

University of Nevada, Reno

**Traumatic Birth Experiences within the Family Context: The Role of Adverse
Childhood Experiences, Postpartum Mental Health, Bonding and Infant Emotion
Identification**

A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Education

By
Alexandra Shrake

Dr. Brenda Freeman, Dissertation Advisor

August 2020

Copyright by Alexandra Shrake 2018 All Rights Reserved



THE GRADUATE SCHOOL

We recommend that the dissertation
prepared under our supervision by

Alexandra Shrake

entitled

**Traumatic Birth Experiences within the Family Context: The Role
of Adverse Childhood Experiences, Postpartum Mental Health,
Bonding and Infant Emotion Identification**

be accepted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

Dr. Brenda Freeman

Advisor

Dr. Melissa Burnham

Committee Member

Dr. Ken Coll

Committee Member

Dr. Roger Stewart

Committee Member

Dr. Diane Barone

Graduate School Representative

David W. Zeh, Ph.D., Dean

Graduate School

August 2020

ABSTRACT

Obstetric complications and emergencies are an increasing concern in the United States with over fifty thousand women experiencing severe life-threatening emergencies annually (CDC, 2020). Beyond the stark realities of increasing rates of serious complications and death during childbirth are reports that up to one third of women would describe the birth of their child as “traumatic” and indicate that they feared that they or their child would die or be seriously injured (Soet, Brack & DiLorio, 2003). Research indicates that these traumatic experiences have negative physical, emotional and social sequelae for the women involved (Ayers et al., 2008; Skinner et al., 2018). Despite increasing awareness of the ramifications of traumatic childbirth, the relationship between these experiences and parent-child bonding is not well understood. More specifically, there is a lack of understanding of how overall parental adverse childhood experience scores, specific forms of traumatic birth experiences, and infant emotion identification may relate to the development of healthy parent-child bonding.

This dissertation examined three research questions: Are there significant differences between low history of trauma and high history of trauma as measured by the ACE checklist in post-natal depression, post-birth PTSD, and bonding, in those who experienced birth trauma? Are there significant differences between types of birth trauma in post-natal depression, post-birth post-traumatic stress disorder, and bonding in those who have experienced birth trauma? In those who have experienced traumatic birth experiences, are there significant differences in frequencies of infant emotions identified in those who report high and low birth-related trauma and bonding?

Three-hundred and nineteen participants responded to an online survey and were asked to respond to questions about adverse childhood experiences, types of birth trauma, postpartum mental illness, parent-infant bonding and infant emotion identification.

The results of the study indicated that those who experience birth trauma report much higher rates of postpartum depression, postpartum post-traumatic stress disorder and parent-infant bonding disorders than rates reported by the general population (Gavin et al., 2005; Muzik, Bockneck, Broderick, Richardson, Rosenblum, Thelen, & Seng, 2013; O'Hara & Wisner, 2014; Postpartum Support International, 2020; Reck, Klier, Pabst, Stehle, Steffenelli, Struben, Backenstrass, 2006). In this study, parental adverse childhood experiences did not appear to be related to rates of postpartum depression, postpartum posttraumatic stress disorder or disorders of parent-child bonding. Although prior adversity was not associated with birth trauma outcomes, some physical, psychological and relational aspects of traumatic birth experiences were associated with higher levels of postpartum depression, post-natal post-traumatic stress disorder and bonding disorders. Experiencing traumatic birth as interpersonal in nature and differences in attributions of responsibility demonstrated differing outcomes for postpartum PTSD and bonding. Finally, parents who identified higher rates of identification of passivity, unusual "other" responses and lower rates of interest in images of infants expressing ambiguous and mixed emotions endorsed more difficulty in parent-child bonding in this sample.

The findings of this study highlight concerning rates of postpartum mental illness and disorders of parent-child bond in those experiencing birth trauma. Moreover, this study speaks to the possible negative ramifications that interpersonal forms of birth

trauma may have for postpartum individuals and their families. Further research may continue to examine the role of parents' identification of infants' emotions as a precursor to healthy bonding in those experiencing traumatic birth.

Keywords: adverse childhood experiences, attachment theory, birth trauma, infant emotion identification, interpersonal trauma, parent-infant bond, postpartum depression, postpartum post-traumatic stress disorder

DEDICATION

To My Daughter

You are my greatest adventure and my greatest joy.

*“Your children are not your children.
They are the sons and daughters of Life’s longing for itself.
They come through you but not from you,
And though they are with you, yet they belong not to you.*

*You may give them your love but not your thoughts,
For they have their own thoughts.
You may house their bodies but not their souls,
For their souls dwell in the house of tomorrow,
which you cannot visit, not even in your dreams.
You may strive to be like them,
but seek not to make them like you.
For life goes not backward nor tarries with yesterday.*

*You are the bows from which your children
as living arrows are sent fourth.”*

Kahlil Gibran

ACKNOWLEDGEMENTS

To my husband, there is no one I'd rather have by my side on our journey. Thank you for stretching me to be more courageous, more adventurous and more compassionate. This dissertation journey is just as much yours as it has been mine. Thank you for all the sacrifices that you have made to get us here.

To my mother and my father, who has always been there with unconditional love, empathy, hard work and encouragement. Thank you for instilling in me curiosity, the confidence to pursue my dreams and a love of learning that sustains me during even the hardest times.

To my in laws, without you, none of this would be possible. You have been ever willing to lend a hand, an ear to listen and more than a few delicious meals. I am honored to be part of your family.

To Brenda Freeman, my sincerest gratitude for being a guiding force behind this dissertation particularly as I established my family, moved across states, and now through a global pandemic. To my committee, your insight has been valuable. I am so thankful for your willingness to share your expertise, guidance and most of all, your time with me.

Thank you.

TABLE OF CONTENTS

ABSTRACT	2
DEDICATION	5
ACKNOWLEDGEMENTS	6
CHAPTER I:	
INTRODUCTION.....	1
Brief Introduction to Birth Trauma.....	1
Statement of the Problem.....	2
Adverse Childhood Experiences.....	3
Types of Birth Trauma.....	3
Postpartum Mental Illness.....	4
Infant Emotional Identification.....	5
Research Questions.....	6
Theoretical Background.....	6
Attachment Theory	6
Attachment Theory and Trauma.....	7
Attachment Theory and Postpartum Mental Illness.....	8
Attachment Theory and Infant Emotion Identification.....	8
Definitions.....	9
CHAPTER II: LITERATURE	
REVIEW.....	10

Birth Trauma.....	11
Definition of Birth Trauma	11
Prevalence.....	14
Types of Birth Trauma.....	15
Physical Types of Trauma	15
Psychological Birth Trauma	15
Relational Nature of Birth Trauma.....	16
Betrayal Trauma.....	17
Cultural Narratives in Birth Trauma.....	23
Risks for Birth Trauma.....	24
Impact of Birth Trauma (Postpartum Mental Health).....	27
Birth Trauma and Family Context.....	29
Birth Trauma and Partners.....	29
Birth and Infant Factors.....	30
Attachment Theory	32
Attachment	
Definition.....	32
Development of Attachment Theory	33
Classification of Infant's Attachment.....	34
Attachment and Caring for Infants	37
Infant Cues and Responsiveness.....	38
Birth Trauma and Healthy Attachment.....	40
Emotion Identification and Cue Reading.....	42

Definition of Emotion.....	43
Development of Emotional Expression	43
Infancy	46
Toddlers	47
Parents Role in Healthy Emotional Development	48
Research on Caregiver's Identification of Infant Emotion.....	51
Birth Trauma and Infant Emotion Identification	54
Birth Trauma, Treatment and Implications for Counselors	55
Summary and Connection to Research Questions	56
CHAPTER III: METHODS	56
Introduction.....	58
Research Question	58
Methodology	58
Participants.....	59
Procedures.....	61
Measures	61
Demographics	61
Obstetric Information.....	61
Edinburgh Postnatal Depression Scale	62
IFEEL Pictures	62
Postpartum Bonding Questionnaire	63
Impact of Events Scale-Revised	65
Adverse Childhood Experiences Scale	66

Data Analysis	67
Assumption Assessments.....	68
CHAPTER IV: RESULTS.....	69
Introduction.....	69
Baseline Assessments	73
Analyses: Research Question One: Adverse Childhood Experiences	74
Analyses: Research Questions Two: Types of Trauma	76
Physical Domains of Birth Trauma.....	76
Psychological Domains of Birth Trauma.....	85
Relational Domains of Birth Trauma.....	91
Interpersonal Trauma and Attributions of Responsibility.....	103
Analyses: Research Question Three: Infant Emotion Identification...	111
Birth Trauma Sample.....	112
Infant Emotion Identification and PTSD.....	113
Infant Emotion Identification and Bonding.....	114
CHAPTER V: DISCUSSION.....	115
Summary of the Results	115
Research Question One.....	117
Research Question Two	119
Physical Birth Trauma.....	125
Psychological Birth Trauma.....	127
Relational Birth Trauma.....	131
Interpersonal Trauma and Attributions of Responsibility	

Research Question Three.....140

Recommendation for Clinicians144

Conclusions.....148

Future Research148

REFERENCES151

APPENDICES199

Appendix A..... 199

Appendix B..... 201

Appendix C..... 202

Appendix D..... 203

Appendix E 204

Appendix F..... 206

Appendix G..... 207

Appendix H..... 208

Appendix I.....209

Appendix J.....210

Appendix K.....211

Appendix L.....212

Appendix M.....213

Appendix N.....214

Appendix O.....215

Appendix P.....216

Appendix Q.....	217
Appendix R.....	218
Appendix S.....	219
Appendix T.....	220
Appendix U.....	221
Appendix V.....	222
Appendix W.....	223
Appendix X.....	224
Appendix Y.....	225
Appendix Z.....	226
Appendix i.....	227
Appendix ii.....	228

LIST OF TABLES

Table	Page
1. Demographic Data	74-75
2. Descriptive Statistics.....	71-77
3. Chi-Square Tests	78-110
4. Independent Sample <i>t</i> -Tests	112-115

CHAPTER 1: INTRODUCTION

Despite medical innovations and advances, women are at significantly higher risk of death or serious medical complications during birth than they were even thirty years ago (CDC, 2019). In fact, women in the United States are at nearly a 45% higher risk of experiencing severe obstetric complications including a 54% higher risk of experiencing postpartum hemorrhage, and are at double the risk of experiencing kidney failure, shock, sepsis or having to use a ventilator as a result of childbirth than they were in 2006 (Fingar, et al., 2018). Perhaps most concerning, however, maternal morbidity in America has tripled in the last three decades (CDC, 2020). For every one woman who dies in childbirth, another 70 experience “close calls” or nearly die. To put this into context, this represents nearly fifty thousand women experiencing severe, life threatening obstetric complications during childbirth annually (Ellison & Martin, 2017).

Beyond the stark realities of increasing rates of serious complications and death during childbirth are reports that up to one third of women would describe the birth of their child as “traumatic” and indicate that they feared that themselves or their child would die or be seriously injured (Soet, Brack & DiLorio, 2003). Moreover, after childbirth, 35% of women report partial symptoms of posttraumatic stress disorder (PTSD) (Soet, Brack & DiLorio, 2003). And of postpartum women, another three to sixteen percent may develop full symptomology of PTSD (Grekin & O’Hara, 2014).

In recent years, multidisciplinary research has begun to examine the effects of complicated and difficult births for postpartum women. Research defines these experiences as “birth trauma,” in which women experience “actual or threatened injury or death to themselves or to their baby” (Beck, 2004 p.28). Implicit in this definition is

recognition that women themselves define what experiences they view as traumatic during the birth process (Beck, 2004). However, Ayers (2004) reports that traumatic birth often shares common experiences of feeling helpless, out of control, powerless, and terrified during labor. Additionally, women may experience symptoms of PTSD and other forms of perinatal distress after birth (Olde, et al. 2006, McKenzie-McHarg, Ayers, Ford, Horsch, Jomeen, Sawyer, Stamrood, Thomson & Slade, 2015). Qualitative research indicates that women may experience intrusive thoughts, avoidance, irritability, loss of relationship quality with significant others, avoidance of sex and/or further pregnancy, anger, self-blame, shame, suicidal thoughts, anhedonia, dissociation and loneliness in the months after a traumatic birth (Elmir et al., 2010; Fenech & Thomson, 2014).

With awareness of the increasing rates of obstetric emergencies, there is an increasing need to understand not only the physical, emotional and social impact of those emergencies on women, but also of the impact on their families and their relationships (Beck, 2006). Research is increasingly recognizing the potential for fathers and other care providers to also develop distressing symptomology following witnessing complicated or traumatic births. In fact, partners may report similar traumatic symptomology in responses to birth as their significant others (Illes et al., 2010).

Of particular concern is the potential impact that a birth trauma, and the accompanying distress related to it, may have on early relationships between caregivers and their infants. The parent-infant bond may be particularly at risk due to the cultural expectations about birth, expectations or experiences of the “liminal nature of birth,” and the potential of an infant serving as a trauma reminder of the event (McKenzie-McHarg et al., 2015, p. 220). Despite awareness about the prevalence of traumatic birth and the

potential negative outcomes for families, there continues to be a lack of understanding of possible mediating factors in traumatic birth experiences. More specifically, there is a lack of understanding of the relationship between parental adverse childhood experiences, postpartum depression, postpartum PTSD, and bonding. Additionally, although research has indicated that types of birth trauma have differing effects on postpartum PTSD, a comprehensive evaluation of the relationship between types of birth trauma, postpartum mental illness, and bonding has not been explored. Finally, the role of infant emotion identification in postpartum PTSD and infant bonding is not fully understood in those who have experienced birth trauma.

Statement of the Problem

During the first year of an infant's life, the brain is particularly responsive to early life experiences due to the rapid and the plastic nature of brain development during this time (Zeanah & Zeanah, 2018). The context of this rapid development occurs almost exclusively within the relationship of caregivers and may be particularly vulnerable to adversity (Zeanah & Zeanah, 2018). Traumatic birth experiences occur during the early beginnings of the parent-child relationship and thus present potentially significant complications for early bonding. Yet, there is a lack of understanding of the role of traumatic birth experiences in parent-infant bonding. Current birth trauma research has demonstrated inconsistent findings for bonding with some research indicating a correlation between traumatic birth and impaired bonding, some research indicating no relationship, and other research indicating a relationship between traumatic birth and improved bonding (Ayers et al., 2016).

The lack of clarity in the relationship between traumatic birth experiences and disorders in parent-child bonding indicates a need for research that examines this interface in a more nuanced, complex and interrelated way. General research on bonding in the context of trauma and parent-child bonding points to the potential moderating role of parents' adverse childhood experiences, types of trauma experienced in adulthood, postpartum mental illness, and parents' ability to read infant emotional cues.

Adverse childhood experiences (ACEs; experiences of abuse and household dysfunction) have been correlated with disruptions in the parent-child relationship (Lehning, Nagl, Stephan, Wagner, & Kersting, 2019). However, no research has examined how high ACEs scores may impact the relationships of those experiencing birth trauma. More specifically, research has not explored if ACEs scores may amplify experiences of birth trauma and its relationship to postpartum outcomes.

General trauma and bonding research found a connection between interpersonal violence and impaired mother-infant bonding (Morelen, Rosenblum & Muzik, 2018; Schwerdtfeger & Nelson, 2007). Moreover, Schwerdtfeger and Nelson Goff (2007) found that attachment based and interpersonal trauma, in contrast with other types of traumatic events, was correlated with impaired attachment during pregnancy. Research has also highlighted how parents' history of childhood maltreatment may have particularly detrimental impacts on mother-infant bonding (Morelen, Rosenblum, & Muzik, 2018). Findings indicate potential differing impacts of specific traumas on parent-child relationships and more research on specific forms of trauma is warranted. Moreover, trauma that occurs as a sequela of birth may present differently than trauma occurring as a result of other types of adverse events (McKenzie-McHarg et al., 2015). Birth trauma

happens in relationship with the child and thus specific events with the birth experience (blame for the child, abuse, separation) may indicate differing pathways for impact on bonding and postpartum outcomes.

Lifetime symptoms of maternal PTSD are correlated with negative outcomes in early childhood including higher risk for trauma and higher internalizing and externalizing symptoms (Bosquet, Kitts, Blood, Bizarro, Hofmeister, & Wright, 2011). Additionally, general trauma research indicates that postpartum mental illness may interact with trauma to impact bonding (Lehnig, Nagl, Stepan, Wagner, & Kersting, 2019). Impaired bonding in postpartum depression has a long history, with research finding that postpartum depression represents a significant concern for bonding (Muzik, Bockneck, Broderick, Richardson, Rosenblum, Rhelen, & Seng, 2013). Research indicates that there are high rates of Postpartum depression (PDD) and PTSD comorbidity making PDD a significant concern in birth trauma and bonding (Flory & Yehuda, 2015). Additionally, PTSD during pregnancy and postpartum is correlated with negative outcomes for caregivers and their infants including high rates of negative parenting (Vignato, Georges, Bush, & Connelly, 2017). Moreover, history of trauma can be reactivated or triggered during the postpartum period as a result of the intimacy of the parent-child relationship, changes in identity related to parenting, or as a result of children's distress or cries (Erickson, Julian, & Muzik, 2019).

PTSD is also specifically correlated with bonding concerns. Muzik and colleagues (2013), (2013) found that PTSD, as well as depression, was correlated with impaired bonding at six months. Researchers have also found that the severity of PTSD and the time of onset for PTSD symptoms can have effects on parent-infant bonding (McKenzie

et al., 2015; Muzik, et. al., 2016). Thus, when exploring bonding in the context of birth trauma, postpartum mental illness must be considered.

Parents' identification of their infants' emotions is a precursor to parent-infant bonding (Peltola, Forssman, Puura, Ijzendoorn, & Leppanen, 2015). Infants are largely dependent on caregivers to meet physiological and psychological needs during the early years (Spangler, Geserick, & Von Wahlert, 2005). Infants' vulnerability requires that parents and caregivers be able to identify nonverbal cues (for hunger, discomfort, overstimulation, fatigue, and early expressions of emotions) and respond to these cues in appropriate and predictable manners (Zeneah & Zeneah, 2018). This sensitive and consistent pattern of responding to infants' emotional expressions and physiological cues may be one mechanism by which bonding takes place (Feldman, 2007).

The accuracy of parents' emotional identification is also important as the "the emotional tone of early experiences provides a framework within, which the infant develops his or her own affective repertoire" (Rosenblum, Dayton, & Musik, 2019, p. 104). In other words, research indicates that parents' identification of their infants' emotions sets the foundation for children's awareness of their own emotions and the beginnings of emotional regulation and health. Furthermore, research indicates that parents' ability to take their child's perspective and engage in parent-infant synchrony is protective in the context of the risk factors associated with parental mental illness (Trapolini, Ungerer, & McMahon, 2008). In the context of trauma and maternal psychopathology, the quality of parental relationship has been shown to mitigate the risk of maternal mental illness (Bergman, Sarkar, Glover, & O'Conner, 2008/2010). Despite awareness about the importance of sensitive responding, research has not examined how

birth trauma may affect parents' ability to identify their children's emotional cues accurately and how this may relate to bonding. Ultimately, research on birth trauma necessitates further understanding of the relationship between adverse childhood experiences, types of birth trauma, postpartum psychopathology, bonding, and infant emotion identification.

Research Questions

Due to the lack of research and contradictory findings in birth trauma research as it relates to parent-infant relationships, this study seeks to address the following questions: (1) Are there significant differences between low history of trauma and high history of trauma, as measured by the ACE checklist, in postnatal depression, post-birth PTSD, and bonding, in those who experienced birth trauma? (2) Are there significant differences between types of birth trauma in mothers' postnatal depression, post-birth PTSD, and bonding in those who have experienced birth trauma? (3) In those who have experienced traumatic birth experiences, are there significant differences in the number of infant emotions identified between those who report high and low birth-related trauma and bonding?

Theoretical Basis for the Study

Birth trauma and its impact within the family system can be understood through the lens of attachment theory. The connection between attachment styles, trauma and bonding are well researched (Hairston, Handelzalts, Assis, Kovo, 2018; Main & Hesse, 1990) and as a result, this study does not seek to replicate established research on attachment styles. Attachment theory, however, provides an essential framework for understanding the parent-infant bond and possible disruptions in this bond due to trauma.

Attachment theory argues that the relationship between child and parent is a biologically based system designed to ensure infant survival (Bowlby, 1969; George & Solomon, 1999). The interaction between caregiver and child serves to facilitate an intimate bond that connects caregiver and child, keeps the child in close proximity (safer), and influences the sensitivity in which caregivers respond to children (Ainsworth et. al., 1978; Bowlby, 1969/1982; George & Solomon, 2008). This bond is instinctual, biologically based, and serves to provide nurturance and safety for the child (Bowlby, 1969). Ainsworth and Bowlby (1991) further built on this theory by arguing that parents' interactions/sensitivity could result in secure or insecure attachment styles (Ainsworth, Bell & Stayton, 1971).

