that other school-aged children did receive some form of mental health care or emotional support in the school setting, as many local schools provided these resources on site and teachers were encouraged to facilitate discussions and pay special attention to children who indicated higher levels of distress. In those cases, parents may not have been aware of services provided informally to their children.

## **Summary**

In conclusion, this study found wide variations in the intensity and duration of children's emotional responses to the 2018 Alaska earthquake, with inconsistent correlation between symptoms and children's age and stage. There appeared to be a connection between elevated levels of parental distress and children's anxiety, but the connection between parental regulation and child well-being appeared to also have a positive effect when parents were able to moderate their own emotions. Both children and parents developed strategies that helped children cope

with their emotions in the wake of the earthquake, and there were findings that pointed to specific aspects of military culture that were at play for families during their recovery after the event. Overall, the findings of this research are generally consistent with what is known from attachment theory, ecological systems theory, and temperament theory. However, some of the results highlighted limitations and indications for future research, which will be addressed in the following chapter.

## **Chapter Five: Discussion and Analysis**

### **Introduction**

This thesis aimed to increase the understanding of the impact of the November 30, 2018 earthquake in south central Alaska on the emotional lives of military children who live there. Six parents were interviewed about their children's experiences, with the hope that trends in children's responses and recovery would emerge. Though the sample size was small, findings were remarkably informative and added to the body of knowledge of how such an event affected these children and families.

### **Themes**

There were three main themes that emerged from the research explored in this thesis. The first theme focused on children's emotional response to the earthquake, and included signs of fearfulness, sleep disturbances, behavior regression, and possible indications that children's recovery had begun. In exploring this theme, it became clear that the aftershocks that continued for months after the initial event were just as disruptive, if not more so, than the earthquake itself, a phenomenon that warrants additional exploration in the wake of this type of natural disaster.

Surprisingly, there was little correlation between age and intensity or duration of children's reaction, evidence that the way children respond to trauma is highly individual and likely depends on a wide range of factors, including family support systems and previous experiences. The variation in levels of fearfulness across the range of ages considered in this research study may also point to temperament being at least as significant as developmental stage in the wake of a traumatic event (Stolarski & Cyniak-Cieciura, 2016).

The second theme was the connection between child well-being and parental self-regulation during the recovery period after the earthquake. The literature clearly supports the idea that children rely on their attachment figures to make sense of traumatic events (Ainsworth, Blehar, Waters, & Wall, 1978). Other studies on children impacted by earthquakes also show that levels of parental distress correlate with ongoing child distress (Proctor et al., 2007), a finding which was supported by the results of this study. Several participants shared direct or indirect correlation between their own feelings of distress and the behaviors of their children, a correlation which had both positive and negative effects. Parents with extreme distress reported challenges in comforting their children. However, parents also noticed that when they began to feel grounded and calm themselves, their children also appeared calmer and more emotionally balanced. It is clear both in this study and in the literature that the relationship between parent and child is a critical factor in children's emotional recovery after a natural disaster (National Scientific Council on the Developing Child, 2004).

The third theme centered on strategies that helped children cope with and recover from the traumatic experience of the earthquake. Many children took active roles in getting their needs met in the recovery process, finding both predictable and novel ways to cope with the initial event and ongoing aftershocks. Parents implemented responsive strategies based on the expressed needs of their children, specifically by honoring children's needs for physical proximity and by providing children with age-appropriate information on the cause of earthquakes and how the family was prepared should another earthquake occur. These strategies seemed to be very effective for families, a finding supported by other research on the impact of natural disasters on children (Matsen & Osofsky, 2010). While many children experienced high levels of distress, only one family utilized mental health care to manage children's emotions.

This is somewhat surprising, given that the military health care system provides free access to mental health care in a variety of formats and families are encouraged to use it. Several parents stated that while their children's symptoms of stress were significant, they were not severe enough to warrant the pursuit of official mental health care. It is possible that families consider mental health care as a crisis management strategy, as opposed to a supportive strategy to address more moderate amounts of distress.

### **Strengths and Limitations**

**Strengths.** A chief strength of this study is its uniqueness – at the time of publication, it is the only study published on the emotional state of military children after the 2018 Alaska earthquake. Data on the impact of natural disasters on military children living on a military base specifically is remarkably scarce, given the regularity with which military installations are impacted by severe weather and other natural disasters. The DoD has acknowledged that climate change is likely to increase both the frequency and the intensity with which military installations are impacted by natural disasters (2019), so any contribution to understanding of the nuances of those impacts is useful. While the military typically prioritizes the safety and well-being of children living on military installations, standard training does not currently address the emotional impact on children of a natural disaster, particularly in the weeks and months following the initial event, when initial crisis response has concluded.

Further, the literature has shown that military families live with many compounding stressors due to frequent deployments and regular relocations, among other factors. When military families find themselves stretched to their limits as a matter of course and are then required to cope with a traumatic event like an earthquake or other natural disaster, some families may find the strain extremely difficult, if not impossible, to manage. A better

understanding of the specific ways military children responded to the 2018 earthquake, as well as the strategies that children and families employ to help them cope with the event, can help both policy makers and supportive professionals more appropriately address the needs of this specific population when unpredictable and inevitable events like natural disasters occur.

**Limitations.** One significant limitation of this study was the small sample size. While responses among participants showed remarkable consistency, the lack of outliers is surprising and warrants further exploration. Another limitation is that the interviews included only one parent of the children whose experiences were considered, and all of those parents were female. While fathers in the population surveyed were not excluded from the study, the majority of male parents of young children are military members, who were excluded. It is possible that another parent, and fathers in particular, may have a different perspective on the meaning behind behaviors children exhibited in the wake of the earthquake, as well as different strategies for helping children cope and recover.

The inconsistencies found in parental reporting about duration and intensity of children's responses point to another limitation. It is possible that the research questions were not specific enough to obtain more accurate data. Further, the reliance on subjective memories around this topic may be an inherent limitation, as well.

The potential for subjective bias in the researcher, who is also a military spouse and who experienced the 2018 earthquake, is another limitation. Having also experienced this traumatic event could have impacted the way the research and subsequent analysis were conducted, as well as the conclusions that were drawn.

*Lack of military specific results.* The limited findings specific to the military community may indicate another limitation. That said, some data did emerge. Two participants described deployments as a normative feature in assessing children's stress levels, comparing their children's behavior after the earthquake to their behavior during deployments. Illustrating another military-specific perspective, Participant 6 described her daughter researching other duty stations they might be assigned to after Alaska, looking for locations without natural disasters. This child's response indicates an awareness and acceptance of the inevitability of a future move, as well as her ability to use this knowledge in an emotionally supportive manner. Research shows that both relocation and the deployment cycle are highly normalized in military culture, and these particular findings support that conclusion (DeVoe & Ross, 2012).

One other finding specific to the military community was that the children who had a deployed parent also had the longest-lasting symptoms of distress, with signs of anxiety continuing at the time of the interview. Their father deployed a month before the earthquake and remained deployed six months later. Other participants shared that their children were much calmer when the whole family was reunited, so it makes sense that when families could not be reunited, stress levels might remain high for children and adults alike. However, it is difficult to draw conclusions based on one family's experiences.

In all, there was not enough data to extrapolate differences between military children's experiences and the experiences of their civilian counterparts, or to determine in what ways military life impacted children's recovery after the earthquake. This could be a limitation in what research questions were asked, or in participant awareness of the ways that military life influences aspects of children's development.

## **Recommendations and Implications for Future Research**

While this research adds to the body of knowledge on how military children may be impacted by natural disasters, there are strong implications for future research. First, a larger sample size which includes both parents of children who were impacted by the earthquake would allow for a more complete picture of children's reactions and recovery. Specifically, active duty military members should be included in the research, as their knowledge and experience may bring nuance to the data that is currently missing.

Longitudinal research on the impact of this earthquake, completed over several months or years would also increase understanding, as would additional quantitative data to pair with qualitative studies such as this one. This type of research could be expanded to other natural disasters in other locations. Several military installations have been severely impacted by natural disasters in the past year, and it is increasingly likely that military families could experience multiple types of disasters in multiple locations. The experiences of those families in particular warrants special attention.