Traumatic experiences are consistently linked to compromised attachment systems (Lyons-Ruth, Block, & Parsons, 1993). Birth trauma occurs within the context of this attachment relationship during its earliest beginnings and thus may represent particular concern for bonding disruption (Beck, 2004). It should be noted that attachment and bonding, though often used interchangeably, reflect unique phenomena. Bonding is the affectionate relationship that a parent develops with an infant (Myer, 1984). Strong parental bonding may contribute to the development of attachment, but attachment represents a larger construct than bonding. Attachment is the relationship which allows the child to utilize the parent (and the relationship with the parent) to build both safety and exploration. Attachment is often categorized according to different styles that are correlated with overall emotional and social health later in life (Benoit, 2004).

Attachment theory articulates the belief that parents' patterns of caregiving are internalized as representations of relationships for children (George & Solomon, 2008).

As children become parents, those internalized representations influence their caregiving practices. In the context of trauma, a phenomenon known to activate attachment representations, parents' early experiences may be particularly relevant (Abelow, Marks, Feldman, & Huffman, 2013; George & Solomon, 2008). Thus, exploration of birth trauma in the context of bonding should take into account mothers' adverse childhood experiences.

In attachment theory, the way in which parents respond to their children's attachment related behaviors (i.e., proximity seeking: seeking closeness and attachment) dictate whether or not infants develop healthy (secure) or unhealthy (insecure) attachment relationships (Ainsworth, Bell & Stayton, 1971; Ainsworth & Bowlby, 1991). Mental illness is thought to disrupt the sensitive responding of caregivers, resulting in insecurely attached infants (Campbell et al., 2004).

A caregiver's ability to sensitively identify and respond to children's emotional expressions and cues has is an important factor in the establishment of healthy and secure attachment and bonding (Erikson & Muzik, 2018). Secure attachment serves as the foundation for healthy developmental trajectories including later healthy parenting practices, children's later attachment styles as adults, and children's biopsychosocial outcomes (Lysons- Ruth & Block, 1996; Ranson & Urichuk, 2008; Sabarra & Hazen, 2008; Wright, Hill, Sharp, & Pickles, 2018). Largely, healthy caregiving relationships appear to be protective against maladaptive developmental trajectories (McGoron et al. 2012; Scheeringa & Zeanah, 2001).

Bretherton and Munholland (2008) argue that in the development of the attachment relationship, the parent identifies and responds to the infant's emotions and

the infant begins to develop expectations about the parent's responses. These expectations develop into a working model about what relationships are, and then further develop into predictable attachment styles (Main, Kaplan, Cassidy, 1985). The interpretation of infants' cues and emotional signals and the response to these cues is called parent-infant synchrony and is believed to be the foundation of attachment (Feldman, 2007). In fact, Ainsworth, Bell, and Stayton (1974) argued that recognizing, reading, and responding quickly and appropriately to children's cues served as the most basic tenet of attachment- survival and safety.

A history of trauma may affect parents' accuracy in identifying infant emotion and thus potentially may affect sensitive responding. Dayton, Huth-Bocks, and Busuito (2016) found that mothers who had experienced the interpersonal/familial trauma were more likely to interpret infant facial expressions as negative. Thus, birth trauma's potential impact on emotion identification may indicate concerns for bonding. In summary, attachment theory articulates a guiding framework for understanding the potential mechanisms by which birth trauma may have negative impacts on bonding and highlights the importance of repairing traumatic disruptions in the caregiving system.

Definitions

Adverse Childhood Experiences (ACEs)

ACEs are a standardized measure that identifies the number of "childhood emotional, physical or sexual abuse and household dysfunction" during the first 18 years of life (Felitti et al., 1989, p. 245). Adverse childhood experience scores typically include psychological, physical, and sexual abuse; violence against mother; parental substance

abuse; parental mental illness; and parental incarceration (Felitti et al., 1989). Scores range from 1 to 10, with higher scores indicating more adverse childhood experiences.

Birth Trauma

The terminology used for birth trauma is diverse including: partus stress reaction, postnatal stress disorder, postnatal PTSD, PTSD following childbirth, traumatic birth and birth trauma (Ayers et al., 2008). Despite differences in nomenclature and some definitional evolution, the most commonly used definition for birth trauma in current literature is a birth process that involves “actual or threatened serious injury or death to the mother or her infant. Additionally, the birthing woman experiences intense fear, helplessness, loss of control and horror” (Beck, 2004, p. 28).

Postpartum Depression (PPD)

PPD is characterized by the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5), as a specifier of Major Depression. The specifier states “with peripartum onset if onset of mood symptoms occurs during pregnancy or within 4 weeks following delivery” (American Psychological Association, 2013, p. 186-187).

Postnatal Post-Traumatic Stress Disorder

Postnatal PTSD is typically understood as PTSD that occurs as a result of childbirth. PTSD is defined by the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5) according to symptomology involving intrusion, avoidance and alterations in cognition and reactivity occurring after exposure to death, life-threatening event, serious injury or violence (American Psychological Association, 2013).

Parent-Child Bonding

The parent-child bond is characterized as “the affective dimension in the (parent)–infant relationship. It has much to do with a (parent's) representations: the emotions and sentiments that the (parent) has for the child, as well as cognitions about him or her. Parent-infant bonding after birth is assumed to be an adaptive mechanism that is biologically driven, mainly by oxytocin” (Beinfar, Maury, Haquet, Faillie, Franc, Combes, Picaud, Rideau, & Cambonie, 2011).

Infant Emotion Identification

Infant emotion identification is the identification of a “facial expressions of emotion” from an infant during the first year of life (Izard, Huebner, Risser, McGinnes, & Dougherty, 1980).

CHAPTER II: LITERATURE REVIEW

Approximately 136 million people give birth every year (World Health Organization, 2005). Common knowledge dictates that the postpartum period is a time of significant change and transition (Cowan, Cowan, Heming, Garrett, Coysh, Curtis-Boles & Boles, 1986). This transitional period can be both a time of joy and also a time of increased stress requiring significant adjustment for many families (Bibring, Dwyer, Huntington, & Valenstein, 1961). These adjustments may include profound shifts in everyday life, changes in identity, and changes in family dynamics. Additionally, new mothers are tasked with adjusting to physical healing that occurs after giving birth and are also tasked with caring for their completely dependent baby (Bibring et al., 1961; Heinicke, 2002). This caregiving is often intensive and many families report lacking physical and social support (Ceballo & McLloyd, 2002). Historical and societal changes that have resulted in more dual earner couples and shorter maternity leaves may

exacerbate stress for families and result in decreased opportunities for familial and social support (Kotila, Schoppe-Sullivan, & Kamp Dusch, 2013).

Additionally, cultural trends in the United States may produce increased stress on mothers. Douglas and Michaels (2004) note that American culture views motherhood as all encompassing requiring mothers to give all aspects of themselves and their identity to motherhood . When a mother's reality does not match this expectation, particularly during the postpartum period, women are at increased risk for stress and negative mental health outcomes (Rizzo, Schiffrin, & Liss, 2012). For all these reasons, research indicates that families are at increased risk for mental health issues during the perinatal period (Brockington, 2004; Erickson, Julian, & Muzik, 2019; Muzik, Brier, Menke, Davis, & Sexton, 2016; Seng, Kane Low, Sperlich, Ronis, & Liberzon, 2009; Wenzel et al., 2005).

Birth Trauma

Within the context of the transitional nature of birth and cultural beliefs that create pressure on families, birthing individuals may experience increased difficulty when their birth process is traumatic (Zimmerman, 2013). Research indicates that mothers who experience traumatic births are more likely to have negative beliefs about themselves, their identity as a parent, and see their birth as a failure at the onset of parenting. A history of early traumatic experiences and postpartum difficulties may compound the effects of cultural narratives about the meaning of motherhood (Gattoni, 2013). However, only in the last fifteen years have traumatic births been recognized in the literature. As awareness about the impact of traumatic births has increased, there has been increasing awareness of the potential long term negative mental health and physical

effects of traumatic births on birthing individuals and their families (Greenfield, Jomeen, & Glover, 2019).

In this discussion of traumatic birth, the review covers definitions, prevalence, types of birth trauma, risk factors, impacts and cultural and family context.

Definition of Birth Trauma

As already articulated, the terminology used to define birth trauma is varied. In an attempt to further clarify the nature and definition of traumatic births, Greenfield, Jomeen, Glover (2019) provide examples of a traumatic birth, a birth that may be traumatic, and a birth that may be conceptually related, but likely not traumatic. One example of a traumatic birth may be:

A mother is told her baby's life is at risk and given unwanted medical interventions, including an episiotomy without adequate anesthesia. She does not feel in control and is distressed by both the threat to her baby's life and the pain and physical injury incurred through the episiotomy. She feels medical staff are brusque and uncaring in their attitude toward her. She has lasting physical effects from the episiotomy and feels traumatized when thinking back over the birth. She wishes she had made different choices and feels that the perceived removal of her choice was traumatic, as well as the lasting physical trauma from the episiotomy (p. 261).

In this example, the fear for the child's life, subjective feelings of loss of control, threats to bodily autonomy, and lasting physical effects likely contribute to the traumatic nature of this birth (Greenfield et al., 2019). An example of a birth defined as borderline may be:

A mother is told her baby's life is at risk and advised that she needs medical interventions she does not want, including an episiotomy. She feels respected by those caring for her and in control of the decisions and decides to have the advised interventions. She experiences distress at the threat to her baby's life and at having interventions she would have preferred not to have and describes the birth as difficult. But the care she received and feeling in control of decisions protects her from being traumatized by the events. On reflection, she feels she would have made the same choices again and trusts that she would have been supported by those caring for her in whatever decisions she had made (Greenfield et al., 2019, p. 261).

In this example, there is a perceived risk to the baby's life and interventions that were not desired, but feelings of respect and control limit the feelings of terror and horror associated with the birth and are likely protective. A birth unlikely to be traumatic is: "a mother is told her baby's life is at risk and is given medical interventions which she welcomes" or "a mother has an empowering and satisfying birth experience and is very happy with it" (Greenfield et al., 2019, p. 261). Although the experiences in these births may be difficult, the feelings of choice, empowerment, satisfaction, and positive outcome are likely protective.

Of additional note, one person may experience their birth as traumatic while others, including healthcare providers, view the same birth as routine (Alder, Stadlmayer, Tschudin, & Bitzer, 2006; Beck, 2004). For example, in the UK, .1% of births are typically classified as severely life-threatening (Baskett & Sternadel, 1998; Murphy & Charlett, 2002). Despite objective measures, much higher percentages of women report

perceiving a life-threatening risk to themselves or their infant (Moleman, Van Der Hart, & Van Der Kolk, 1992). This disjunction between healthcare providers' perceptions and birthing individuals' perceptions is important to note, particularly in considering screening and intervention for traumatic birth experiences.

In addition to understanding that traumatic birth experiences are subjective and defined by the individual experiencing them, research also indicates the importance of viewing birth trauma on a continuum rather than exclusively through the lens of PTSD. Birthing individuals certainly may experience PTSD in response to traumatic births, but they may also experience forms of subclinical distress that may negatively impact the individual's health and warrant clinical attention (Ayers et al., 2008). As a result of the awareness of the presence of subclinical, but concerning, presentation of trauma reactions, researchers often view birth trauma on a continuum of distress (Ayers et al., 2008, Greenfield et al., 2019). In attempting to understand traumatic birth, not only is a cohesive definition important, but also an understanding of the prevalence and impact of these birth experiences.

Prevalence

Up to 34% of persons giving birth self-report birth trauma (Soet, Brack & Dilorio, 2003). Between 1.5% and 6% of people giving birth are estimated to meet criteria for birth related PTSD (Beck, 2004). Another 8.3% to 28% of women reports posttraumatic stress symptoms that do not meet the full criteria for a PTSD diagnosis (Czarnocka & Slade, 2000; Soet, Brack, & Silorio, 2003). Research indicates that prevalence rates for specific forms of trauma may be higher, however. For example, women who experience stillbirth report rates of PTSD as high as 26% (Engelhard, Van Den Hout, & Schouten,

2006). Additionally, women who experience severe complications during childbirth have higher rates of PTSD with rates around 15-18% (Dikem-Yidiz et al., 2017 & Grekin & O'Hara, 2014).

Prevalence rates appear similar between industrialized countries including the UK, USA, Australia, Sweden, Italy and the Netherlands (Ayers & Pickering, 2005; Creedy, Shochet, & Horsfall, 2000; Czarnocka & Slade, 2000; Maggioni, Margola, & Filippi, 2006; Soderquist, Wijma, & Wijma, 2002; Wenzel, 2005; Wijma, Soderquist & Wijma, 1997; White, et al., 2006). Adewuya, Ologun and Ibigbami (2006) found higher rates of childbirth trauma in Nigeria and argue that trauma following childbirth might be higher in developing countries. However, there is a lack of additional research that limits cross cultural comparisons (Ayers, Joseph, McKenie, -McHarg, Slade, & Wijma, 2008). Largely, research indicates that birth trauma is prevalent, and its etiology can be linked to a variety of physical, psychological and relational characteristics.

Types of Birth Trauma

Birth trauma research indicates that the etiology of traumatic birth experiences is often multidimensional and can be physical, psychological, or relational in nature.

Physical Types of Trauma

In considering birth trauma, research indicates that the physical events of a traumatic birth can be diverse. People giving birth report trauma as a result of a variety of factors including: stillbirth, emergency cesarean delivery, instrumental delivery (forceps, vacuum, other devices), fetal distress, cardiac arrest, pre-eclampsia, congenital anomalies, inadequate pain relief, hemorrhage, manual removal of placenta, premature birth, unexpected events, prolonged labor, and rapid delivery (Ayers, Bond & Wijma,

2016; Bailham & Joseph, 2003; Beck, 2004; Bryanton, Gagnon, Johnson & Hatem, 2008; Creedy, Schochet, & Horsfall, 2000; Fairbrother & Woody, 2007; Furuta, Sandall, & Brick, 2012; Olde, et al., 2006). In some cases, birth trauma may involve damage to tissues and organs (McKinlay et al., 2008). Additionally, a small minority of women may experience a normal, uncomplicated birth as traumatic and life threatening due to the subjective experience of the birthing individual (Alder, Stadlmayer, Tschudin, & Bitzer, 2006; Beck, 2004).

Psychological Birth Trauma

Birth trauma often has a psychological component in addition to the physical events of the birth that are endorsed as traumatic for birthing individuals. Birthing individuals report higher rates of trauma when they: fear for their own life, fear for the life of the infant, fear receiving an epidural, feel a loss of control during the process, and dissociation occurring during labor. Additionally, postpartum risk factors include: rumination, self-blame, lack of support, and higher perceived stress after the delivery (Anderson & McCarley, 2013; Anderson, Melvaer, Videbech, Lamont, & Joergensen, 2012; Ayers et al., 2016; Bailham & Joseph, 1997; Bryanton, Gagnon, & Johnson, 2008; Creedy, Schochet, & Horsfall, 2000; Fairbrother & Woody, 2007; Olde & Kleberm 2006; Ryding, Wijma, &Wijma, 1998: Tomsis, Gelkopf, Yerushalmi, & Zipori, 2018; Waldenstrom et al., 2004).

Additionally, research indicates that a history of prior traumatic experiences can contribute to feelings of trauma during childbirth. For example, the birth, or aspects of the birth, may serve as a powerful reminder of past experiences of sexual abuse (Greenfield et al., 2019).

Ultimately, despite the plethora of risk factors for experiencing birth trauma, the leading predictor of women experiencing PTSD as a result of birth trauma was fear of their child being harmed or dying during birth (Beck, 2004; Ryding et al., & 1998).

The Interpersonal Nature of Birth Trauma

In understanding potential risk factors and etiologies of birth trauma, research indicates that interpersonal interactions have the potential to be a significant component of why individuals report birth as a traumatic experience. Individuals often report trauma in response to interactions with healthcare providers, including feeling degraded, feeling a lack of empathy, and receiving unnecessary or inadequate care (Bohren, Vogel, Hunter, Lutsiv, Makh, & Souza; 2015; Reed, Sharman & Inglis, 2017; Thomson & Downe, 2008). Additionally, those experiencing birth trauma report separation from their infant, having their infant in the neonatal intensive care unit (NICU), lack of information during labor and lack of support as contributing to trauma in birth (Ayers, Bond, & Wijma, 2016; Bailham & Joseph, 1997; Olde, et al., 2006; Schecter, Pham, Hua, Spinazzola, Sonnenklar, Li, Papaioannou, Milanaik, 2019).

In general trauma research, traumatic experiences that occur as a result of another individual (are interpersonal in nature) are more likely to result in significant distress or post traumatic symptomology (Kimmel, Gould, Kirmse, Gomez, Ressler, & Nemeroff, 2016). This is particularly concerning in light of research indicating that women often report birth trauma as a direct result of interpersonal interactions with their healthcare staff. More specifically, individuals frequently report trauma, or an aspect of their trauma, as a result of the inadequate or abusive quality of care from healthcare providers themselves (Reed, Sharman & Inglis, 2017). Perhaps surprisingly, birthing individuals

report providers' actions and inactions during labor are more commonly experienced as traumatic than type of delivery or degree of pain during labor (Elmir, Schmied, & Jackson, 2010; Reed, Sharman & Inglis, 2017; Thomson, & Downe, 2008). Birthing individuals are not the only ones who report birth trauma as an interpersonal trauma. In fact, midwives, doulas, nurses, and birthing partners also report frequently witnessing birth trauma that occurred as a result of care providers' actions and inactions (Leinweber, Creedy, Rowe, & Gamble, 2017).

Betrayal Trauma

Of particular concern, individuals report feeling betrayed by those they are dependent on during the birth process (Beck, 2004). General trauma research indicates that forms of betrayal trauma can have particularly negative effects on sense of self and trauma symptomology (Freyd, 1997; Freyd, DePrince, & Gleaves, 2007). Betrayal trauma occurs in the context of a relationship in which the individual feels traumatized by an individual on whom they trust and depend (Freyd, 2019). Birthing individuals largely report feeling reliant on healthcare providers: to make best decisions for themselves and their babies, to keep them safe, and to have more knowledge and experience about the process of labor and delivery than themselves (Miller, 2007). This reliance and trust in healthcare providers can become traumatic when women report feeling that their trust was betrayed by providers who were viewed as incompetent or abusive (Beck, 2004). Qualitative research indicates that women reported "feeling betrayed by a (healthcare) system that was supposed to care for me" (Beck, 2004, p. 32). Some women reported feeling betrayed by the feeling that "individuality, dignity, control, communication,

caring, trust, support and reassurance” were taken from them during what was supposed to be one of the happiest moments of their lives (Beck, 2004).

Women also reported feelings of betrayal in response to healthcare providers who they viewed as placing their own desires over those of birthing individuals and their families. Reed, Sharman, and Inglis (2017) found that women reported traumatic birth in response to perceptions that providers acted in their own interest, rather than for the woman or her child. For example, in Reed et al. (2017), one woman reported: “I found my OB’s lip service to my wishes and then his switch against them traumatic. I found the comment “let’s get this over and done with, I have a golf game to get to” traumatic... (p. 3). Or another woman’s experience: “I begged not to have c section, neither I nor my baby were in distress or danger, but because the doctor was ready to go home, he did a terrible section that resulted in almost a year of recovery” (p. 4).

Qualitative research indicates that women also felt betrayed by healthcare providers who they viewed as deceptive and/or coercive. For example, in Reed et al.(2017), one woman reported “It was not the birth itself that I found traumatic rather the way we were treated by the midwife. Being lied to in order to speed up my labor unnecessarily and putting me and my baby at risk” (p. 5). Another women reported feeling coerced when “my daughter was breech. I was told that if didn’t consent to the cesarean before labor started then they would perform a cesarean without my consent under general anesthesia when I arrived” (p. 5). Another women reported: “If you do not consent to syntocin or a c-section then we can get our friend the psych registrar down here to section you- then we can do whatever we want to you but you may not be able to keep your baby” (Reed et al., 2017, p. 5).

In extreme cases, women reported betrayal in response to feeling violated and assaulted by those they believed they could trust. In qualitative studies, women reported that they were forcefully exposed (Beck, 2004). Others reported feeling violated. One woman wrote: “I felt violated, and angry that I should have to defend myself and my body while I was trying to push my baby out (Reed et al., 2017, p. 5). Some birthing individuals reported providers ignoring request to stop such as “the doctor would not get her fingers out of my vagina even when directly told. After it was discovered that I suffered tearing, I wanted the tearing to be healed on its own- no stitches, but she and another doctor stitched anyway, despite my screaming at them to stop” (Reed et al., 2017, p. 6).

Some women reported feeling betrayal during their birth experiences that reminded them of past sexual assaults. For example, one woman wrote “The most terrifying part of the whole ordeal was being held down by four people and my genitals touched and probed repeatedly without permission and no say in the matter, this is called rape, except when you are giving birth. My daughter’s birth was more sexually traumatizing than the childhood abuse I’d experienced” (Reed et al., 2017, pp. 6-7). Another woman wrote “My cervix was manually dilated forcefully after pleading for the Dr. to stop. This caused me to re-experience a previous rape. Later in my birth my doctor performed a deep episiotomy after being told repeatedly that I did not want one...” (Reed et al., 2017, p. 6).

Additionally, some birthing individuals reported betrayal and trauma in response to physical assaults. In Reed et al. ,(2017), one woman reported: I “... couldn’t be tubed, so nurses manually choked me out” and another woman who reported “she was very rude

and condescending, both to myself and to my midwife. She proceeded to dig out my uterus without any numbing medication. It was horrifying” (p. 6).

In birth trauma research, feelings of betrayal may be compounded by power dynamics inherent in western labor and delivery practices. During labor and delivery, power relationships are reflective of larger society including a reflection of power relations in the healthcare system (Rothman, 1982). In practice, this means that doctors and other healthcare staff are often perceived to have more power than birthing individuals. As a result of this power imbalance and frequent fears about the process and pain associated with labor, difficult events during labor have the potential to increase feelings of powerlessness and loss of control within the labor and delivery process (Cronin-Fisher, 2018). Additionally, trauma research in general indicates that imbalanced power relationships contribute to traumatic experiences (Afuape, 2011).

In birth trauma research, women report power imbalances that were reflected in women feeling unheard, uninformed and lacking in choice (Beck, 2004). Birthing individuals also reported feeling powerless, lacking informed consent, or lacking basic information about what was occurring. Women at times perceived the lack of information as occurring intentionally (Beck, 2014; Thomson & Downe, 2008). In Reed et al..(2017), women also reported feeling unheard and ignored and that their knowledge about their bodies and their babies was minimized and undervalued. One woman wrote, “my baby was in distress and had me liquor and in all honesty probably should’ve been sectioned, at this stage. I was begging for one as I knew something was wrong with my baby they refused” (p. 5). Beck (2004) found that lack of information and voice, especially during decision making, may be paired with lack of privacy, empathy and respect. Beck (2004)

found that in experiences of birth trauma women often reported lack of empathy. This lack of empathy even occurred in response to the death of their child (Beck, 2004).

Power dynamics were also indicated in reports of objectification including lacking in bodily autonomy and feeling dehumanized. Women reported feeling dehumanized during labor with care providers treating them as if they were an object to be monitored, gather data and viewed as simply a means to an end (Beck, 2004). Women also expressed concern about feeling that they were an object to learn on rather than an individual. Reed et al. (2017) stated, “one woman wrote about how the room filled with staff hoping to watch her give birth to her breech baby: ... and the amount of people that filled the room to watch a vaginal breech delivery, when I failed at this, everyone left”(p. 4).

Increasing discussion of interpersonal birth trauma has occurred across roles and across disciplines. For example, research indicates that two thirds of midwives (67.2%) report witnessing a traumatic birth that involves abusive practices (Leinweber, Creedy, Rowe, & Gamble, 2017). Leinweber, et al. (2017) report midwives report particular distress related to witnessing abusive and aggressive actions during birth. Outside of healthcare a growing movement called childbirth activism appears to be developing in response to traumatic childbirth, particularly traumatic childbirth related to interpersonal dynamics (Sawyer & Ayers, 2009).

Childbirth activists express concern about obstetric practices they have termed “obstetric violence.” Obstetric violence was first legally defined in Venezuela in 2007. Venezuela indicated that obstetric violence involved the loss of autonomy, abusive or dehumanizing treatment and negatively impacts the life of the women (D’ Gregorio,

2010). More specifically, Venezuelan law further enumerates that types of practices that can be defined as obstetric violence include practices that take control of birthing position, opportunity for attachment or consent for medical procedures away from individuals. Additionally, ignoring obstetric emergencies or providing unnecessary medical care are considered forms of obstetric violence (D' Gregorio, 2010). One particular subset of obstetric violence is what Kitzinger (2006) defines as birth rape. Kitzinger (2006) argues that women may experience symptoms of trauma similar to rape survivors when they describe feeling a lack of body autonomy and report feeling coerced and violated during the process of birth.

Professional burnout, lack of competence, and unresolved trauma appear to be risk factors for professionals engaging in “obstetric violence”. Additionally, increasing pressures on medical staff, financial incentives, and fear about legal ramifications contribute to poor obstetric care and signal the need for systemic change (Fernandez, 2013; Kukura, 2018).

Beyond interactions with healthcare providers, birth trauma has ramifications for relationships with birthing partners and infants. In current western culture, childbirth often involves multiple individuals: the birthing individual, the infant, the partner, and healthcare staff (Ayers et al., 2008). Thus, when a birth trauma occurs, it occurs within the context of these larger relationship dynamics. Birth trauma often happens upon meeting a child for the first time and as a result the child has the potential to serve as a trauma reminder or trigger. Additionally, parents may develop anger or resentment toward a child or a partner that was part of the traumatic birth process (Beck, 2004).

Cultural Narratives in Birth Trauma

Unrealistic cultural expectations for labor and delivery may increase women's experiences of traumatic birth. Murphy (2010) notes that in western cultures childbirth has become increasingly medicalized with birth increasingly viewed as a "medical crisis" requiring intervention rather than as a normal, natural process (Murphy, 2010). Similarly, Cronin-Fisher (2018) argues that labor and delivery in the United States takes place largely within the social construction of risk management in the healthcare system. Thus, women and healthcare providers are focused on managing potential risks of childbirth and birthing individuals frequently report fear about something going wrong during their birth process (Cronin-Fisher, 2018).

Additionally, cultural expectations and pressure to experience childbirth as positive and joyful may increase birthing individuals' distress. Cultural narratives around childbirth largely describe the "liminal nature of birth" in which birth is often viewed as a positive and beautiful introduction to parenthood and to your child (McKenzie-McHarg et al., 2015, p. 220). Individuals are at increased risk for developing shame and trauma symptomology in response to events that are viewed with negative social evaluations (Budden, 2009; Dickerson, 2008). Thus, experiences of childbirth that run counter to cultural expectations and beliefs, such as childbirth that is traumatic, horrifying, and difficult rather than positive and joyful, may place women at increased risk for distress. In line with this argument, Thomas (2013) found that birthing mothers often felt isolated and pressured to move beyond their birth trauma. Ayers et al. (2006) found that women reported pressure to feel positively about their birth experience and felt that their negative birth reflected poorly on their ability to bring their child safely into the world, thus negatively impacting their view of themselves as mother. Additionally, traumatic birth

may involve feelings of loss or grief as traumatic births often run counter to individuals' hopes and expectations for the childbirth process and these feelings of grief and loss run counter to cultural narratives about what childbirth should feel like and what meaning it should have (Ayers et al., 2006). In addition to research regarding types of birth trauma, research indicates that some pre-pregnancy, pregnancy and postpartum factors increase risk for traumatic birth.

Risks for Birth Trauma

There is a significant amount of research exploring potential risk factors for birth trauma. Largely, conceptual frameworks of postpartum PTSD borrow from the diathesis stress model (Ayers, et al., 2004). PTSD is thus situated within a narrative of individual vulnerability and environmental risk factors that combine to provide the etiology of childbirth related PTSD (Ayers, 2004).

During pregnancy, fear of labor, depression, history of psychological problems, high anxiety, prior history of trauma, low coping skills, therapy for birth or pregnancy related issues, and low familial support were correlated with higher risk for developing PTSD after childbirth (Ayers, et al. 2004; Grekin & O'Hara; 2014; O'Donovan, Alcorn, Patrick, Creedy, Dawe, Devilly, 2014; Soderquist, et. al., 2009). In addition, traumatic birth may result in more adverse outcomes for teen mothers and women with unplanned pregnancies (Anderson & Perez, 2015; Beck, et al. 2015). Moreover, women of color are at higher risk for birth trauma including abusive obstetric care (Somerstien, 2019).

One area of risk identified in the literature is a woman's prior trauma history including childhood trauma. Research indicates that prior traumatic experiences can contribute to feelings of trauma during birth. For example, the birth, or aspects of the

birth, may serve as a powerful reminder of past experiences of sexual abuse (Greenfield et al., 2019). Although not investigated in birth trauma research to date, general trauma research indicates that an individual's overall adverse childhood experience score has been correlated with PTSD and a variety of other negative outcomes. Felitti and colleagues (1998) assessed adverse childhood experiences of 17,000 individuals through Kaiser Permanente Health in California between 1995-1997. Adverse childhood experiences (ACEs) are assessed through five questions that examine childhood maltreatment and five questions that assess household dysfunction (Felitti et al., 1998). Adverse childhood ACEs are associated with a variety of negative adult outcomes including higher risk for heart disease, respiratory illness, cancer, liver disease, skeletal disease, smoking, sexually transmitted infections, obesity, depression, suicide, hallucinations, maternal perinatal mental health disorders, asthma, risk for sexual violence, substance abuse, and overall shorter life expectancy (Anda et al., 1999, Dong, Giles et al., 2004; Dube et al., 2001, Felletti et al., 1998; Waehrer, Miller, Silverio, Oh, & Burke, 2020). Additionally, there was a 1.4 to 1.6 times increased risk of obesity and inactivity in individuals with high ACEs scores (Felitti et al., ,1998).

Additionally, ACEs have been associated with both pregnancy and postpartum risk. Higher ACEs scores have been correlated with higher pregnancy risks including preeclampsia, diabetes, and premature birth (Frajemberger, Clements-Noelle, & Wei-Yang, 2015). Moreover, higher maternal stress during pregnancy is correlated with a higher rates of mental illness and lower cognitive functioning in infants (O'Connor et al., 2002; Van den Bergh et al., 2005).

A recent meta-analysis substantiated these findings. There was a correlation between abuse history and pregnancy/postpartum depression (Alvarez-Segura, Garcia-Esteve, Torres, Plaza, Imaz, & Hermida-Barros, 2014). Sexual abuse has also, individually, has been correlated with preterm delivery (Margerison-Zilko, Strutz, Kelly, Li, Holzman, & Holzman, 2017). Moreover, a recent meta-review on postpartum depression found that risk of postpartum depression was correlated with both lifetime stress and childhood abuse (Hutchens & Kearney, 2020).

Despite the negative health outcomes for individuals with high ACEs scores and the connection of both ACEs and specific forms of childhood trauma on pregnancy and postpartum outcomes, there is a lack of research examining the role of ACEs in the experience of birth trauma. Clinically, understanding the impact of ACEs on postpartum health and bonding after traumatic childbirth is important for healthcare and mental health providers. If high ACEs scores are correlated with more negative outcomes after traumatic childbirth, an ACEs screening may help practitioners screen for higher risk after negative childbirth experiences. This is of additional importance due to the widespread use, acceptance, and ease of administering of the short ACEs form (Schmidt, Narayan, Atzi, Rivera, & Lieberman, 2020). Moreover, the ACEs questionnaire may be used during pregnancy for women who are at risk for a variety of pregnancy and postpartum complications. The short nature of the form may present lower potential for re-traumatization during a time of increased risk for triggers (Courtois & Riley, 1992; Schmidt et al., 2020). Additionally, due to the potentially high rates of birth trauma in the general population (up to 34%) (Beck & Watson, 2008), the ACEs questionnaire would

provide an opportunity to screen women during pregnancy and in the event of a traumatic birth experience.

Impact of Birth Trauma (Postpartum Mental Health)

In addition to risk factors and types of birth trauma that contribute to endorsement of trauma symptomology, research has also explored outcomes for those experiencing birth trauma. For birthing individuals, research demonstrates that birth trauma often shares common outcomes to many forms of trauma including symptoms PTSD such as avoidance, hyperarousal, and re-experiencing (Ayers et al., 2008). Additionally, women report ongoing symptoms of trauma including increased symptomology at the anniversary of the traumatic experience (Beck, 2017). Unfortunately, research indicates that the impact of birth trauma can be lifelong if untreated (Forssen, 2012).

Research also indicates that women who have experienced birth trauma have high comorbidity rates between PTSD and other mental health disorders such as depression and anxiety (Goulding, Grewen, Meltzer-Brody, Pearson, & Stuebe, 2019). In a sample of those who experienced birth trauma, women who have combined demographic risk factors and PTSD are five times more likely to develop depression and three times more likely to develop comorbid generalized anxiety disorder (Keane & Kaloupek, 1997). Of note, there is a lack of research on comorbidity with other forms of psychopathology such as substance use and attachment disorder (Ayers et al., 2008).

Although there appears to be similar symptomology between PTSD from other events and PTSD related to childbirth, the phenomenology of PTSD following childbirth may be unique in various ways. For example, childbirth involves physiological, neurological, and hormonal changes that may have unique repercussions for trauma

(Briddon, Slade, Isaac, & Wrench, 2011). Ayers et al. (2008) indicate that birthing individuals who experience birth trauma are at higher risk for negative effects around sexuality including loss of libido, negative hormonal changes, and ramifications of physical injuries to mother or child. Perhaps unsurprising, birthing individuals who experience a traumatic birth have lower reproductive rates (Gottvall & Waldenstrom, 2002).

Additionally, trauma during childbirth may have phenomenological differences due to the medical environment within which birth often occurs in industrialized societies. For example, many traumatic births involve various medications, such as systemic analgesic medications, that may impact memory formation, processing, and recall. Further, memory plays an important role in the development and maintenance of PTSD; however, little is known about how these medications may impact women's experience of trauma or their experience of the birth of their child within the context of trauma (Briddon, Slade, Isaac, & Wrench, 2011).

In addition to possible physiological changes, women may have altered views of and avoid interaction with medical providers, particularly gynecological providers (Ayers et al., 2008). Additionally, research indicates birth trauma can impact women's future decisions about birth. For example, women who have had a traumatic birth are much more likely to have a home birth or freebirth (i.e., give birth without a professional care provider, which may place them and future infants at higher risk for medical emergencies (Keedle, Schmied, Burns, & Dahlen, 2015). On the other hand, individuals who have experienced birth trauma have higher rates of elective cesarean sections as well (Kottmel

et al., 2012). In addition to negative outcomes for birthing individuals, research indicates that birthing families may be negatively impacted, as well.

Birth Trauma and the Family Context

As previously noted, birth trauma often occurs within the context of the family; partners and the infant are frequently connected to the traumatic event (Beck, 2004; Hinton, et al., 2014; Reed, et al., 2017). Although less established than research examining impacts for birthing individuals, birth trauma research indicates impacts for families in addition to the birthing individual (Ayers et al., 2015).

Birth Trauma and Partners

Birth partners appear to experience negative effects from witnessing birth trauma. Research indicates that birthing partners are susceptible to developing PTSD as well. Rates of PTSD in partners are estimated to be between 0-5% (Ayers, Wright, & Wells, 2007; Skari, 2002; Iles, Slade, & Sipby, 2005). Additionally, partners report experiencing depression, flashbacks, and PTSD for months or years after the birth (Hinton, Locoock, & Knight, 2014). Partners report feeling powerless and excluded during traumatic births and report that what they witnessed was “shocking and distressing” (Hinton et al., 2014).

Research also indicated that there may be negative ramifications for parents’ relationships with one another after a birth trauma. Parfitt and Ayers (2008) found that mothers’ PTSD related to childbirth negatively affected parents’ relationship their romantic relationships when depression was also present. Birth trauma has been associated with negative communicative patterns between romantic partners (Ayers, Eagle, & Waring, 2006). Qualitative studies indicate that women report difficulty engaging in sexual activity following a traumatic birth and may wait as long as a year to

resume sexual activity, which can negatively impact romantic relationships (Skinner et al., 2017).

Birth Trauma and Infants

Birth trauma research focusing on birth trauma's impact on infants is relatively new and warrants additional attention (Ayers et al., 2015). The impact of birth trauma on infants must be considered within the parent-infant relationship, as infant difficulties are often the result of a dysregulated relationship (Zeneah, 2019). The limited current research seems to indicate that there is a correlation between psychological birth trauma and negative infant outcomes such as decreased breastfeeding, more dysregulation, more difficulty with soothing, increased socioemotional difficulties, disrupted patterns in eating and sleeping, and possible cognitive impacts (Cook, et. al., 2018). Birth trauma is negatively correlated with rates of breastfeeding (Halperin et al., 2015). Declines in breastfeeding appear to have multiple etiologies. Birth trauma is correlated with decreased milk supply and also psychological distress can place mothers at risk for more difficulty breastfeeding. Qualitative research indicates that women endorse one of two relationships with breastfeeding after a birth trauma. One in which they feel the need to prove that they can breastfeed and the second that breastfeeding is too difficult in the context of the distress related to the trauma (Beck, 2008). However, overall, rates of breastfeeding appear lower for families who have experienced traumatic birth. Decline in rates of breastfeeding among mothers who have experienced PTSD is concerning as breastfeeding is correlated with decreased risk of infection, childhood obesity, and is protective against sudden infant death syndrome (Stuebe, 2009).

Research also indicates that maternal PTSD (not specific to birth trauma) may be a mediator between birth trauma and negative infant outcomes (Seng, et. al., 2011).

Research has found that postpartum PTSD is associated with more passive and compliant infants, more disorganized behavior, higher rates of crying, more avoidance, and less desire for physical closeness (Cook, et al., 2018). Research also indicates that infants who have mothers who have experienced birth trauma may have more difficulty recovering when becoming dysregulated and be less responsive to soothing from parents during toddlerhood (Bosquet Enlow et al., 2011). At least one study has found that postpartum PTSD is correlated with poorer cognitive outcomes in toddlerhood (Parfitt et al., 2014).

Brand, et. al., (2010) express concern about the potential for maternal PTSD or stress to affect children through a variety of means including neurobiological changes such as through increasing cortisol rates. For example, in general PTSD research, infants of mothers who had PTSD demonstrated difference in cortisol rates, particularly for mothers who experienced PTSD during the third trimester (Yehuda et al., 2005). Additionally, Morland et al. (2007) note that PTSD is correlated with negative behavioral responses and other psychiatric comorbidities such as depression that may negatively impact children. Finally, negative health behaviors associated with PTSD such as dysregulated eating patterns, smoking, and substance abuse may have adverse health effects for infants (Morland et al., 2007).

Of additional concern is the potential for birth related trauma to impact future pregnancies because research indicates that PTSD in a subsequent pregnancy may negatively impact birth weight and gestation (Seng, Low, Sperlich, & Liberson, 2011; Yonkers, Smith, Forray, Epperson, Costello, & Belanger, 2014). Additionally, there is

concern about the potential for birth trauma to impact parent-child relationships with particular concern about bonding and healthy attachment for infants of mothers who had traumatic birth experiences.

Attachment Theory

In considering the interactions between parent and child in the context of birth trauma, we situate the research within the larger theory of attachment. Attachment theory provides the theoretical framework that articulates the dynamics of the parent-child relationship and the implications this relationship has for later life (Roseblum, Dayton, & Musik, 2019). In understanding parent-infant bonding, we must first understand the attachment relationship as the context that undergirds parent-infant bonding and disruptions that can occur due to traumatic experiences. Of note, this study will not explore attachment styles themselves in parent-infant bonding. This has been studied elsewhere (see Williams, Patricia Taylor, & Schwannauer, 2016). This study is, however, based in and theoretically guided by attachment theory.

Attachment Definitions

In simple terms, attachment is the emotional connection, the behaviors, and relationship that develops between an infant and their caregiver (Ainsworth, Blehar, Waters, & Wal, 1978). John Bowlby defined this connection as “any form of behavior that results in a person attaining or maintaining proximity to some other clearly identified individual who is conceived as better able to cope with the world” (Bowlby, 1988, p. 27). In other words, attachment provides a secure base (a relationship of comfort, support and safety) from which children can explore and learn independence, stretch their skills and grow whilst still maintaining safety (Bowlby, 1969). In practical terms, the most

fundamental aspect of attachment is whether or not a child seeks his caregiver when he or she is upset or frightened (Bowlby, 1988).

The quality of the attachment relationship can vary from one pair to another. Generally, the quality of attachment relationships is stable and predictive of later life outcomes (Bowlby, 1982). The quality of the attachment relationship is believed to be determined by caregivers' sensitivity and responsiveness to infants' nonverbal communication (Ainsworth, Blehar, & Wall, 1978). Ultimately, the attachment relationship can begin with bonding prenatally and during birth (Ruschel, Zielinsky, Gings, Pimentel, Azevedo, Paniagua, & Nicoloso, 2013).