Finally, research with a narrower focus on the ways that military family life, including deployments and relocation, might overlap with other unrelated trauma as well as the child and family's ability to cope with natural disasters, would be a useful contribution to the body of knowledge. Research that compares the emotional experiences and responses of military children to their civilian counterparts could add a great deal to the understanding, as well.

## **Conclusion**

In conclusion, this study found that the earthquake led to significant, long-lasting emotional impacts for many children who experienced the 2018 Alaska earthquake. The initial

event was deeply upsetting to both children and their parents, and the aftershocks which continued for months caused additional stress and may have slowed recovery. However, all of the children considered showed signs of recovery six months after the earthquake, illustrating the resilience of children in general, and military families specifically. As plans are made for future disaster preparation, the strategies employed by children and families could be used to improve supportive systems and responses by parents, teachers, and other caregiving professionals who respond to future events. Hopefully, future research will continue to explore the emotional impact of these events on military children, ensuring that this population receives sensitive and appropriate intervention when the next natural disaster inevitably occurs.

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## **Appendix A: Informed Consent Form**

### **Introduction:**

My name is Jennifer Fiechtner. I am a student at Pacific Oaks College in California. I am conducting a research study on the impact of the November 30, 2018 earthquake on the emotional lives of military children, interviewing civilian spouses and partners of military service members who are parents about their children's experiences. I am completing this research as part of my master's degree. I invite you to participate.

### **Activities:**

If you participate in this research, you will be asked to:

1. Complete a short demographic form listing the ages of children in your household and the amount of time you have lived in Alaska.
2. Participate in an audio recorded interview that will take about one hour, at a time and place that is convenient to you. Interview questions will be provided for your review ahead of time.

### **Eligibility:**

You are eligible to participate in this research if you:

1. Are a civilian spouse of a military service member stationed at Joint Base Elmendorf-Richardson (JBER).
2. Have a child or children ages 0-10 who live with you.
3. You and your child/ren experienced the earthquake that occurred in November 2018 in south central Alaska.
4. You are co-parenting with a military member who is stationed at JBER.

You are not eligible to participate in this research if you:

1. Are not a civilian spouse or parenting partner of a military service member stationed at JBER.
2. Do not have a child or children ages 0-10 who live with you.
3. You and your child/ren DID NOT experience the earthquake that occurred in November 2018 in south central Alaska.
4. You are NOT co-parenting with a military member who is stationed at JBER.
5. If you received a medical diagnosis such as PTSD as a result of the earthquake, or you still find that talking about the earthquake makes you very upset and you think this interview might make you feel worse.

6. You are co-parenting with a junior enlisted military member in the researcher's spouse's chain of command.
7. You are employed by the Department of Defense.

I hope to include six adult participants in this research.

**Risks:**

There are minimal risks in this study. A possible risk includes feeling upset or distressed after thinking about the earthquake and the events that follow. If you have been diagnosed with PTSD or other mental health condition due to the earthquake, or you are experiencing severe, ongoing distress due to the earthquake, you are not able to participate in this study.

To decrease the impact of these risks, you can: skip any question in the interview process, stop the interview at any time, or take a break during the interview if you feel upset. A list of mental health resources available through the military will be provided for you at the time of the interview.

**Benefits:**

If you decide to participate, there are no direct benefits to you. The potential benefits to others are an increased understanding of the unique needs of military children after natural disasters which could be used to improve existing support programs and develop new resources for the future.

**Additional Costs:**

There are no anticipated financial costs to you.

**Confidentiality:**

The information you provide will be kept confidential to the extent allowable by law. Some steps I will take to keep your identity confidential are: I will identify you by a letter (such as "Participant A") in all written documents, I will not ask for your name in audio recordings, and any identifying details will be changed in final publication.

The people who will have access to your information are: myself and my thesis advisor, as well as a trained transcriptionist recommended by the University of Alaska School of Education who will transcribe the interview. The transcriptionist will have access to only to the audio recording of the interview. In the recordings, you will not be identified by name.

I will secure your information with these steps: storing it in a password protected file on my laptop and in my cloud-based data storage. Paper documents will be scanned and files stored in a password protected file. Original hard copies will be shredded.

I will keep your data for 7 years. Then, I will delete electronic data and destroy paper data.

**Audiotaping:**

I would like to use a voice recorder to record your responses. You are free to decline, but you cannot participate if you do not wish to be recorded.

Please sign here if I can record you: \_\_\_\_\_

**Contact Information:**

If you have questions for me, you can contact me at: [jfiechtner@po.pacificoaks.edu](mailto:jfiechtner@po.pacificoaks.edu) or 605-786-4040. My thesis advisor's name is Dr. Lee Turner. She works at Pacific Oaks and is supervising me on the research. You can contact her at: [lturner@pacificoaks.edu](mailto:lturner@pacificoaks.edu) or 916-524-8745.

If you have questions about your rights in the research, or if a problem has occurred, or if you are injured during your participation, please contact the Institutional Review Board at: [POCIRB@PacificOaks.edu](mailto:POCIRB@PacificOaks.edu).

**Voluntary Participation:**

Your participation is voluntary. If you decide not to participate, or if you stop participation after you start, there will be no penalty to you. You will not lose any benefit to which you are otherwise entitled.

**Termination of Participation:**

I may stop your participation, even if you did not ask me to if you become very upset during the interview process and are unable to communicate with me (such as in the case of a panic attack or other acute emotional event).

If you decide to stop participation, you may do so by asking me to end the interview and erase the audio recording. If so, I will not use the information I gathered from you.

**Compensation:**

To thank you for your willingness to participate, you will be given a \$5 Starbucks gift card.

**Signature:**

A signature indicates your understanding of this consent form. You will be given a copy of the form for your information.

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Participant Signature	Printed Name	Date
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Researcher Signature

### **Appendix B: Interview Questions**

1. What was your experience with earthquakes before November 2018? If yes, were any of these previous experiences on military bases?
2. Tell me about the day of the earthquake. Where you and your child were when the earthquake occurred. If you were not together, how long did it take you to reunite? Was your child's behavior normal following the earthquake or were there changes? If there were changes, what were they? How long did those changes last?
3. If your child experienced distress, what kinds of things did you try to help them cope? What worked best? What didn't work for you?
4. Did you use any mental health or emotional support resources to assist your child with their recovery and stabilization?
5. How is your child doing now?

**Appendix C: Demographics Questionnaire**

1. Did you and your child experience the November 30, 2018 earthquake in south central Alaska?

\_\_\_\_\_ yes      \_\_\_\_\_ no

2. Do you have a mental health diagnosis like PTSD, or strong, ongoing distress related to the earthquake?

\_\_\_\_\_ yes      \_\_\_\_\_ no

3. Please list the current age(s) of the child/ren ages 0-10 you are parenting. You may write in more if needed.

Child #1 \_\_\_\_\_      Child #2 \_\_\_\_\_      Child #3 \_\_\_\_\_

Child #4 \_\_\_\_\_      Child #5 \_\_\_\_\_      Child #6 \_\_\_\_\_

4. How long have you lived at this duty station?

\_\_\_\_\_ years \_\_\_\_\_ months

### Appendix D: Military Ranks in Order of Seniority

E = enlisted; O= officer

	<i>Air Force</i>	<i>Army</i>	<i>Navy</i>	<i>Coast Guard</i>
E-1	Airman Basic	Private	Seaman Recruit	Seaman Recruit
E-2	Airman 1 <sup>st</sup> Class	Private 2 <sup>nd</sup> Class	Seaman Apprentice	Seaman Apprentice
E-3	Senior Airman	Private 1 <sup>st</sup> Class	Seaman	Seaman
E-4	Staff Sergeant	Specialist or Corporal	Petty Officer 3 <sup>rd</sup> Class	Petty Officer 3 <sup>rd</sup> Class
E-5	Technical Sergeant	Sergeant	Petty Officer 2 <sup>nd</sup> Class	Petty Officer 2 <sup>nd</sup> Class
E-6	Master Sergeant	Staff Sergeant	Petty Officer 1 <sup>st</sup> Class	Petty Officer 1 <sup>st</sup> Class
E-7	Senior Master Sergeant	Staff 1 <sup>st</sup> Class	Chief Petty Officer	Chief Petty Officer
E-8	Chief Master Sergeant	Master Sergeant or 1 <sup>st</sup> Sergeant	Senior Chief Petty Officer	Senior Chief Petty Officer
E-9	Command Chief Master Sergeant	Sergeant Major or Command Sergeant Major	Master Chief Petty Officer	Master Chief Petty Officer
O-1	Second Lieutenant	Second Lieutenant	Ensign	Ensign