Development of Attachment Theory

Attachment theory was first introduced by John Bowlby in 'The Nature of Child's Tie to His Mother' (Bowlby, 1958) and expanded upon in his early work titled *Attachment and Loss* in 1969 (Bowlby, 1969). In these works, Bowlby posited that children's interactions with their caregivers were not primarily about meeting their own needs or drives, but were in actuality about something deeper, a relational connection. Ultimately, this relational connection serves as the foundation for a child's development. More specifically, Bowlby argued that the early relationship with caregivers in the first few years of life provided the foundation for how individuals interacted within and understood future relationships (Bowlby, 1958).

Influenced by ethnological research on imprinting and bonding, Bowlby believed that babies were born with the desire and need for certain relationships that provide security and safety (Bowlby, 1973). Babies are able to seek and elicit caregiving from their parents through instinctual behaviors that an infant is born with and which are

evolutionarily advantageous (Bowlby, 1982). Bowlby hypothesized that children maintain closeness and elicit interaction with caregivers as a method of survival. Bowlby also recognized that caregivers must respond to these eliciting behaviors, otherwise children would not survive. For example, children used their attachment figure as a “secure base” from which to explore the world, but when they were frightened or sense danger, they returned to their attachment figure seeking protection and support (Bowlby, 1988). Thus, attachment functioned to keep a young child close enough to their caregiver to maintain their safety (Bowlby, 1982).

In 1960, Mary Ainsworth expanded upon Bowlby’s research and furthered understanding of attachment by exploring differences in attachment patterns among infants and their caregivers. During this research, mothers and children were studied in their home and mothers’ interactions with their infants were studied. In addition to observations in the home, Ainsworth began to conduct research in laboratory settings. She observed when mothers left the room, infants demonstrated different patterns of reactions and that these patterns appeared to align with particular caregiving behaviors in the home. In Ainsworth’s research, she found that mothers who responded sensitively to their infants’ needs were more likely to have infants who cried less, explored more, and tended to be more responsive to soothing when reunited with caregivers. This study provided the foundation for viewing attachment as a product of maternal caregiving sensitivity (Bretherton, 2013).

From this preliminary research, Ainsworth developed the “Strange Situation” procedure to assess the quality of an attachment relationship (Ainsworth, et al., 1978). The Strange Situation is a laboratory study in which a standardized set of events occur for

a mother-child dyad. The duration of the Strange Situation is roughly three minutes per event and involves a specific series of events. First, the infant and mother enter an unfamiliar playroom and are left alone. Next, a stranger enters the room and the mother leaves the child and stranger alone together. The mother then returns to the room and the stranger leaves. The child is then left completely alone, followed by the stranger reentering the room. Finally, the caregiver returns and the stranger leaves. Researchers monitor the child behaviors in response to the returns of the mother to determine possible patterns of attachment in mother-child dyads (Ainsworth et al., 1978).

From these observations, researchers have identified consistent patterns of interactions in mother-child dyads. The development of three attachment styles were identified. Later research by Main and Solomon (1990), identified a fourth attachment style in attempts to capture a number of children whose behavior did not match with the three identified domains, but followed an alternative pattern of behaviors that appeared clinically meaningful.

Classification of Mother-Infant Attachment

Bowlby theorized that attachment behaviors become organized into an attachment behavioral system that serves to maintain proximity to attachment figures (Bowlby, 1969). As previously noted, Ainsworth furthered the exploration of these patterns of organized attachment behaviors with the Strange Situation study (Ainsworth et al., 1978). In this study, Ainsworth and colleagues (1978) found that there were three patterns of attachment demonstrated: avoidant; secure, and anxious-ambivalent.

The first attachment pattern, group A, were said to demonstrate avoidant attachment. This attachment style was characterized by a lack of engagement with

mothers during play and then a lack of engagement with mothers upon the mother's return. Ainsworth noted that this attachment pattern appeared related to mothers who were rejecting of their infant, demonstrating more anger toward their infant, were less emotionally expressive and often resistant to physical contact with their infant during daily life (Ainsworth et al., 1978).

The second pattern in the Strange Situation was for infants who fell into group B. These infants were categorized as securely attached. This category is defined by proximity seeking to the mother and ability to be soothed by the mother upon her return. This group was also more willing to explore the toys in the novel situation when accompanied by their mother. Mothers of securely attached babies were found to be responsive and emotionally available to their infants (Ainsworth et al., 1978).

The third pattern, group C, was characterized as anxious-ambivalent. These infants tended to be more distressed in response to strangers, were more distressed in response to mothers, and had more difficulty being soothed upon the mother's return. Mothers of anxiously attached infants seemed to be generally less responsive to their infants and had more difficulty responding in appropriate ways to the infant's communication (Ainsworth et al., 1978).

Main and Solomon later identified a fourth attachment category, the disorganized attachment style (1990). Like the other attachment styles, this style was identified in the context of the Strange Situation. This attachment style is characterized by a disorganized and chaotic response to the mother leaving and returning in the strange situation. This attachment style is thought to have developed in response to abusive and threatening

behavior from the caregiver. This leaves the child's only secure base as being both a source of comfort and a source of danger (Main & Hesse, 1990).

Since the initial research on attachment styles, a plethora of research has examined these attachment styles in relation to a variety of child outcomes. Research indicates that individuals with an avoidant attachment style may struggle with interpersonal skills, more anger and be more prone to social rejection (Suess, Grossman, & Sroufe, 1992). Individuals with an anxious-ambivalent attachment style have higher rates of anxiety, less social competence, higher rates of frustration, aggression, and decreased empathy as compared to securely attached individuals (Kestenbaum, Farber, & Srouge, 1989). Finally, research has consistently indicated that children with disorganized attachment are most vulnerable to negative outcomes later in life including more externalizing behaviors including aggression (Bohlin, Enginger, Brocki, Thorell, 2012). These children are at increased risk for not only externalizing behaviors, but also post-traumatic stress disorder, borderline personality disorder (MacDonald, Beeghly, Grant-Knight, Augustyn, Woods, Cabral, Jacobs, Saxe, & Frank, 2008;Mijkovitch, Deborde, Bernier, Corcos, Speranza, & Pham-Scottez, 2018). On the other hand, secure attachment is correlated with healthier socio-emotional development (Egeland & Heister, 1995).

Attachment and Caring for Infants

Research indicates that early caregiving relationships are of paramount importance to child development (Shonkoff & Phillips, 2000). Infants and young children's early interactions with caregivers serve as the foundation for learning about themselves, their world and what to expect from relationships with others (McGoron et

al., 2012; Scheeringa & Zeanah, 2001). Research indicates that these early relationships influence: children's self-regulation, willingness to explore and interact with their environment, self-esteem, memory, peer relationships, cognitive development, and resiliency in response to negative events (Bretherton & Mullholland, 2008; Kochanska, 1995; Kochanska, Coy, Tjebkes, Husarek, 2008; Laible & Thompson, 1998; Meins, 2013; Rosenblum, Dayton, & Muzik, 2019).

Attachment develops during the early years and is largely believed to develop through early parent-child bonding. Parents' sensitivity to children's physical and emotional needs and the signals they use to communicate these needs are paramount to the parent-child bond (Milne, Johnson, Waters & Small, 2018; Moneik, Colonnese, Stams, Meins, 2017).

Infant Cues and Maternal Responsiveness. Maternal sensitivity is defined as a caregiver's ability to identify infants' cues from their expressions, cries and body language in order to meet infants' emotional and physical needs (Meins, 2013). Sroufe et al. (1999) note that positive interactions (emotion expression, voice tone, and quality) serve to transmit the sense of trust and affection that creates the emotional bond with the child. In addition to facial cues, infants cry to elicit interaction with caregivers and to communicate needs. Researchers argue that infants may exhibit distinct cries in response to particular stimuli such as hunger, pain, and need for interaction (Zeifman, 2001). In attachment theory, an infant's cry serves to elicit interaction and maintain proximity to the caregiver (Bowlby, 1971). In line with attachment theory, research indicates that over a period of time, infants begin to cry less when their cries are not responded to by

caregivers, indicating that crying is fundamentally interpersonal communication and dependent on parent-child interactions (Ijzendoorn & Hubbard, 2000).

Caregivers' sensitive responding is correlated with secure attachment (Bell & Ainsworth, 1972). McElwain and Booth-Laforce (2006) found that secure attachment was particularly correlated with mothers' ability to respond sensitivity to children's distress. Thus, early bonding is influenced by the ways in which caregivers read their children's cues, understand when a response is necessitated, and respond with an appropriate pace and response.

Bretherton (1992) highlights the importance of parental sensitivity from the view of the child, indicating that parents' responsiveness or non-responsiveness to their cues tells the infant that their relationships are either dependable and predictable or inconsistent and unstable. As the child grows, the child internalizes this view of relationships into an "internal working model" of what is expected in the world (Bretherton, 1992). Thompson (2008) further notes that not only the responsiveness of the caregiver is important in the development of infant relationships, but also the tone and quality of that responsiveness when it occurs. In fact, maternal sensitivity and ability to take the perspective of the child has been correlated with secure attachment at twelve months (Meins, et al., 2001).

Researchers have termed the process of cue reading between infant and caregiver, especially in response to emotional cue reading, "attunement" (Schorre, 2001; Stern et al., 1985). Attunement is the process of communicating an emotion and having that emotion mirrored and responded to in a way that supports the child's regulation (Stern et al., 1985). Attunement allows the infant to be supported when they are unable to regulate

their own emotion and theorists argue that it sets the foundation for emotional relating with others and self-regulating (Legerstee & Markova, 2007).

The importance of cue reading is evident in the frequency of which this interaction occurs within the parent-infant relationship. The mother-infant relationship contains frequent face to face interactions that are often initiated by the infant, such as feeding, changing or cleaning, talking to or playing with, soothing, burping, etc. (Easterbrooks et al., 2012). In fact, infants and parents may interact in such unity that there is a coordination of behavior, neurology, and physiology called dyadic synchrony (Feldman, 2017; Rosenblum, Dayton, & Musik, 2019). Thus, current research indicates that early bonds and their development into an attachment relationship are connected to not only psychological processes, but also physiological responses in our most intimate relationships. Understanding of attachment and its connection to infant cue reading and sensitive responding highlights questions about the potential impact a traumatic event may have in the context of the early beginnings of parent-child bonding.

Birth Trauma and Healthy Attachment Bonds

Some research indicates that attachment begins to develop as early as the prenatal period (Laxton-Kane & Slade, 2002) and research indicates that attachment develops primarily in the first few years of life (Ainsworth et al., 1978). Thus, there is potential for disruption in early attachment and bonding when a traumatic event occurs at the onset of the face to face introduction between infant and parent during birth. Despite this theoretical concern and general research indicating the potentially negative impact of maternal mental illness and trauma on attachment security and bonding, there is limited understanding of birth trauma and bonding. Research consistently indicates that familial

mental illness such as anxiety and depression are risk factors for developing insecure attachments and responding insensitively to infants' needs and cues (Brockington et al., 2006; Erickson, Julian, & Muzik, 2018). In addition to depression, parental trauma has the potential to negatively affect children's attachment security (Hesse, 2008; Main & Hesse, 1990) and may impact sensitive caregiving (Coyl et al., 2002; Lyons-Ruth & Block, 1996; Lyons-Ruth & Jacobvitz, 2008).

As indicated earlier, disrupted attachment and bonding in the early years is particularly concerning in light of the rapid neurodevelopment that occurs during this time period and this development's dependency on the parenting environment (Fox, Levitt, Nelson, & Nelson, 2010; Monk, Spicer, & Champagne, 2012). In light of rapid neurodevelopment and general research about the impact of maternal mental illness on parent-child bonding, the impact of birth trauma on parent-infant bonding is of particular concern.

However, current research on the interaction between birth trauma and parent-infant bonding is equivocal (Ayers et al., 2015). Additionally, research that examines parental attachment style in combination with birth trauma and the impact on bonding is limited. Of particular concern, despite the significance of sensitive responding in attachment and the potential for trauma to disrupt this responding, no research to date has examined parents' accuracy in reading infant cues and emotions in birth trauma populations. Some research indicates that maternal PTSD is associated with negative impacts for bonding. Parfitt and Ayers (2009) found that PTSD related to childbirth negatively affects the parent-child bond and security of attachment. Similarly, Davies et al. (2008) found that mothers with some symptoms of PTSD were less warm towards

infants, more intrusive, and tended to have more negative views of infants. Mothers who met criteria for full PTSD reported less feelings of attachment to their infants and indicated that they felt more hostility toward their child and enjoyed their infant less.

Dekel et al. (2018) found that birth trauma was correlated with hypervigilance towards infants and more attempts to avoid interactions with infants, who mothers found to be reminders of the birth trauma itself. Additionally, birth related postpartum PTSD was correlated with less secure attachment than non-childbirth related PTSD (Dekel, et.al., 2018). One research study indicated that posttraumatic stress disorder in the context of a premature birth may present additional risk to the bond with the child. Forcada-Guex, Borghini, Pierrehumbert, Ansermet, and Muller-Nix (2010) found that mothers who gave birth to premature infants and developed symptoms of PTSD were at increased risk for controlling behaviors during play and distorted views of their infant at six months.

Additionally, qualitative studies indicate that women experiencing traumatic births report difficulty bonding with their babies (Beck, 2016; Iles & Pote, 2015). Women report difficulty bonding with their baby as a result of dissociation and fear for their child (Zimmerman, 2013). Women often report guilt and fear in response to these difficulties (Thomas, 2013).

On the other hand, some research indicates that postpartum PTSD is not correlated with infant-parent bonding. Ayers et al. (2007) and Parfitt (2014a, 2014b) found that there was no association between PTSD and the maternal-infant bond.

Ultimately, inconsistencies in research on birth trauma and bonding necessitate further research and understanding. More specifically, further attention should be paid to

potential moderating variables. One potential moderating variable in parent-infant bonding is parents' ability to accurately read children's emotions as research indicates that sensitive responding may be the foundation of healthy parent-child attachment (Mein, et al., 2001). Parents who are sensitive and responsive presumably are adept at reading children's emotions.

Emotion Identification and Cue Reading

Discussion of emotion identification for infants necessitates discussion of the basis for emotions including definition of emotions, development of emotional expressions, importance of healthy emotional development, research on caregiver infant emotion identification, attachment and infant emotion identification, and emotion identification in birth trauma populations.

Definition of Emotion

The definition of emotion has a long history of controversy and various definitions of emotion continue to persist. Moreover, the ways in which emotions are defined and understood are often guided by diverse theories about the function of emotions (Izard & Kobak, 1991). For the purpose of this investigation, emotions are considered according to Izard and Kobak's (1991) definition by examining emotion as a system of neurological, physiological and cognitive processes that interrelated (Izard & Kobak, 1991). These processes collectively form the different dimensions of emotion including emotion elicitors, receptors, states, expressions, and experiences (Lewis, 2008). More specifically, emotion occurs in response to a stimulus. This stimulus can occur within the person or within the environment. Once a stimulus occurs, emotions are activated through neurological pathways (pathways in the central nervous system or

general system activation in response to arousal) (Lewis, 2008). As the physiological process occurs, hormonal responses determine the specific emotion states that are created. These emotional states include emotional expressions, which are the outward communication of the emotion and include changes in facial movement, voice tone, etc., that signal to others the quality and intensity of the emotional experience (Lewis, 2008). Finally, emotional experiences are the individual's awareness of the physiological changes that signal an emotion (Lewis, 2008). In essence, emotions are viewed as complex processes that must be understood within larger biological and social systems and the specific definition and function of emotion are guided by diverse theories (Keltner, Sauter & Cowen, 2019).

Development of Emotional Expression

One particular aspect of emotion that has documented research significance, and socioemotional developmental importance, is emotional expression in infancy and toddlerhood. Researchers have consistently noted the importance of emotional expression as a mechanism for interaction, connection, and attachment with caregivers (Fonagy, Gergeley & Target, 2007; Fraley, Niedenthal, Marks, Brumbaugh, & Vicary, 2006; Kammermeier, Duran Perez, Konig, & Paulus, 2020; Lenzi, Pantano, Macaluso, Lenzi & Ammaniti, 2009). Additionally, research has demonstrated the importance of early emotional expressions and adults' awareness and interaction as a result of these expressions are connected with socioemotional outcomes for children in later years (Center for the Developing Child at Harvard, 2010).

Despite the research significance of early infant emotional expressivity, there is controversy over the course and meaning of the development of emotional expression.

Particularly, controversy regarding whether or not emotions are present in early infancy. In order for emotions to occur in the earliest months and days of infancy, one must believe that emotions are “innate, universal and biologically based” (Rosenblum, Dayton, & Musik, 2019, p. 98). This biologically based and universal perspective to emotions has supporters and critics (Roseblum et al., 2019). In essence, the earliest expression of emotion in infancy requires adherence to the structuralist approach to emotions and research has been inconclusive about early expressions of emotions. There is research to indicate that infants respond in differential patterns to their mothers’ expressions of joy, interest, sadness, and anger as early as two months (Izard et al., 1995). Research also indicate that infants have predictable patterns of facial movement in response to stimuli as early as ten weeks and that these movements remain consistent in the first year of life (Haviland & Lelwica, 1987; Izard et al., 1995). Researchers argue that these studies indicate that infants feel distinct sets of emotions as newborns and that these emotions are similar to adults’ expressions.

On the other hand, Sternberg and Campos (1990) found that infants at one month old did not demonstrate the same facial expressions to an anger inducing situation as they did when they were four and seven months old. Additionally, research comparing young infants’ facial expressions appeared to differ from adult expressions in various emotion stimulating events (Oster et al., 1992). Thus, researches argue that infants demonstrate expressivity, but that it is not reflective of distinct emotion and certainly not reflective of our understanding of adult emotions such as happiness, anger, sadness, et cetera.

Despite controversy about the earliest beginnings of emotional expression, most theorists and researchers do agree on several aspects of early emotions. Researchers agree

that emotional expressivity in early infancy has important ramifications for social, emotional and cognitive development (Bowlby, 1969; Cicchetti & Schneider-Rosen, 1984; Izard & Malesta, 1987; Oster & Ekman, 1978; Oster, 2005). Researchers also agree that there are biological bases for infants' early facial movements and expressions of distress and that these serve social functions with caregivers (Treventhen, 2009). Finally, researchers collectively note that infants' facial expressions become more complicated and nuanced with physiological, cognitive, and social development (Oster, 2005).

Patterns of development of emotions in later infancy are an additional area of general consensus in the literature. Research generally indicates that the development of children's emotional expressions and their ability to identify and communicate these emotions may represent a complex interaction between biologically based processes and environmental, largely caregiving, input (Rosenblum, Dayton, & Musik, 2019). In other words, as children develop, they gain more and more experience with their caregiving environment and that caregiving environment begins to shape their awareness, expression and identification of emotion (Rosenblum et al., 2019).

In considering the course of the development of emotional expression in infancy and toddlerhood, we will discuss typical development, the importance of healthy emotional development and the role of the caregiver in facilitating this development.

Infancy

Despite controversy, research does indicate a consistent developmental trajectory for emotional development (Rosenblum et al., 2019). During the newborn stage, infants are almost completely dependent on caregivers to support them in meeting basic needs, helping to regulate, and understanding their basic cues (Rosenblum et al., 2019). During

this time of total dependency, infants are able to feel and express general distress through crying (Rosenblum et al., 2019). Additionally, positive emotion typically appears around two to three months, evidenced by the first social smiles (Ambrose, 1963). Next, infants begin to demonstrate the ability to laugh. Laughter often has developed by five months (Sroufe & Waters, 1976). The next emotional milestone typically occurs around six months old when infants may express jealousy and anger (Rosenblum et al., 2019).

In addition to expressions of their own emotions, infants also begin to understand and react to others' emotions. Around nine months, children are able to understand that their caregivers' emotions relate to environmental experiences (Feinman, Roberts, Hsieh, Sawyer & Swanson, 1992). With experience from interacting with caregivers, children develop, and increasingly depend on, the ability to read others' emotional expressions as a way to determine how to respond to situations (Rosenblum et al., 2019). This basic form of social referencing in which children begin to use awareness of their caregivers' (and others') emotions to determine how to respond to their environment typically occurs around a year. For example, if a caregiver responds apprehensively to their environment then the child is also likely to engage fearfully (Feinman et al., 1992).

Toddlerhood

During toddlerhood, children began to develop "self-conscious" emotions that require a sense of self; these include shame, guilt, and embarrassment (Lewis, 2000). With a sense of self and awareness of the social dynamics of emotions, toddlers begin to exert more control over emotional expressions. Between the ages of 18 and 21 months, toddlers begin to develop the capacity to use their emotions to communicate and get their needs met (Rosenblum et al., 2019).

At around 18 months, toddlers begin to engage in even more complex understanding of others' emotions. Around this age, children are able to engage in "emotional eavesdropping" in which the child responds to an environment from information that they are able to gather from adults' conversations (Repacholi & Meltzoff, 2007). At the end of the first year, children also begin to develop capacity for responding to others empathically. These empathic expressions are often modeled from how caregivers have responded to their own distress in the past. For example, if children are soothed in response to distress with cuddles and a comforting toy, they may offer cuddles or their favorite toy to another who is upset (Rosenblum et al., 2019).

Of note, Izard, Hembree, and Huebner (1987) found that despite advances in emotional development, infants' and toddlers' unique emotional expressions were consistent with age. Thus, though children generally follow predictable paths for developing emotional expressions, they also have their own individual emotional qualities and these qualities may persist with age. For example, Kochanska, Gross, Lin, and Nichols (2002) found that in toddlerhood some children were more prone to expressions of particular expressions of emotions than others. More specifically, some children had more fearful temperament and were also more prone to expressions of guilt than their peers in similar situations (Kochanska et al., 2002).

Parents' Role in Healthy Emotional Development and Infant Emotion Identification

Parents remain the primary influence on emotional development in infancy and toddlerhood and parental influence likely sets the stage for later socioemotional competence as children age (Campos, Tehin, & Own, 2003; Halberstadt & Lozada, 2011). Research indicates that even during the earliest days of life, infants and caregivers

are beginning to develop consistent and meaningful patterns of interactions. These early interactions set the tone and health for infants' emotional development, serve as relational templates for later years, and provide the foundation for infants' ability to regulate their own emotions (Ainsworth et al., 1978; Rosenblum et al., 2019). Eventually, these interactions around emotion develop into children's attitudes towards emotions (Gergely & Watson, 1996; Izard, 1971).

Ultimately, parents play an important role in the development of emotional regulation through “processes of affective exchange, disruption-repair sequences, physical and verbal mirroring” (Rosenblum et al., 2019, p.103). In other words, parents help their infants regulate their internal emotion and physiological experiences through a process called coregulation, because their infants are too young to regulate their own emotions independently. Coregulation takes place through parents identifying their children's emotional states and responding in ways that are soothing or engaging as need (Calkins, 1994; Crockenberg & Leerkes, 2004). More specifically, a baby's cry typically signals caregivers to respond and attempt to soothe the baby. The baby can smile to elicit interaction and then can look away communicating overstimulation and the need for space (Stern, 1985). Infants may also regulate through shifting attention away from aversive stimuli or shifting toward positive stimuli (Johnson, Posner, & Rothbart, 1991; Kochanska, 2002). Parents respond sensitively when they read these cues accurately and respond accordingly.

Gergely and Watson (1996) argue that mothers' emotional expressions during interactions with their infants can support infant emotion regulation by mirroring the child's affect and then changing that emotion or changing the intensity of the emotion

during the mirroring. Thus, parents support children in understanding and transforming emotional experiences through their own verbal and nonverbal interaction around infants' cues (Gergely & Watson, 1996).

Not surprising, parental response to infants' emotional cues involves not only accurate reading of infant cues, but misjudgment of those cues, as well. Stern (1995) describes this phenomenon as the "parent-infant emotional dance" or the process of effective synchrony and repair following disruptions in this synchrony. In other words, in healthy development, parents will inaccurately interpret children's needs, but should be able to repair these disruptions and reconnect with their infants to support healthy attachment, bonding, and regulation (Stern, 1995).

Healthy socioemotional development in infancy can be disrupted when these misjudgments of cues occur frequently and without reconnection and repair. This can occur when parents become emotionally reactive to their infant's communication and simply mirror the emotion with the same intensity, which in turn contributes to children's emotional dysregulation. Infants are then alone in attempting to calm their own arousal (Gregory & Watson, 1996). Disruptions in sensitive caregiving can also occur when parents have difficulty understanding their child's cues. One possible reason for difficulty is when parents respond not to the child's emotions, but to their own emotional experience and assume similar emotion or intent from their child (Musser, Kaiser-Laurent, & Ablow, 2012).

Research indicates that the presence or absence of this sensitive caregiving has profound implications for infant socioemotional outcomes (Borenstein, et. al., 2017; McElwain & Booth-Laforce, 2006). In fact, research confirms a connection between

infants' attachment and parents' ability to identify infants' emotions (Kochanska, Philibert, & Barry, 2009; Leerkes et al. 2011; Zeanah et al., 1993). Ainsworth and colleagues (1978) found that a mother's responsiveness to infant cues predicted the frequency and duration of a child's crying at one year of age. That is parents' sensitive responding predicted children's later frequency of dysregulation and stress. Additionally, research indicates that mothers' sensitivity to children's emotions was predictive of the frequency of positive emotion for young children and their ability to regulate negative emotion at age two. This indicates that sensitive responding can have long term effects on children's socioemotional development (Malasta-Magai, 1991).

One particularly powerful example of the impact of disruptions in affective synchrony is the Still Face Experiment conducted in 1975 by Edward Tronick. Tronick, Adamson & Brazelton (1975) investigated infants' reactions to caregivers becoming non-responsive and emotionless after a period of typical interaction with their infants. In response to this change in responsiveness, children became distressed. First infants attempted to gain the caregiver's attention with a variety of skills that they had learned in interaction with their caregivers. When these initial attempts to gain interaction didn't work, infants became increasingly distressed: first becoming serious and appearing concerned. Next, the infants attempted to get away from the caregiver- withdrawing from the interaction, physically attempting to move away and then becoming increasingly distraught and crying (Tronick, et al., 1975).

In interpreting the still face research, Tronick, et al., (1975) argued that the dysregulation that the infant experiences demonstrates the importance of sensitive cue reading and responsive interactions in developing healthy attachment and healthy

bonding. Additionally, researchers have expressed concern about the potential implications of this research for maternal depression, which tends to blunt maternal facial expression and interferes with maternal engagement, on infants' healthy development (Tronick, et al., 1975). Research into events such as birth trauma that have been correlated with mental illness and conceptually, may impact sensitive responding and bonding, are of concern for the infant, the caregiver, and the parent-child relationship.

Research on Caregiver's Identification of Infant Emotion

In addition to the importance of parents' ability to read infant emotions for infant-parent bonding and socioemotional development, research has confirmed the universality of adults' ability to interpret their infants' expression of emotions. When shown still photographs of infants with a variety of facial expressions, adults have been found to largely agree on the type of emotion being expressed. This agreement is particularly strong for primary emotions such as joy, interest, distress/sadness, and surprise (Emde, Izard, Huebner, Sorce, & Klinnert, 1985; Lewis, Ramsay, & Sullivan, 2006). Some researchers do contest the universality of infant emotions largely due to questions about whether interpretations of infants' emotions can be accurately understood without infants' ability to communicate the meaning of their emotions and whether expressions of emotions truly correlate with feeling states (e.g., Camras & Shutter, 2010). Nonetheless, extensive findings on adults' reliability in identifying infant emotional expressions and connection of that accuracy to later outcomes indicates that parents' ability to identify infant emotions is reliable, valid and conceptually meaningful (Bader & Fouts, 2019).

Research into parents' ability to identify infants' emotions has found a parent's accuracy in identifying infant emotion is connected with their reactions to infants' crying,

their own emotional responses to infants (annoyance, irritation, distress) and to the parent's own physiological arousal (heart rate, skin conductance level, etc.) (Feldman, et al., 2011; Gustafson & Green, 1989). Additionally, research indicates that there may be a connection between parental responses to infant cues and increases in the activity of mother's brain after childbirth (Kim et al., 2014).

Of particular concern for attachment relationships, maternal mental health disorders including PTSD may impact parents' ability to accurately identify children's emotions. Research on PTSD and emotion identification is inconsistent and indicate that the specific type of trauma may have a differing impact on adults' ability to correctly identify infant emotional expressions. Some research indicates that mothers with PTSD were less sensitive with responses to their infants (Feeley et al., 2011; Forcada-Guex et al. 2011; Muller-Nix et al., 2004). Additionally, Ionio and Di Blasio (2014) found that mothers were less interactive with their infants in the Still Face Experiment when they had PTSD. However, other studies found no association between PTSD and maternal sensitivity/responsiveness (Muller-Nix et al., 2004; Parfitt et al., 2013).

The type of traumatic experience and whether the trauma has been resolved or not may impact the ways mothers interpret infant emotions, especially when infants express mixed or ambiguous emotions. For example, mothers with a history of child abuse, intimate partner violence or who have had insecure attachment were more likely to perceive negative emotions in ambiguous situations (Dayton et al., 2016; Rosenblum et al., 2006). Bernstein, Timmons, and Lieberman (2019) found that mothers who experienced interpersonal violence were more likely to have a perceptual bias toward fear and that this was correlated with children's externalizing symptoms. Of particular note,

betrayal trauma was associated with affect identification and internalizing/externalizing symptoms in children (Gagnon, DePrince, Chu, Gorman, & Saylor, 2015). Additionally, mothers with unresolved trauma are more likely struggle with accurately identifying infant surprise, passivity and shame. Mothers with unresolved trauma are more likely to perceive unusual infant emotions from ambiguous expressions (i.e. identifying emotions that less than 5% of other caregivers perceived (DeOliveira, 2001).

Changes in perception of infant emotions due to trauma and maternal mental illness may impact sensitive parenting. However, these perceptual limitations are also concerning in light of research indicating that during infancy, the expression of some emotions can be adaptive for infants. For example, Lewis and Ramsay (2005) found that expressions of sadness in infancy were correlated with cortisol production (stress) while anger was not. Lewis and Ramsay (2005) hypothesize that sadness may indicate lack of control or feelings of helplessness, while anger is associated with motivation and energy arousal. Lemerise and Dodge's (2000) further supports this theory by noting that anger was often associated with problem solving in infancy. Thus, parents who struggle with accurately identifying particular emotions due to their own traumatic experiences and mental health issues could potential reinforce early negative emotional functioning in young children (Lemerise & Dodge, 2000). Due to research indicating that trauma and mental health disorders are potentially disruptive to parents' ability to identify infant emotions and cues, and that the frequency of expression of specific emotions may serve specific biological functions and have unique impacts for children, the lack of research on the potential impact of birth trauma is particularly concerning and warrants further attention.

Birth Trauma and Infant Emotion Identification

There is a lack of understanding of both infant emotion identification and bonding in birth trauma research. The lack of research on birth trauma and infant emotion identification is concerning as general research on PTSD indicates that unresolved trauma may be reactivated within the context of the intimacy and dependence of the mother-infant dyad (Fraiberg, Adelson & Shapiro, 1975). This leads to increased risk for maternal disengagement and dissociation (Ludmer et al., 2018). Additionally, maternal PTSD can be triggered by infant crying and may increase the risk for less sensitive and responsive caregiving in response to the infant's non-verbal cues (Schechter et al., 2004). Sensitive and responsive caregivers, or the lack thereof, then set templates for children's expectations of the world and their relationships. More specifically, a parent's ability to accurately identify and appropriately respond to children's early cues about their needs and early expression of emotions are an important aspect of the parent-infant bond (Thompson, 2008).

Moreover, general research on PTSD and caregiving indicates that children are at higher risk for trauma themselves when their caregivers have experienced trauma. This transmission of trauma is hypothesized to be a result of less sensitive caregiving which leads to biological changes for infants who experience longer and more intense forms of psychological and physiological distress in the absence of parent comfort (Erickson, Julian, & Muzik, 2019; Gunnar & Quevedo, 2007).

Despite the potential interactions among emotion identification, sensitive caregiving, trauma and healthy attachment and later child outcomes, to date, no research has looked at the connection between parents' identification of specific emotions in

infancy and bonding in birth trauma populations. Additionally, to date, no research has examined the relationships between parents' identification of specific emotions in infancy and birth-trauma related PTSD.

Birth Trauma, Treatment and Implications for Counselors

In addition to better understanding the impact of childbirth-related trauma, greater understanding of the impact of birth trauma on bonding and emotion identification may allow clinicians to better target treatments for those experiencing birth trauma and their families. Experts in the field of birth-related PTSD recommend that further research clarify effective treatments and gather information about areas to target for improvement (Ayers et al., 2008; 2015). Yet, due to the relatively recent exploration of birth-related trauma, research regarding treatment and potential treatment considerations is limited (Ayers et al., 2008).

Research has primarily focused on cognitive behavioral therapy (CBT) and debrief treatments for mothers experiencing birth-related trauma. Limited research indicates CBT may decrease traumatic symptomology (Horsch et al., 2017), while research on debriefing after childbirth has found mixed results for effectiveness (Ayers, Claypool, & Eagle, 2006; Lee, Slade, & Lygo, 1996). Qualitative studies indicate that debriefing may be helpful in that it allows women to gather information, correct misperceptions, and to fill in blanks that helped them to process and heal from their trauma (Iles & Pote, 2015). Finally, case studies indicate some promise for both CBT and Eye Movement Desensitization and Reprocessing (EMDR) in treating mothers with birth-related PTSD (Ayers et al., 2007; Sandstrom et al., 2008; Stramrood et al., 2012).

A better understanding of the role of mothers' experience of early adversity in their experience of birth trauma, differential effects of different forms of birth trauma, and the impact on bonding and infant emotion identification may inform areas of focus and target in treatment. Better understanding of birth trauma and the impacts that it may have on the birthing individual and their family may lead to more robust and nuanced exploration of appropriate treatments.

Summary and Connection to Research

Currently, birth trauma research has demonstrated that traumatic experiences during birth have powerful and often negative implications for mothers' mental health including high rates of PTSD and postpartum depression (Dekel, Stuebe, & Dishy, 2017). Research indicates that risk factors such as prior trauma may increase negative mental health outcomes in the event of traumatic birth (Dekel et al., 2017). Yet, despite the clinical relevance and wide use of the ACEs survey, birth trauma research has failed to explore how ACEs may impact postpartum depression and postpartum PTSD. If ACEs scores were correlated with birth trauma outcomes, this tool may provide a simple, easily accessible, and less triggering assessment for counselors and healthcare providers working with postpartum families (McDonnell & Valentino, 2016).

Additionally, birth trauma research indicates that the type of birth trauma that individuals experience may have specific ramifications for the severity of trauma symptomology (Dekel et al., 2017). Moreover, qualitative research indicates that experiences of birth trauma as interpersonal and within the context of betrayal may be particularly difficult for birthing individuals (Beck, 2009). General trauma research indicates that interpersonal trauma often has profound impacts for relationship

functioning including parent-child relationships (Guyon-Harris, Ahlfs, & Huth-Bocks, 2017). Despite the indications that specific forms of trauma-- particularly interpersonal experiences of trauma- may be impactful, research has not explored the relationship between types of trauma, postpartum depression, and bonding.

Finally, research on bonding after a traumatic birth has been inconclusive, indicating the necessity to look at possible mediating variables. Bonding is intimately tied with parents' ability to identify children's emotional and physiological needs and respond sensitively. Yet, birth trauma research has not explored the relationship between trauma symptomology, bonding and infant emotion identification.

The current research study seeks to explore the following research questions in hopes of providing greater understanding of birth trauma within the family system: (1) Are there significant differences between low history of trauma and high history of trauma, as measured by the ACE checklist, in postnatal depression, post-birth PTSD, and bonding, in those who experienced birth trauma? (2) Are there significant differences between types of birth trauma in mothers' postnatal depression, post-birth PTSD, and bonding in those who have experienced birth trauma? (3) In those who have experienced traumatic birth experiences, are there significant differences in the number of infant emotions identified between those who report high and low birth-related trauma and bonding?

CHAPTER III: METHOD

This study seeks to examine potential factors that affect parent-infant relationships in families who have experienced traumatic births. Parents were assessed on measures of parent-infant bonding, depression, traumatic reactions, accuracy in emotion

identification, adult attachment, and parental meta-emotion through an online questionnaire. The remainder of this chapter describes the details of the methodology including research questions, research design, participants, measures, procedures, and data analysis.

Research Questions

This research investigated the following three research questions:

(1) Are there significant differences between low history of trauma and high history of trauma, as measured by the ACE checklist, in postnatal depression, post-birth PTSD, and bonding, in those who experienced birth trauma? (2) Are there significant differences between types of birth trauma in mothers' postnatal depression, post-birth PTSD, and bonding in those who have experienced birth trauma? (3) In those who have experienced traumatic birth experiences, are there significant differences in the number of infant emotions identified between those who report high and low birth-related trauma and bonding?

Methodology

This study utilized an internet-based survey to examine factors related to the infant-parent relationship in families who had experienced birth trauma. There are several threats to validity in utilizing a survey as a method of data collection including sampling error, measurement error, and nonresponse error (Check & Schutt, 2012; Ponto, 2015). In order to minimize sampling error, the population of interest for this study was clearly defined and recruitment strategies were focused on accessing this specific population (see below for further information about sample and sampling procedures).

In order to minimize measurement error, this study examined validity and reliability of each measurement used and identified measures that most closely aligned with the subjects of interest. Additionally, measurements were chosen that are commonly used in birth trauma research (see below for further information on each measurement).

In order to address nonresponse error, the study recruited individuals who were fluent in English and had enough technological knowledge to complete the online survey. Additionally, the researcher made every effort to make the survey user friendly. Limiting the study to those who are fluent in English and have some level of technological knowledge and internet access likely limited non-response error and incorrect responses, it also should be noted that it limits the generalizability of the findings. Of note, the length of the survey is likely a risk to the validity of the study in this design. Additionally, due to emphasis on anonymity, no follow up procedures were in place for non-responders (Ponto, 2015).

Participants

Using the statistical program *g power* (Erdfelder, Faul, & Buchner, 1996), a minimum sample size was calculated as 126 participants for a two-group independent samples *t*-test with a power of .80. This study had a sample size of 319 participants. Of the original 319, five participants failed to complete the survey. All participants that failed to complete the survey had one measure missing. Their data were included for other measures that they completed in full.

A convenience sample was recruited by accessing individuals through social media including birth trauma related associations and support groups. Associations posted a request for research in their Facebook group, their Twitter account, and their

website. Internet recruitment for surveys has been shown to be equal in quality and quantity of respondents and data integrity as other traditional forms of hardcopy data collection. This holds true when the sample is self-selected (Gosling, Vazire, Srivastava, & John, 2004).

Additionally, participants were also recruited through local pediatric offices, doula and midwife groups, psychiatric services, and postpartum groups. As an incentive, participants were given the option of applying to be randomly selected for two VISA gift cards for their participation in the study.

Participants that had experienced a birth trauma were invited to participate. Birth trauma was self-defined by participants. This study was interested in capturing individuals' internal perspective about their own difficult births. Self-identification of what constitutes trauma is consistent with the literature on birth trauma (Van Heumen, Hollander, Van Pampus, Van Dillen, & Stramrood, 2018). Inclusion criteria were: participants must be over the age of 18, be English speaking and be technologically savvy enough to navigate an online survey. The survey could be accessed either by computer or by smart phone. Additionally, respondents must have had a child that was between the ages of 0-5 years old. Inclusion criteria were determined to maximize the successful and accurate collection of data. Additionally, the age range of children of participants targeted the window of rapid development in the first five years and thus is consistent with the theory and target demographic of this study. Also, the researcher was concerned that if the birth trauma had not occurred in recent years, the memory and impact of the trauma may have dissipated. Finally, participants were offered the chance to enter a raffle with the chance to win one of two \$100 gift cards.

Procedures

Initially, the researcher obtained permission from the University of Nevada, Reno Institutional Review Board (IRB) to conduct the research including all data collection, measures used and informed consent procedures. The consent form described the purpose of the study and highlighted that participants' participation was voluntary. The consent form detailed that participants could withdraw from the study at any time without consequence. Participants were also thanked for their participation in the study and were offered postpartum and mental health resources for additional support. The IRB at University of Nevada, Reno determined this study to present a small risk to participants due to the discussion of difficult and traumatic life experiences, which for some, can be dysregulating. Additional resources were thus provided to support participants (Stire, 2014). The IRB approval form can be found in Appendix A. The online survey flyer can be found in Appendix B. Additionally, the informed consent form is included in Appendix C and the list of trauma and postpartum resources can be found in Appendix D.

Measures

In the online questionnaire, measures were included for demographic information, obstetric data, depression, parent-infant bonding, infant emotion identification and birth related post-traumatic stress disorder.

Demographic Data

The questionnaire asked for demographic data including age, education, ethnicity, socioeconomic status, and country of residence. These data were utilized for descriptive information about the sample of respondents.

Obstetric Information and Types of Birth Trauma

The obstetric questionnaire included questions focused on obstetric experiences. These questions about birth were drawn from qualitative and quantitative birth trauma research indicating that specific obstetric experiences were endorsed as contributing to feelings of trauma (Simpson & Catling, 2016). Additionally, specific obstetric experiences were assessed as a result of general trauma research indicating that the type of trauma experienced may impact individuals' identification of emotion (Dayton et al., 2016; DeOliveira, 2001; Gagnon, DePrince, Chu, Gorman, & Saylor, 2015). Finally, questions were included to assess if traumatic birth experiences were interpersonal in nature and how responsibility was attributed for the birth trauma. Appendix E.