O-2	First Lieutenant	First Lieutenant	Lieutenant Junior Grade	Lieutenant Junior Grade
O-3	Captain	Captain	Lieutenant	Lieutenant
O-4	Major	Major	Lieutenant Commander	Lieutenant Commander
O-5	Lieutenant Colonel	Lieutenant Colonel	Commander	Commander
O-6	Colonel	Colonel	Captain	Captain
O-7	Brigadier General	Brigadier General	Rear Admiral Lower Half	Rear Admiral Lower Half
O-8	Major General	Major General	Rear Admiral	Rear Admiral
O-9	Lieutenant General	Lieutenant General	Vice Admiral	Vice Admiral
O-10	General	General	Admiral	Admiral

\*The rank of warrant officer exists in the Army, Navy, and Coast Guard and is situated between enlisted service members and officers. This rank structure is omitted in this chart for brevity since it is not referenced in this thesis.

## Appendix E: Demographics Summary

### Participant 1:

Children:

1. Age 12. Female. No data collected.
2. 1a - Age 9. Female. Data collected.
  - a. Attends private school off base; resumed classes following the weekend after the quake.

*Time on station on 11/30/18: 2 years*

Lives on base.

- Active duty spouse is high ranking officer

### Participant 2:

Children:

1. Age 14. Male. No data collected.
2. Age 12. Male. No data collected.
3. 2a - Age 9. Female. Data collected.
  - a. Attends public school on base. One week out of school after quake.
4. 2b - Age 7. Female. Data collected.
  - a. Attends public school on base. One week out of school after quake.

*Time on station on 11/30/18: 8 months*

Lives on base.

- Active duty spouse is senior enlisted

**Participant 3:**

## Children:

1. 3a - Age 10 months. Female. Data collected.
  - a. Attends full-time in-home childcare in her neighborhood.
2. 3b - Age 5. Male Data collected.
  - a. Attends public school on base, and before/after care in base programs. Out of school 1 week after quake, stayed in usual childcare setting full-time instead.

*Time on station on 11/30/18:* 1 year, 3 months

Lives off base.

- Active duty spouse is high ranking officer

**Participant 4:**

## Children:

1. 4a - Age 7. Male. Data collected.
  - a. Attends public school in town about 45 minutes from base. Out of school two weeks after quake.
2. 4b - Age 5. Male. Data collected.
  - a. Does not attend school. Home full time with mother.
3. 4c- Age 1.5. Female. Data collected.
  - a. Home full time with mother.

*Time on station 11/30/18:* 9 years, 6 months (lived locally before marrying service member).

Lives off base. \*\*Much closer to epicenter – lots more damage locally.

- Active duty spouse is senior enlisted

**Participant 5:**

Children:

1. 5a - Age 5. Male. Data collected.
  - a. Attends private preschool off base. Returned to school 3 days following quake.
2. 5b - Age 3.5. Female. Data collected.
  - a. Attends private school off base. Returned to school 3 days following quake.

*Time on station 11/30/18:* 1 year, 6 months

Lives off base.

- Active duty spouse is mid-level officer

**Participant 6:**

Children:

1. 6a - Age 11. Female. Data collected.
  - a. Attends public school on base, school is across the street from home. Out of school for 1 week after quake.
2. 6b - Age 6. Female. Data collected.
  - a. Attends public school on base – same school as older sister.

*Time on station 11/30/18 –* 1 year, 5 months.

Live on base.

- Active duty spouse is senior ranking enlisted. He deployed one month before earthquake and remains deployed at the time of interview.