Postpartum Depression

The Edinburgh Postnatal Depression Scale (EPDS) was selected for assessing individuals' symptoms of postpartum depression. The scale is a 10-item questionnaire that is used to screen for depression after birth (Cox, Holden & Sagovsky, 1987). Each question is rated on a Likert scale (0-3), with a maximum score of 30. Higher scores indicate increased risk for developing or experiencing postnatal depression. Scores that are equal to or above 13 are suggestive of clinically significant symptomology (Cox et al., 1987). The EPDS has high reliability and validity in women who are pregnant or have given birth (Cox et al., 1987; El-Hachem, Rohayem, Khalil, Richa, Kesrouani, Gemayel & Salameh, 2014). There was a split half reliability of .88 and a standardized coefficient of .87 (Cox et al., 1987). Appendix F includes a copy of the EPDS.

Infant Emotion Identification

To examine infant emotion identification, this study utilized the IFEEL Pictures (Emde, Osofsky, & Butterfield, 1993). The IFEEL Pictures have been frequently utilized

in a variety of infant emotion identification and postpartum studies (Butterfield,1993; DeOliveria, 2001; Osofsky & Culp, 1993; Szajnberg & Skrinjaric, 1993; Zahn-Waxler, & Wagner, 1993). The IFEEL Pictures are comprised of thirty images of infants' faces that were captured during daily life. Overall, the images were selected as they were deemed to show infants expressing mixed or ambiguous emotional expressions (though some images are more consistent individual expressions of one emotion).

In administration of the photos, participants are shown the images in a booklet and given a corresponding number sheet to record responses (Emde et al., & 1993). The participants are directed: "Here are some pictures of babies' facial expressions. Please tell us, in one word if possible, the strongest and clearest feeling that each baby is expressing. There are no right or wrong answers" (Emde et al., & 1993, p. 82).

In data analysis, researchers then take participant responses from the IFEEL Pictures sets and code the responses into thirteen emotion categories: surprise, interest, joy, contentment, passive, sadness, shy-cautious, shame-guilt, disgust-dislike, anger, distress, fear and an "other" category. The emotions are coded utilizing a lexicon that lists possible responses and to which category they would correspond. The number of each participant's responses is then tallied for each emotion category. Finally, mean frequency of responses for each of the thirteen emotion categories is calculated for the entire sample (Emde et al.,& 1993).

The group means can be compared to the IFEEL Reference Sample (n = 145) provided with the tool (Emde et al., & 1993). The reference sample is a largely white, middle-class sample who had infants between the ages of three and 12 months. Within the reference sample there were no correlations for age, number of children, maternal

education or child age with the emotion category scores (Emde et al., & 1993). The IFEEL Pictures are shown to be consistent across maternal mood (Szajnberg & Skinjaric, 1993). Additionally, they have demonstrated test-retest reliability (Appelbaum et al., 1993).

In this study, the IFEEL Picture Booklet was converted into online images and instructions in PDF format to maintain image quality. In the survey, the instructions from the booklet were included in the beginning and then each of the images was presented with a space for respondents to label the emotion.

Parent-Infant Bonding

To assess the quality of the parent-infant bond, the Postpartum Bonding Questionnaire (PBQ) was utilized (Brockington et al., 2001). The PBQ is a 25-item self-report questionnaire utilized to identify early problems in the mother-infant relationship. The questionnaire measures four aspects of the parent-infant relationship including impaired bonding, rejection and anger, anxiety about care, and risk of abuse (Brockington et al., 2001). The questionnaire is a Likert scale (0-5, never to always) and higher scores are indicative of more problems in the infant-parent relationship. A score of 25 or higher is indicative of clinical significance. A score of 10 or more indicates some concern for problematic bonding. Additionally, each subscale has a cutoff point: scores above 16 on Anger/Rejection indicate a severe concern, and a score of 11 or higher on Infant Anxiety indicates high anxiety (Brockington, Fraser, & Wilson, 2006; Brockington et al., 2001).

In line with Hairston, Handelzalts, Assis, and Kovo (2018), this research study omitted the subscale for risk of abuse due to ethical concerns related to the ability to follow up with participants and access individual supports for high risk families.

Additionally, research indicates that this subscale does not have sufficient variance in studies, and thus may be of limited utility (Wittkowski, Wieck, & Mann, 2007).

The PBQ has been validated in a clinical sample of women experiencing problems in mother-infant bonding and women with mental health disorders. Additionally, the PBQ has also been used in non-clinical postpartum populations (Brockington et al., 2006). The PBQ has high interrater reliability (Brockington et al., & 2006). The sensitivity of the scales ranged from .82 to .88 in ability to detect a bonding disorder in those who had previously been diagnosed. Additionally, the PBQ had acceptable internal consistency (.76 Cronbach alpha) for the total bonding scale and .79, .63, .63 for the subscales (Wittkowski, et. al., 2007). Additionally, PBQ has good convergent and concurrent validity (Wittkowski et.al., 2007). Since its development, the PBQ has been widely used in research and in clinical programs (Busonera et al., 2017; Edhborg et al., 2005; Garcia-Esteve et al., 2016; Muzik et al., 2013). Appendix G includes a copy of the PBQ.

Posttraumatic Stress Symptomology

For evaluation of posttraumatic stress symptomology, the Impact of Events Scale-Revised (IES-R) was utilized (Weiss & Marmar, 1997) obtained from the Hartford Institute of Geriatric Nursing, New York University, Rory Meyers College of Nursing. The IES-R is designed to assess posttraumatic symptomology in response to a specific event. In this questionnaire, the event that participants were asked to respond to was identified as childbirth. The scale includes three subscales: intrusion; avoidance; and hyperarousal. Each subscale can be scored separately, or the scales can be combined for an overall score (Weiss & Marmar, 1997). Items are ranked on a Likert scale from 0-5

(indicate the anchors). Scores of 0-8 are identified as subclinical, 9-25 as mild, 26-43 as moderate and 44 and above as severe (Horowitz et al., 1979). Past researchers have utilized the subscales as indicative of specific forms of non-clinical distress by converting the percentage of maximum scores for avoidance and intrusion scores into low, medium and high distress categories (Williams, Taylor, & Schwannauer, 2016).

The IES-R has demonstrated reliability and convergent/construct validity with alpha scores between .92 and .96 for the total scale score, .87 to .94 for intrusion, .84 to .90 for avoidance, and .79 to .91 for hyperarousal (Brunet, St- Hilaire, Jehel, & Kind, 2003; Creamer, Bell, & Failla, 2003; Olde et al. as cited in Williams, Taylor, & Schwannauer, 2016).

Additionally, IES- R has been used in postpartum populations and in relationship to childbirth (Anderson & Mccarley, 2013; Jotzo & Poets, 2005; Williams et al., ,2016). This provides an additional opportunity for research comparisons with current birth trauma research. See Appendix H.

Adverse Childhood Experience Scale

The Adverse Childhood Experiences Scale (ACEs) is a questionnaire that includes ten questions about difficult experiences during childhood. The questionnaire can be scored from 0-10. Participants receive a point for each question that they endorse as “yes” (Felitti et al. 1998). The ACEs questionnaire is a well establish screening tool for childhood adversity and has been correlated with a range of negative physical and social-emotional outcomes in a perinatal period (Hillis, Anda, Dube, Felitti, Marchbanks, & Marks, 2004; Schmidt, Narayan, Atzl, Riveria & liberman, 2018).

The ACEs questionnaire is considered reliable with kappa statistics between 0.52-0.72 in test-retest of each question (Dube, Williamson, Thompson, Felitti, & Anda, 2004). Convergent validity has been assessed with the Childhood Trauma Questionnaire for childhood maltreatment and found significant correlations ($r = .73, p < .01$; Schmidt, Narayan, Atzl, Rivera, & Liberman, 2018). Appendix I has a copy of the ACEs questionnaire.

Procedures

Upon recruitment for the study, participants followed a link to Qualtrics (Qualtrics, Provo, UT) to view the information page detailing the purpose of the study, informed consent including confidentiality, and were provided an estimated time to complete the study (20-30 minutes). Respondents indicated their willingness to complete the study by clicking onto the next page with the survey. Next, the participant was taken to the questionnaire that included the above measures. Upon completion of the survey, the last page included resources for trauma and general postpartum resources.

Upon gathering enough data to meet the required sample size, the data were analyzed in SPSS. No follow up measures were utilized. Nonresponses to more than two subscales of any measure were not included in the sample and responses that appeared to be all the same were also excluded.

Data Analysis

The first two research questions were assessed using a series of chi square analyses. The third research question was examined utilizing three statistical procedures. First, descriptive data and effect size were utilized to compare the current sample to the standardized sample in the IFEEL Picture set. Next, the research utilized chi squares to

examine the shame and disgust categories (endorsed or not) with bonding and birth related PTSD. Finally, a series of independent samples *t*-tests were utilized to examine each emotion category mean in those who endorsed PTSD and those who did not endorse PTSD. Additionally, independent samples *t*-tests were utilized to examine each emotion category mean for those endorsing a probable bonding disorder and those who did not.

Assumption Assessments for each Analysis

In examining the first two research questions, assumptions for chi squares were evaluated. The assumption of expected frequencies of five or more were evaluated for all. Chi squares are reported. For those cells with expected frequencies below five, Fisher's exact test was reported, as applicable (Howell, 2010).

In examining the third research question, three statistical analyses were completed. The first utilized effect sizes to examine differences in mean frequency of each emotion category endorsed as compared to the standardized control. Next, chi squares were used to evaluate responses utilizing shame and disgust (categorized as endorsed or not endorsed) with bonding (probable disorder or normal) and birth related PTSD (normal or probable PTSD). All cell counts were above five.

Finally, independent samples *t*-tests were utilized to evaluate mean frequencies for each emotion category of the infant emotion identification measure with bonding (probable disorder or normal) and birth related PTSD (normal or probable PTSD). The data contained outliers and exhibited some skew, causing limited departures from normality. Despite these violations, the size of the sample and the robust nature of *t*-tests, the *t*-test was deemed to remain an appropriate statistical evaluation tool. Equality of

variance between groups were evaluated. For those whose equality of variance assumption was violated, the appropriate statistic was utilized (Laerd Statistics, 2016).

CHAPTER IV: RESULTS

The purpose of this research was to explore relationships between birth trauma and (1) parental mental health outcomes (PDD and birth related PTSD) and (2) factors related to parent-child relationships (infant emotion identification and bonding). In order to examine possible relationships, three were examined. The first research question was: are there significant differences between low history of trauma and high history of trauma as measured by the ACE checklist in post-natal depression, post-birth PTSD, bonding, and emotional identification in those who have experienced birth trauma. The second research question evaluated was: are there significant differences between types of birth trauma in post-natal depression, post-birth PTSD, bonding, and emotional identification in those who experienced birth trauma. These research questions were answered by examining a series of chi square tests of association.

The third research question was: are there significant differences infant emotion identification in those who have birth related PTSD and impairment in parent-child bonding. This hypothesis was examined first by providing descriptive differences in frequency of infant emotions identified between this sample of individuals who have experienced birth trauma and the standardized norm for the IFEEL images utilizing effect size calculations. Next, chi squares were utilized to examine differences between the identification of shame and disgust and parent-child relationship dysfunction and birth related PTSD. Finally, for the remaining emotions categories, t-tests were utilized to examine statistically significant differences in emotion identification between those who identified birth related PTSD and those who did not. Additionally, differences in emotion identification were evaluated for those who reported parent-child relationship dysfunction

and those who did not. The results from the statistical analysis of the survey data will be discussed in this chapter.

Demographics and Obstetric Background Information

An online survey was distributed in early March 2020. Distribution of the survey targeted birth trauma, postpartum and various other motherhood support groups on social media. However, the survey was also shared “word of mouth” and reposted by others to their personal accounts and to other groups using the “share” feature on Facebook. Three hundred and nineteen participants completed the survey. Participants for this study were predominately white (92.2%), highly educated (37.6% have a doctoral degree) and of higher income (41.7% over \$100,000). Participants were also predominately American (74.3%). Participants’ ages ranged from 21 to 58, with 72.2% of participants falling between the ages of 28-42. Demographic information for participants is shown in Table 1. Of note, some participants selected multiple races (i.e., identified as multiracial). As a result, the collective number for individual racial groups may exceed the total participants. Additionally, 36 participants incorrectly entered their child’s date of birth, instead of their own. As a result, total identified participant ages are less than the sample total.

Table 1: Participant Demographic Data

Demographic	Total Sample (n = 319)	
Race or Ethnicity		
White	92.2%	n=294
Hispanic or Latinx	6.3%	n=20
Asian	2.8%	n=9
Other	2.2%	n=7
Black or AfricanAmerican n=7		2.2%

Native Hawaiian or Pacific Islander	.3%	n=1
Nationality		
United States of America	74.3%	n=237
United Kingdom	16.6%	n=53
Canada	2.5%	n=8
Australia	1.6%	n=5
Germany	.9%	n=3
Ireland	.9%	n=3
Costa Rica	.6%	n=2
France	.6%	n=2
New Zealand	.3%	n=1
Mexico	.3%	n=1
Sweden	.3%	n=1
Thailand	.3%	n=1
Income		
0-20,000	4.1%	n=13
20,001-40,001	11.6%	n=37
40,001-60,000	13.5%	n=43
60,001-80,000	12.9%	n=41
80,001-100,000	16%	n=51
100,001-149,999	24.1%	n=77
150,000 and above	17.6%	n=7
Age		
43 and above	3.1%	n=17
38-42	21.7%	n=69
33-37	29.2%	n=76
28-32	21.3 %	n=68
23-27	4.5%	n=19
23 and below	.3%	n=1
Education		
Less than high school	0.3%	n=1
High School graduate	1.9%	n=6
Some college	9.4%	n=30
Associate degree	4.4%	n=14
Bachelor's degree	22.3%	n=71
Master's degree	21.6%	n=69
Doctoral degree	37.6%	n=120

In addition to collecting basic demographic information, obstetric data were collected. Participants were asked to describe the physical, psychological and relational nature of their traumatic birth experience. Of note, participants were able to select multiple characteristics to describe their traumatic experiences. The physical nature of the traumatic birth is included in Table 2. The most common physiological characteristic of traumatic birth in this sample was prolonged labor (47.3%), followed by fetal distress (40.4%), and unplanned/emergency c-sections (37.9%). On the other hand, cardiac arrest (.9%), congenital abnormalities (1.9%) and loss of fertility (3.1%) were infrequently reported in this sample.

Table 2: Obstetric Data

Physical Nature Of Birth		Total Sample: (n = 319)
Prolonged Labor	47.3%	n=151
Fetal Distress	40.4%	n=129
Unplanned/Emergency Cesarean Section	37.9%	n=121
Inadequate Pain Relief	31.3%	n=100
Hemorrhage	21.3%	n=68
Rapid Delivery	19.1%	n=61
Premature Birth	18.8%	n=60
Pre-Eclampsia	14.4%	n=46
Tissue or Organ Damage	13.2%	n=42
Vacuum Extraction	12.9%	n=41
Manual Removal of Placenta	12.5%	n=40
Forceps Delivery	11.3%	n=36
Infant Birth Injury	10.7%	n=34
Loss of Fertility	3.1%	n=10
Congenital Abnormalities	1.9%	n=6
Cardiac Arrest	.9%	n=3

The psychological and relational nature of participants' birth experiences are detailed in Table 3. As with the physical characteristics of the traumatic birth experience, participants were able to select more than one psychological and relational characteristic

of their birth. The psychological and relational characteristics of traumatic birth experiences for participants were most characterized by loss of control (75.9%), fear for the life of the infant (60.2%) and separation from the infant (60.2%). Fearing for your partner during birth was reported relatively infrequently (9.4%). Additionally, participants reported fearing for their own life (41.4%), experiencing incompetent healthcare (35.1%), separation from support partners (34.2%), NICU (32.9%), degradation by healthcare providers (28.2%), dissociation (27.6%) and feeling betrayal by others (21.6%) during their birth experiences. Participants also reported physical (7.2%), verbal (7.2%) and sexual abuse (2.5%) during birth.

Table 3: Obstetric Data

Psychological/Relational Nature Of Birth	Total Sample: (n = 319)	
Psychological Characteristics		
Loss of Control	75.9%	n=242
Fear for Infant Life	60.2%	n=192
Fear for Own Life	41.4%	n=132
Dissociation	27.6%	n=88
Fear for Partner	9.4%	n=30
Relational Characteristics		
Separated from Infant	60.2%	n=192
Incompetent Healthcare	35.1%	n=112
Separated from Support	34.2%	n=109
Infant in NICU	32.9%	n=105
Degraded by Healthcare	28.2%	n=90
Betrayed by Others	21.6%	n=69
Physical Abuse	7.2%	n=23
Verbal Abuse	7.2%	n=23
Sexual Abuse	2.5%	n=8

Additionally, in exploring obstetric experiences, participants were asked if they believed their traumatic experiences were a result of the actions or inactions of others. Fifty eight percent of participants reported feeling that the trauma occurred as a result of others'

actions (n = 188). Of those participants, the majority felt that their healthcare provider's actions or inactions were responsible for their traumatic birth experience (57.4%). Table 4 below details participants' attributions of blame around their traumatic birth experiences. In reviewing the table, readers should note that participants were able to select multiple sources of blame. For example, participants may have selected that their traumatic experiences were the result of their actions and as a result of the provider's inactions.

Table 4: Obstetric Data

Interpersonal Birth Trauma: Attributions of Responsibility	Total Sample: (n = 319)	
Others at Fault	58.9%	n=188
Healthcare Provider	57.4%	n=183
Myself	16.3%	n=52
Partner	4.4%	n=14
Infant	1.6%	n=5

Baseline Assessments

Participants were asked to answer questions about their own mental health, traumatic experiences, and bonding with their child including postpartum depression, birth-related trauma, adverse childhood experiences, and bonding. A summary of these responses is included in Table 5 below. The Edinburgh Postnatal Depression Scale (EPDS) was utilized to explore possible postpartum depression. Almost 76% of participants endorsed possible postpartum depression. For birth-related trauma, individuals completed the Impact of Event Scale- Revised (IES-R) with birth identified as the traumatic event of interest. Slightly over a third of respondents (39.4%) reported partial or probable PTSD. For Adverse Childhood Experiences, 26% of participants

reported high risk (four or more ACEs). Respondents also reported high rates of concern around bonding, with 41% reporting responses indicative of a bonding disorder and 12.9% indicating severe bonding responses. See Table 5 below.

Table 5: Baseline Assessments

Assessment	Total Sample: (n = 319)	
<i>Postpartum Depression</i> (n=319)		
Possible depression	75.5%	n=241
No depression	24.5%	n=78
<i>Birth Related Post-Traumatic Stress Disorder</i> (n=304)		
No PTSD symptoms	60.8%	n=194
Partial PTSD symptoms	13.2%	n=42
Probable PTSD	5.6%	n=18
Severe PTSD	20.4%	n=65
<i>Comorbid PDD-PTSD</i> (n=71)		
Percentage of Sample	23.3%	n=71
Percentage of those with PTSD	85.5%	n=71
Percentage of those with PDD	29.4%	n=71
<i>Adverse Childhood Experiences</i> (n = 317)		
Three or fewer	74%	n=236
Four or more	8%	n=26
Childhood sexual abuse	19.1%	n=61
Childhood physical abuse	26.5%	n=84
Childhood verbal abuse	39.1%	n=124
Domestic violence during childhood	10.7%	n=34
<i>Postpartum Bonding Questionnaire</i> (n = 319)		
General parent-child dysfunction	37%	n=118
Bonding disorder	41%	n=133
Bonding related rejection	12.9%	n=41
Infant-focused anxiety	4.4%	n=14

Analyses: Research Question One: Adverse Childhood Experiences

A series of chi squares were conducted to assess relationships between adverse childhood experiences and postpartum depression, birth related PTSD and bonding in a

sample who identified as having had a traumatic birth. More specifically, the researcher examined the question: are there significant differences between low history of trauma and high history of trauma as measured by the ACEs checklist in postnatal depression, post-birth PTSD, and bonding in those who experienced birth trauma?

Initially, measures were calculated categorically according to cutoff scores identified by the measures and relevant research. The ACEs checklist cutoff was defined as those who have four or more ACE scores (high adverse childhood experiences) and three or fewer ACE scores (low adverse childhood experiences) (Felitti, Anda, Nordenberg, Edwards, Koss, & Marks, 1998). Postpartum depression was defined as high risk for postpartum depression (a score of 10 or above on the EPDS) and low risk for postpartum depression (a score of nine or below) (Cox, Holden, & Sagovsky, 1987). Birth-related post-traumatic stress disorder was calculated as probable PTSD (a score of 33 and above on the IES-R) and low trauma related symptomology (32 and below on the IES-R) (Weis, 2007). Finally, bonding was explored according to four categories: a total bonding score (a score of twenty-five and above, indicating an abnormal mother-infant relationship) and three subscales: (1) bonding (indicated as impaired with a score higher than 10 on the MEASURE or not impaired, with a score of 10 and below), (2) rejection (a score of 13 and above indicative of a severe bonding disorder or a score of 12 and below not meeting criteria for severe bonding disorder with high risk for anger/rejection), and (3) anxiety (high levels of anxious bonding with a score of 11 or higher and low anxiety with a score of 10 and below) (Brockington, Fraser, & Wilson, 2006). All expected cell frequencies were greater than five.

There was no significant relationship between adverse childhood experiences and postpartum depression ($X^2(1) = .957, p = .32$) or birth related post-traumatic stress disorder ($X^2(1) = 2.77, p = .09$). Additionally, there were no significant findings for impaired bonding ($X^2(1) = 1.95, p = .163$), or rejection ($X^2(1) = 1.615, p = .20$). For anxious bonding, the Fishers two-sided exact test was utilized due to low cell count. Findings were not significant ($X^2(1) = .05, f = .76$). See Appendix J for summary of chi squares for ACEs.

Analyses: Research Question Two: Physical, Psychological and Relational Trauma

Analyses were then conducted to explore the research question: are there significant differences between types of birth trauma in post-natal depression, post-birth PTSD and bonding in those who experienced birth trauma? Different types of birth trauma were characterized according to three separate dimensions that were pulled out of existing literature, including: physical, psychological and relational. Within each dimension of birth trauma, research identified various common experiences within each domain and these were included: prolonged labor, fetal distress, c-section, inadequate pain, hemorrhage, premature birth, pre-eclampsia, tissue organ damage, vacuum, manual placental removal, forcep delivery, congenital abnormality and loss of fertility. Cardiac arrest was excluded from analyses due low endorsement within the sample. For psychological factors, loss of control, fear for life of infant, own life, fear for partner and dissociation were included. For relational factors, separation from the infant, incompetent healthcare, separation from supports, NICU admission, feeling degraded, feeling betrayed, and physical, sexual and verbal abuse were included. Chi squares were

conducted to assess possible relationships between different forms of traumatic births and postpartum depression, birth related post-traumatic stress disorder and bonding.

Physical Domains of Birth Trauma

Initially, physical aspects (prolonged labor, fetal distress, c-section, inadequate pain relief, hemorrhage, premature birth, pre-eclampsia, tissue/organ damage, vacuum delivery, manual removal of the placenta, forceps delivery and loss of fertility) of traumatic births were assessed for their relationship with PDD and birth related PTSD using chi squares.

Rapid Delivery. Chi squares were conducted examining the presence or absence of rapid delivery with the presence or absence of PDD, the presence or absence of birth related PTSD and the presence or absence of a bonding disorder, impaired bonding, bonding related rejection and bonding anxiety. All cell counts were greater than five. These chi square analyses found no significant relationship for PDD ($X^2(1)=1.83$, $P=.18$), Birth related PTSD ($X^2(1)=.571$, $P=.45$), bonding disorder ($X^2(1)=.02$, $p=.90$), impaired bonding ($X^2(1)=.21$, $p=.65$) bonding related rejection ($X^2(1)=.84$, $p=.36$) and bonding anxiety ($X^2(1)=.85$, $f=.32$). See Appendix K for a summary of chi square results of findings for rapid delivery.

Prolonged Delivery. Next, the experience of prolonged labor during a traumatic birth was explored with its relationship to PDD, birth trauma related PTSD and bonding disorder, impaired bonding, bonding related rejection and bonding related anxiety were evaluated with another series of chi squares. All chi square cell counts were greater than five. No significant relationships were identified with PDD ($X^2(1)=3.26$, $P=.07$), birth trauma related PTSD ($X^2(1)=2.52$, $P=.11$), bonding disorder ($X^2(1)=.53$, $P=.47$),

impaired bonding ($X^2(1)=.216, P=.64$), bonding related to rejection ($X^2(1)=2.37, P=.12$), and anxious bonding ($X^2(1)=.043, P=.83$). See Appendix L for a summary of chi square results of findings for prolonged delivery.

Emergency and Unplanned Caesarian Section. A series of chi squares were conducted with the presence or absence of an emergency or unplanned c-section during a traumatic birth and possible relationship with PDD, birth trauma related PTSD and bonding. All cell counts were greater than five. No significant relationships were found for emergency c-section and bonding related anxiety ($X^2(1)=3.48, p=.06$), impairment in bonding ($X^2(1)=.33, p=.57$) total bonding score ($X^2(1)=1.89, p=.17$), PDD ($X^2(1)=.48, p=.49$) and birth related PTSD ($X^2(1)=.31, p=.58$). Bonding related rejection was significantly related to the experience of an unplanned C-section ($X^2(1)=15.8, p=.000$). Those that had an emergency c-section had higher incident ($n = 117$) than expected low incidence of rejection in bonding ($n=105$). Conversely, those not endorsing an emergency c-section had a higher rate ($n=37$) of severe bonding disorders than expected ($n=25$). Table 6 details the findings for emergency c-section.

Table 6. Emergency C-Section and PDD, PTSD and Bonding

Postpartum Functioning	C-Section		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	51 (48)	27 (30)	0.48
Probable PDD	147 (149)	94 (91)	

<i>Birth- Related Trauma</i>			
No PTSD	177	60	0.24
	(175)	(62)	
Probable PTSD	59	23	
	(61)	(21)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	119	82	1.89
	(125)	(76)	
Parent Child Rel Dysfunction	79	39	
	(73)	(45)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	113	73	0.33
	(115)	(71)	
Probable Bonding Disorder	85	48	
	(83)	(50)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	161	117	
15.90**		(173)	(105)
Risk for Rejection	37	4	
	(25)	(16)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	186	119	3.48
	(189)	(116)	
Infant-Focused Anxiety	12	2	
	(9)	(5)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies

Forceps Delivery. Forceps delivery was evaluated with PDD, birth trauma related PTSD and bonding with chi squares. All cell counts were greater than five for impaired bonding, total bonding score, birth related PTSD and PDD. For those with cell counts below five, Fisher's exact test was utilized. No significant results were found for the relationship between forceps delivery and bonding related anxiety ($X^2(1)=.25$, $f=1.0$), bonding related rejection ($X^2(1)=1.57$, $f=.196$), impaired bonding ($X^2(1)=.51$, $p=.48$), total bonding ($X^2(1)=.97$, $p=.33$) and PDD ($X^2(1)=.01$, $p=.94$). There was a significant relationship between birth related PTSD and a forceps delivery ($X^2(1)=.838$, $P=.002$). For those who experienced a forceps delivery, their rates of probable PTSD were higher (17) than expected (9). For those who did not experience forceps delivery, there was a higher incidence (218) than expected incidence of those who had low or no rates of PTSD (210). See Table 7 for a description of findings related to forceps delivery.

Table 7. Forcep Delivery and PDD, PTSD and Bonding

Postpartum Functioning	Forcep Delivery		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	69 (69)	9 (9)	0.01
Probable PDD	214 (214)	27 (27)	
<i>Birth- Related Trauma</i>			
No PTSD	218 (210)	19 (27)	9.84**
Probable PTSD	65	17	

	(73)	(9)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	181	20	0.97
	(178)	(23)	
Parent Child Rel Dysfunction	102	16	
	(105)	(13)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	167	19	0.51
	(165)	(21)	
Probable Bonding Disorder	116	17	
	(118)	(15)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	249	29	1.57
	(247)	(31)	
Risk for Rejection	29	7	
	(31)	(5)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	270	35	0.25
	(270)	(34)	
Infant-Focused Anxiety	13	1	
	(12)	(2)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies

Vacuum Delivery. A series of chi squares were used to evaluate the relationship between vacuum delivery during a traumatic birth and PDD, birth related PTSD and bonding. Expected cell counts were greater than five in all analyses. For anxious bonding cell counts were below five, so Fisher's Exact Test was utilized. There were no

significant findings for PDD ($X^2(1)=.00$, $p=.99$), PTSD ($X^2(1)=.03$, $p=.86$) and bonding: total ($X^2(1)=.56$, $p=.45$), impairment ($X^2(1)=.00$, $p=.98$), rejection ($X^2(1)=3.48$, $p=.06$) and anxiety ($X^2(1)=.027$, $p=.70$). Vacuum delivery chi-squares results are included in Appendix M.

Premature Birth. Chi squares were used to examine the relationship between premature birth and PDD, birth related PTSD and bonding. Expected cell counts were greater than five in all analyses. For anxious bonding cell counts were below five, Fisher's Exact Test was utilized. There were no significant findings for PDD ($X^2(1)=.05$, $P=.82$), PTSD ($X^2(1)=.71$, $p=.40$) and bonding: total ($X^2(1)=2.38$, $p=.12$), impairment ($X^2(1)=1.36$, $p=.24$), rejection ($X^2(1)=.54$, $p=.46$) and anxiety ($X^2(1)=.196$, $p=1.0$). See Appendix N.

Fetal Distress. Next, the experience of fetal distress during a traumatic birth was explored with its relationship to PDD, birth trauma related PTSD and bonding disorder, impaired bonding, bonding related rejection and bonding related anxiety were evaluated with another series of chi squares. All cell counts were above five. No significant relationships were identified with PDD ($X^2(1)=.43$, $p=.51$), birth trauma related PTSD ($X^2(1)=1.81$, $p=.18$), bonding disorder ($X^2(1)=.17$, $p=.69$), impaired bonding ($X^2(1)=.17$, $P=.68$), bonding related to rejection ($X^2(1)=.23$, $p=.63$), and anxious bonding ($X^2(1)=2.20$, $p=.14$). The relationship between fetal distress and PDD, PTSD and Bonding is included in Appendix O.

Congenital Abnormalities. A series of chi squares were used to examine possible relationships between birth trauma that included congenital abnormalities and PDD, birth trauma related PTSD and bonding disorders. No significant relationships were

found for PDD ($X^2(1)=.26$, $f=.64$), birth related PTSD ($X^2(1)=.19$, $f=.67$), bonding: general impairment in parent-child relationship ($X^2(1)=3.59$, $f=.08$), bonding related to anxiety ($X^2(1)=.28$, $f=.1$) and severe bonding disorder ($X^2(1)=.90$, $f=.1$). There was a significant relationship with congenital abnormality in the context of a birth trauma and the diagnosis of a bonding disorder ($X^2(1)=4.37$, $f=.04$). Fisher's exact test was utilized due to low cell counts. For those who had experienced a congenital abnormality there was below expected rates ($n=0$) for those who endorsed a bonding disorder ($n=3$). For those who did not have experience with a congenital abnormality, there were higher ($n=133$) than expected rates ($n=131$) of those who were at risk for a bonding disorder. Despite, some significant findings, it is difficult to determine the nature of the relationship between congenital abnormalities and PDD, PTSD and bonding disorders due to uneven and low cell counts. See Table 8 below.

Table 8. Congenital Abnormalities and PDD, PTSD and Bonding

Postpartum Functioning	Congenital Abnormality		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	76 (76)	2 (2)	0.26
Probable PDD	237 (237)	4 (5)	
<i>Birth- Related Trauma</i>			
No PTSD	233 (233)	4 (5)	0.19
Probable PTSD	80	2	

	(81)	(2)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	195	6	3.59
	(197)	(4)	
Parent Child Rel Dysfunction	118	0	
	(116)	(2.2)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	180	6	4.37*
	(183)	(4)	
Probable Bonding Disorder	133	0	
	(131)	(3)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	272	6	0.90
	(272)	(5)	
Risk for Rejection	41	0	
	(40)	(1)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	299	6	0.28
	(299)	(6)	
Infant-Focused Anxiety	14	0	
	(14)	(1)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies

Hemorrhage. Next, the experience of hemorrhage during a traumatic birth was explored with its relationship to PDD, birth trauma related PTSD and bonding disorder, impaired bonding, bonding related rejection and bonding related anxiety were evaluated with another series of chi squares. Cell counts were greater than five (with the exception of anxious bonding in which Fisher's was utilized). No significant relationships were

identified with PDD ($X^2(1)=.04$, $p=.84$), birth trauma related PTSD ($X^2(1)=.21$, $p=.64$), bonding disorder ($X^2(1)=1.38$, $p=.24$), impaired bonding ($X^2(1)=2.2$, $P=.14$), bonding related to rejection ($X^2(1)=.51$, $p=.47$), and anxious bonding ($X^2(1)=.00$, $f=1$). See Appendix P.

Pre-Eclampsia. Chi squares were used to examine the relationship between pre-eclampsia during a traumatic birth and PDD, birth related PTSD and bonding. Expected cell counts were greater than five in analyses. For anxious bonding some cell counts were below five, so Fisher's Exact Test was utilized. There were no significant findings for PDD ($X^2(1)=.08$, $p=.78$), PTSD ($X^2(1)=1.341$, $p=.25$) and bonding: total ($X^2(1)=.44$, $p=.50$, impairment ($X^2(1)=.07$, $p=.79$), rejection ($X^2(1)=.19$, $p=.66$ and anxiety ($X^2(1)=.000$, $f=1$). The results for pre-eclampsia are included in Appendix Q.

Loss of Fertility. A series of chi squares were used to examine possible relationships between birth trauma that involved the loss of fertility and PDD, birth trauma related PTSD and bonding disorders. Cell counts were below five. As a result, Fisher's test was utilized for interpretation of results. No significant relationships were found for postpartum depression ($X^2(1)=.17$, $f=.71$), birth related posttraumatic stress disorder ($X^2(1)=1.11$, $f=.29$), bonding: total ($X^2(1)=.04$, $f=1.0$, impairment ($X^2(1)=.29$, $f=.75$, rejection ($X^2(1)=1.52$, $f=.37$ and anxiety ($X^2(1)=.47$, $f=1$). Findings should be taken tentatively due to low and uneven cell counts. Appendix R has the results of the chi-squares for loss of fertility.

Inadequate Pain Relief. An additional series of chi squares were utilized to explore the possible relationship between inadequate pain relief during birth and PDD, birth trauma and bonding disorders. Expected cell counts were greater than five in

analyses. For anxious bonding cell counts were below five, Fisher's Exact Test was utilized. No significant relationships were found for bonding related anxiety ($X^2(1)=.13$, $f=.77$, impairment ($X^2(1)=1.32$, $p=.25$, rejection ($X^2(1)=1.29$, $p=.26$) and total ($X^2(1)=.06$, $p=.80$). Additionally, no significant findings were found for PDD ($X^2(1)=.02$, $p=.88$) and birth related trauma ($X^2(1)=2.14$, $p=.14$). See Appendix S.

Manual Placenta Removal. Next, the possible relationship between manual placenta removal during a traumatic birth and PDD, birth related trauma and bonding dimensions were explored using chi squares. Expected cell counts were greater than five in analyses. For anxious bonding cell counts were below five, so Fisher's Exact Test was utilized. There were no significant findings for PDD ($X^2(1)=.23$, $P=.63$), PTSD ($X^2(1)=1.612$, $p=.20$) and bonding: total ($X^2(1)=1.77$, $p=.18$, impairment ($X^2(1)=2.57$, $p=.11$), rejection ($X^2(1)=.18$, $p=.66$) and anxiety ($X^2(1)=.04$, $f=.69$). Appendix T details the results of the analysis for manual placenta removal and PDD, PTSD and bonding.

Injury to Infant. Injury to an infant during birth was the next form of birth trauma evaluated. There were no significant findings for PDD ($X^2(1)=.95$, $p=.33$), PTSD ($X^2(1)=.09$, $p=.76$) and bonding: total ($X^2(1)=.29$, $f=.59$, impairment ($X^2(1)=.19$, $p=.67$), rejection ($X^2(1)=2.03$, $f=.15$) and anxiety ($X^2(1)=.20$, $f=.65$). Expected cell counts were greater than five in analyses. For anxious bonding and bonding related rejection cell counts were below five, Fisher's Exact Test was utilized. See Appendix U.

Tissue and Organ Damage. Similarly tissue or organ damage was evaluated within birth trauma and possible relationships with PDD, birth related PTSD and bonding. No significant relationships were found for bonding related anxiety ($X^2(1) = .47$, $f = .70$, impairment ($X^2(1) = .25$, $f = .62$, rejection ($X^2(1) = .63$, $f = .43$) and total

($X^2(1) = .71, p = .40$). Additionally, no significant findings were found for PDD ($X^2(1) = .77, p = .38$) and birth related trauma ($X^2(1) = .70, p = .40$). Expected cell counts were greater than five in analyses. For anxious bonding and bonding related rejection cell counts were below five, so Fisher's Exact Test was utilized. Appendix V includes the results for a series of chi squares for organ damage and PDD, PTSD and bonding.

Psychological Dimensions of Birth Trauma

Next the psychological dimensions of birth trauma (loss of control, fear for infant's life, fear for own life, fear for partner, and dissociation) were evaluated.

Fear for Your Own Life. Fear for your own life was examined in relationship to PDD, birth related PTSD and bonding. All cell counts were greater than five. No significant relationships were found for: impairment ($X^2(1) = .22, p = .64$, rejection ($X^2(1) = 0.00, p = .99$) and total ($X^2(1) = 3.40, p = .07$). Additionally, no significant findings were found for PDD ($X^2(1) = 1.28, p = .26$). In examining the relationship between bonding related anxiety and those who feared for their life during birth, there was a significant relationship ($X^2(1) = 5.45, p = .02$). For those who feared for their own life during the birth of their child, the rate of high infant focused anxiety (10) was higher than expected outcomes (6). For those who did not fear for their own life during the birth of their child, there was higher (183) than expected rates of low infant focused anxiety (179). For birth related trauma, there was a significant relationship with fear for own life ($X^2(1) = 4.41, p = .04$). For those who had experienced fear for their own life, there was higher number of cases of probable birth related PTSD (42) than expected (34). For those who didn't fear for their life, there was higher number of cases (147) than expected for

(139) those who did not have scores representative of birth related PTSD. See Table 9 for the results for fear for your own life.

Table 9. Fear for Your Own Life and PDD, PTSD and Bonding

Postpartum Functioning	Fear for Your Life		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	50 (46)	28 (32)	1.28
Probable PDD	137 (141)	104 (99)	
<i>Birth- Related Trauma</i>			
No PTSD	147 (139)	90 (98)	4.41*
Probable PTSD	40 (48)	42 (34)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	110 (118)	91 (83)	3.40
Parent Child Rel Dysfunction	77 (69)	41 (49)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	107 (109)	21 (20)	0.19
Probable Bonding Disorder	80 (78)	79 (77)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	163 (163)	53 (55)	0.22

Risk for Rejection	24 (24)	17 (17)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	183 (179)	122 (126)	5.45*
Infant-Focused Anxiety	4 (8)	10 (6)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Fear for Life of Your Infant. The next birth related criterion examined was fear for the life of your infant. The relationships with PDD ($X^2(1) = .000$, $p = .99$), and birth related trauma ($X^2(1) = .91$, $p = .34$), were not significant. Additionally, anxious bonding was not significant ($X^2(1) = .10$, $p = .75$), severe bonding disorders ($X^2(1) = .256$, $p = .11$), bonding disorders ($X^2(1) = 1.37$, $p = .24$) and impairment in relationships ($X^2(1) = 3.61$, $p = .06$). All cell counts were greater than five. See Appendix W.

Fear for Your Partner. Fear for your partner was also examined with chi squares. There were no significant findings for PDD ($X^2(1) = .36$, $p = .55$), birth related trauma ($X^2(1) = .02$, $p = .9$), or for bonding: anxious ($X^2(1) = .09$, $f = 1$), rejection ($X^2(1) = 1.13$, $f = .4$), impairment ($X^2(1) = .95$, $f = .33$), and bonding overall ($X^2(1) = 1.51$, $p = .22$). Expected cell counts were greater than five in analyses. For anxious bonding, bonding impairment and bonding related rejection cell counts were below five, Fisher's Exact Test was utilized. Appendix X includes fear for your partner and the relationships to PDD, PTSD and bonding.

Loss of Control. Additionally, loss of control was examined in relationship to PDD, birth related trauma and bonding by chi square. Infant focused anxiety ($X^2(1)=.78$, $f=.53$), rejection ($X^2(1)=2.32$, $p=.13$), bonding disorder ($X^2(1)=1.19$, $p=.28$), and total bonding ($X^2(1)=2.21$, $p=.137$) were not significant. There was also no significance for PDD ($X^2(1)=.00$, $p=.96$). The relationship between birth related PTSD and loss of control was significant ($X^2(1) = 4.137$, $p = .04$). For those who felt a loss of control or power during their birth, their endorsement of probable PTSD rates was higher ($n=69$) than expected outcomes ($n=62$). For those who did not experience a loss of control, their rates of low trauma symptoms ($n=64$) were higher than expected ($n=57$). Expected cell counts were greater than five in analyses. For anxious bonding cell counts were below five, Fisher's Exact Test was utilized. Table 10 includes results of this analysis.

Table 10. Loss of Control and PDD, PTSD and Bonding

Postpartum Functioning	Loss of Control		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	19 (19)	59 (59)	0.00
Probable PDD	58 (58)	183 (183)	
<i>Birth- Related Trauma</i>			
No PTSD	64 (57)	173 (180)	4.14*
Probable PTSD	13 (20)	69 (62)	

<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	54	147	2.21
	(49)	(153)	
Parent Child Rel Dysfunction	23	95	
	(29)	(90)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	49	137	1.19
	(45)	(141)	
Probable Bonding Disorder	28	105	
	(32)	(101)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	71	207	2.32
	(67)	(211)	
Risk for Rejection	6	35	
	(10)	(31)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	75	230	0.78
	(74)	(231)	
Infant-Focused Anxiety	2	12	
	(3)	(11)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Dissociation. The next variable of interest evaluated was dissociation and possible relationships with PDD, birth related trauma and bonding utilizing a chi-square. All cell counts were greater than five. There were two non-significant relationships including infant focused anxiety (bonding) ($X^2(1)=3.68$, $p=.06$) and PDD ($X^2(1)=1.05$, $p=.305$). There were several significant results for dissociation and bonding. For general concerns within parent-child relationship there was a significant finding ($X^2(1)=12.18$,

$p=.000$). Chi square indicated that there were a higher number (46) of individuals who reported relational problems than expected (33) for those who experienced dissociation during birth. Additionally, for those who did not experience dissociation, there was lower (72) than expected (86) individuals reporting problems in the parenting relationship. There was a clinically significant relationship between dissociation and scores that indicate a bonding disorder ($X^2(1)=9.78, p=.01$). Those who experienced dissociation during birth reported higher rates of scores indicating a bonding disorder ($n=49$) than would be expected ($n=37$). In comparison, those that did not experience dissociation reported lower scores indicating a bonding disorder ($n=84$) than would be expected ($n=96$). Additionally, there a significant relationship between experiencing dissociation and endorsing symptomology consistent with a severe bonding disorder that placed the infant at risk for rejection ($X^2(1)=6.27, p=.01$). For those who experienced dissociation, the endorsement of rejection criteria was higher ($n=18$) than expected ($n=11$) and for those who denied dissociation the endorsement of rejection criteria was lower ($n=23$) than expected ($n=30$). There also was a significant relationship with dissociation and birth-related PTSD ($X^2(1)=10.64, p=.001$). Those who dissociated during birth reported more scores indicative of PTSD ($n=34$) than expected (23). Additionally, those who did not endorse dissociation reported PTSD less ($n=48$) than expected ($n=59$). Table 11 includes findings for dissociations and PDD, PTSD and bonding.

Table 11. Dissociation and PDD, PTSD and Bonding

Postpartum Functioning	Dissociation		X ²
	No	Yes	

Postpartum Depression

No PDD	60	18	1.05
	(57)	(22)	
Probable PDD	171	70	
	(175)	(67)	
<i>Birth- Related Trauma</i>			
No PTSD	183	54	
10.64**	(172)	(65)	
Probable PTSD	48	34	
	(59)	(23)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	159	42	
12.18**	(146)	(55)	
Parent Child Rel Dysfunction	72	46	
	(85)	(33)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	147	39	9.28**
	(135)	(51)	
Probable Bonding Disorder	84	49	
	(96)	(37)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	208	70	6.27**
	(201)	(77)	
Risk for Rejection	23	18	
	(30)	(11)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	224	81	3.68
	(221)	(84)	

Infant-Focused Anxiety	7 (10)	7 (4)
------------------------	-----------	----------

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Relational Domains of Birth Trauma

Relational domains (separation from infant, incompetent healthcare, separation from support, NICU admission, degrading treatment, feeling betrayed and physical, sexual and verbal abuse) were calculated utilizing chi-squares as they related to postpartum depression, birth-related post-traumatic stress disorder and bonding.

Physical Abuse. The first relational domain was examined using a chi square to evaluate potential relationships between physical abuse during birth and PDD, birth-related PTSD and bonding. Two relationships were identified as not significant including: bonding anxiety ($X^2(1)=1.10$, $p=.27$) and general parenting dysfunction ($X^2(1)=1.25$, $p=.26$).

There were several significant findings including the relationship between experiencing physical abuse during birth and: birth related PTSD ($X^2(1) = 20.26$, $p = .000$) and PDD ($X^2(1) = 5.42$, $f = .02$). Those who had experienced physical abuse during birth reported higher than expected rates of birth related PTSD ($n=15$) and PDD ($n=22$) than expected ($n=6$ for PTSD and $n=17$ for PDD). On the other hand, those who did not experience physical abuse during birth reported lower incidence of probable PTSD ($n=67$) and PDD ($n=219$) than expected rates ($n=76$ and $n=224$ respectively) of possible birth related PTSD. There were also multiple bonding domains that had a statistically significant relationship with physical abuse including: risk for a bonding disorder

($X^2(1)=5.64$, $P=.02$) and severe bonding disorder placing the infant at risk for rejection ($X^2(1)=3.88$, $p=.049$). For those who experienced physical abuse during birth, there was a higher incidence of probable bonding disorder ($n=15$) and severe bonding disorder ($n=6$) than expected ($n=10$) probable bonding disorder, ($n=3$) severe bonding disorder. Additionally, there was a lower incidence of probable bonding disorder ($n=118$) than expected ($n=123$). All cell counts were greater than five. Table 12 with analyses for physical abuse is included below.

Table 12. Physical Abuse and PDD, PTSD and Bonding

Postpartum Functioning	Physical Abuse		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	77 (72)	1 (6)	5.42*
Probable PDD	219 (224)	22 (17)	
<i>Birth- Related Trauma</i>			
No PTSD 20.26**	229 (220)	8 (17)	
Probable PTSD	67 (76)	15 (6)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	189 (187)	12 (15)	1.25
Parent Child Rel Dysfunction	107 (110)	11 (9)	

<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	178	8	5.64*
	(173)	(13)	
Probable Bonding Disorder	118	15	
	(123)	(10)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	261	17	3.88*
	(258)	(20)	
Risk for Rejection	35	6	
	(38)	(3)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	284	21	1.10
	(283)	(22)	
Infant-Focused Anxiety	12	2	
	(13)	(1)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Verbal Abuse. Next, chi squares were utilized to examine the relationship between verbal abuse during birth and PDD, birth related PTSD, and bonding. Expected cell counts were greater than five in analyses. For PDD, anxious bonding, bonding rejection cell counts were below five, so Fisher's Exact Test was utilized. There was no significant relationship between presence or absence of verbal abuse and bonding: infant focused anxiety ($X^2(1)=.00$, $f=1$), rejection and for increased risk of infant focused anxiety ($X^2(1)=.46$, $f=.52$), impaired bonding and for increased risk of infant focused anxiety ($X^2(1)=2.24$, $p=.13$) and total bonding ($X^2(1)=.45$, $p=.50$). Additionally, the experience of verbal abuse during birth did not have a significant relationship with PDD

($X^2(1)=1.75$, $f=.22$). The experience of verbal abused did have a significant relationship with birth-related PTSD ($X^2(1) = 24.97$, $p = .000$). Of the group of participants that experienced verbal abuse with the birth of the baby, there were higher rates of probable birth related PTSD ($n=16$) than expected ($n=6$). Additionally, there were lower ($n=66$) than expected ($n=76$) rates of probable birth related PTSD for those who did not experience verbal abuse. See Table 13 below for more details on analysis.

Table 13. Verbal Abuse and PDD, PTSD and Bonding

Postpartum Functioning	Verbal Abuse		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	75 (72)	3 (6)	1.75
Probable PDD	221 (223)	20 (17)	
<i>Birth- Related Trauma</i>			
No PTSD 24.97**	230 (220)	7 (17)	
Probable PTSD	66 (76)	16 (6)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	188 (187)	13 (15)	0.45
Parent Child Rel Dysfunction	108 (110)	10 (9)	
<i>Bonding Disorder (Subscale)</i>			

No Bonding Disorder	176 (172)	10 (13)	2.24
Probable Bonding Disorder	120 (123)	13 (10)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	259 (258)	19 (20)	0.46
Risk for Rejection	37 (38)	4 (3)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	283 (283)	22 (22)	0.00
Infant-Focused Anxiety	13 (13)	1 (1)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Sexual Abuse. For those who indicated they had experienced sexual assault during the birth of their child, there were no significant findings for bonding: infant anxiety ($X^2(1) = .38$, $f = 1$), rejection ($X^2(1) = .00$, $f = 1$), bonding impairment ($X^2(1) = .23$, $f = .72$) and total bonding ($X^2(1) = .01$, $f = .1$). Additionally, relationships with PDD ($X^2(1) = 2.66$, $f = .21$) and birth related PTSD ($X^2(1) = 2.54$, $f = .21$) were not significant. When expected cell counts were below five, Fisher's Exact Test was utilized. Overall, cell counts were small and uneven, thus findings may not be accurate. Appendix Y includes details for sexual abuse and relationships of PDD, PTSD and bonding.

Separated from Infant. For those who experienced a separation from their infant during their birth experience, chi squares were utilized to examine relationships with

PDD, birth related PTSD and bonding. Regarding bonding domains, there wasn't a significant relationship with infant focused anxiety ($X^2(1)=1.84$, $p=.18$), bonding disorder ($X^2(1)=2.68$, $p=.10$) and total of bonding ($X^2(1)=2.77$, $p=.10$). For severe bonding disorder, the relationship was borderline significant ($X^2(1)=3.77$, $p=.05$). PDD was not significantly related to separation of infant during birth ($X^2(1)=.06$, $p=.80$). For those who experienced separation from their infant during birth there was a statistically significant relationship with birth-related PTSD ($X^2(1)=5.99$, $p=.01$). For those who experienced a separation from their infant during birth, there were lower ($n=40$) than expected rates of probable PTSD ($n=49$). For those who did not experience a separation, respondents reported higher ($n=42$) than expected rates of probable PTSD ($n=33$). All cell counts were greater than five. See Table 14 below.

Table 14. Separated from Infant and PDD, PTSD and Bonding

Postpartum Functioning	Separated from Infant		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	32 (70)	46 (47)	0.06
Probable PDD	95 (96)	146 (145)	
<i>Birth- Related Trauma</i>			
No PTSD	85 (94)	152 (143)	5.99**
Probable PTSD	42 (33)	40 (49)	

<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	73	128	2.77
	(80)	(121)	
Parent Child Rel Dysfunction	54	64	
	(47)	(71)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	67	119	2.68
	(74)	(112)	
Probable Bonding Disorder	60	73	
	(53)	(80)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	105	173	3.76
		(110)	(167)
Risk for Rejection	22	19	
	(16)	(25)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	119	186	1.84
	(121)	(184)	
Infant-Focused Anxiety	8	66	
	(5)	(8)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Separated from Partner. Chi squares were conducted to examine possible relationships between separation from partner during birth and PDD, PTSD and bonding. Of those who experienced separation from their support partner, there were no significant relationships for PDD ($X^2(1)=2.41$, $p=.12$), birth related PTSD ($X^2(1)=.08$, $p=.78$), and bonding: anxiety ($X^2(1)=.49$, $p=.48$), rejection ($X^2(1)=2$, $p=.16$), bonding impairment

($X^2(1)=.12$, $p=.73$) and total bonding ($X^2(1)=1.12$, $p=.29$) in chi squares. See Appendix Z.

NICU Admission. For those whose infant was admitted to the NICU during their traumatic experience, chi squares were utilized to examine PDD, PTSD and bonding. There were no significant relationships between presence or absence of NICU admission and bonding for infant focused anxiety ($X^2(1)=.86$, $p=.35$). Additionally, the relationship between NICU admission and PDD was not significant ($X^2(1)=.01$, $p=.93$). The relationship with birth related PTSD was also not significant ($X^2(1)=.67$, $p=.41$). For those who experienced a NICU admission, there was a borderline significant finding for relationship with severe rejection related bonding disorder ($X^2(1)=3.83$, $p=.05$). The remaining two bonding subscales were significant: total score ($X^2(1)=4.76$, $p=.03$), and impaired bonding ($X^2(1)=4.50$, $p=.03$). For those who experienced a NICU admission, there were lower endorsed rates of bonding impairment ($n=35$), parent-relationship dysfunction ($n=30$) and bonding rejection ($n=8$) than expected rates of bonding impairment ($n=39$), parent-relationship ($n=44$), rejection ($n=14$). Table 15 includes information for relationship for NICU admission.

Table 15. NICU Admission and PDD, PTSD and Bonding

Postpartum Functioning	NICU Admission		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	52 (52)	26 (26)	.01
Probable PDD	162 (162)	79 (79)	

<i>Birth- Related Trauma</i>			
No PTSD	162 (159)	75 (78)	0.67
Probable PTSD	52 (55)	30 (27)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	126 (135)	75 (66)	4.76*
Parent Child Rel Dysfunction	88 (79)	30 (39)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	116 (125)	70 (61)	4.50*
Probable Bonding Disorder	98 (89)	35 (44)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	181 (187)	97 (92)	3.83
Risk for Rejection	33 (28)	8 (14)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	203 (204)	102 (100)	0.88
Infant-Focused Anxiety	11 (9)	3 (5)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Incompetent Healthcare. Chi squares were conducted to examine the possible relationships between perceiving that there was incompetent healthcare during the birth experience and PDD, birth related PTSD and bonding. There were no significant relationships found with bonding: total ($X^2(1)=.75$, $p=.39$), impairment ($X^2(1)=.62$, $p=.43$), rejection ($X^2(1)=1.6$, $p=.21$), and anxiety ($X^2(1)=.00$, $p=.96$). Additionally, there was no significant relationship between PDD and incompetent healthcare ($X^2(1)=.194$, $p=.66$). For those who experienced birth-related PTSD and incompetent healthcare there was also no significance found ($X^2(1)=1.28$, $p=.26$). Appendix i includes information for chi square results for incompetent healthcare.

Feeling Degraded. A series of chi squares were utilized to examine the relationship between feeling degraded by their healthcare provider and bonding, PDD and birth-related PTSD. Significance was not found for infant focused anxiety ($X^2(1)=.33$, $p=.76$), rejection ($X^2(1)=.03$, $p=.87$), bonding impairment ($X^2(1)=1.91$, $p=.17$) and total bonding ($X^2(1)=1.47$, $p=.23$). Additionally, there was no significant relationship found between feeling degraded during the birth experience and PDD ($X^2(1)=0.76$, $p=.38$). There was a significant relationship found between feeling degraded during the birth and birth related PTSD ($X^2(1)=9.57$, $p=.002$). For those who felt degraded during the birth experience there were higher reported incidents of probable birth related PTSD ($n=34$) than expected ($n=23$). Additionally, there were lower reported incidences of probable PTSD ($n=48$) than expected ($n=59$) for those who did not feel degraded during their birth experience. Table 16 includes analyses for feeling degraded during labor.

Table 16. Feeling Degraded and PDD, PTSD and Bonding

Feeling Degraded

Postpartum Functioning	No	Yes	X ²
<i>Postpartum Depression</i>			
No PDD	59 (56)	19 (22)	0.76
Probable PDD	170 (173)	71 (68)	
<i>Birth- Related Trauma</i>			
No PTSD	181 (170)	56 (67)	9.57**
Probable PTSD	48 (59)	34 (23)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	149 (144)	52 (56)	1.47
Parent Child Rel Dysfunction	80 (84)	38 (33)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	139 (134)	47 (53)	1.91
Probable Bonding Disorder	90 (96)	43 (38)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	200 (200)	78 (78)	0.03
Risk for Rejection	29 (29)	12 (12)	
<i>Infant-Focused Anxiety (Subscale)</i>			

No Infant-Focused Anxiety	218 (219)	87 (86)	0.33
Infant-Focused Anxiety	11 (10)	3 (4)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Betrayal. For those who felt betrayed by others during their birth, chi squares were used to calculate possible relationships with PDD, birth related PTSD and bonding. Three analyses were not significant: PDD ($X^2(1)=1.5$, $p=.22$), infant focused anxiety ($X^2(1)=3.89$, $p=.049$), and bonding related infant rejection ($X^2(1)=.00$, $p=.96$).

Birth-related PTSD and feeling betrayed during the birth was found to have a significant relationship ($X^2(1)=12.28$, $p=.000$). For those who felt betrayed during their child's birth, there were higher rates of endorsement for probable PTSD ($n=29$) than expected ($n=18$). For those who didn't feel betrayed during their birth, there were lower ($n=53$) than expected cases of ($n=64$) probable PTSD.

Additionally, several bonding related variables had a significant relationship feeling betrayed during the birth including: total bonding ($X^2(1)=4.44$, $p=.04$) and bonding impairment ($X^2(1)=3.98$, $p=.046$). For those who felt betrayed during their birth, there were higher rates of impaired bonding then expected: ($n=36$ versus $n=29$). Overall bonding had higher than expected responses for those who felt betrayal ($n=33$ versus $n=26$). Table 17 is included below and details the statistical results for betrayal and PDD, PTSD and bonding.

Table 17. Betrayal and PDD, PTSD and Bonding

Betrayal

Postpartum Functioning	No	Yes	X ²
<i>Postpartum Depression</i>			
No PDD	65 (61)	13 (17)	1.50
Probable PDD	185 (189)	56 (52)	
<i>Birth- Related Trauma</i>			
No PTSD 12.28**	197 (186)	40 (51)	
Probable PTSD	53 (64)	29 (18)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	165 (158)	36 (43)	4.44*
Parent Child Rel Dysfunction	85 (92)	33 (26)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	153 (146)	33 (40)	3.98*
Probable Bonding Disorder	97 (104)	36 (29)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	218 (218)	60 (60)	0.00
Risk for Rejection	32 (32)	9 (9)	

<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	242 (239)	63 (66)	3.90
Infant-Focused Anxiety	8 (11)	6 (3)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Interpersonal Trauma and Attributions of Responsibility in Birth Trauma

The experience of feeling that the traumatic aspects of the birth of their child were a result of an individual's actions (interpersonal trauma) was then explored. Chi squares were used to examine possible relationships between interpersonal trauma and postpartum depression, birth-related PTSD, and bonding. Additional chi squares explored possible relationships with various attributions of blame (self, infant, partner and healthcare provider) and variables of interest.

Interpersonal Trauma and Non-Interpersonal Trauma. For a global exploration of birth related interpersonal trauma and possible relationships with PDD, birth related trauma and bonding, chi squares were used. For bonding: infant focused anxiety ($X^2(1)=2.35$, $p=.31$), rejection ($X^2(1)=1.79$, $p=.41$) and general parenting dysfunction ($X^2(1)=5.36$, $p=.07$) there was not a significant relationship. Additionally, there was not a significant relationship with postpartum depression and interpersonal trauma ($X^2(1)=5.25$, $p=.07$). However, there was a significant relationship found between interpersonal trauma during birth and birth related PTSD ($X^2(1)=9.39$, $p=.01$). For those who reported feeling that there was someone else responsible for their traumatic birth, there were higher reported ($n=60$) than expected ($n=48$) probable PTSD. For those who

didn't report experiencing interpersonal trauma, there was lower (n=22) than expected probable PTSD (n=33). There was also a significant relationship between interpersonal trauma and bonding disorder ($X^2(1)=8.91, p=.01$). For those who felt that their trauma was the result of another, there was higher incidence (91) than expected (n=78) of probable PTSD. For those who didn't experience interpersonal trauma, there was lower (n=42) than expected (n=54) probable PTSD. Table 18 includes data analysis for interpersonal trauma.

Table 18. Interpersonal Trauma and PDD, PTSD and Bonding

Postpartum Functioning	Interpersonal Trauma		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	37 (32)	40 (46)	5.25
Probable PDD	93 (98)	148 (142)	
<i>Birth- Related Trauma</i>			
No PTSD	108 (97)	128 (140)	9.39**
Probable PTSD	22 (33)	60 (48)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	91 (82)	109 (118)	5.35
Parent Child Rel Dysfunction	39 (48)	79 (70)	
<i>Bonding Disorder (Subscale)</i>			

No Bonding Disorder	88 (76)	97 (110)	8.91**
Probable Bonding Disorder	42 (54)	91 (78)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	117 (113)	160 (60)	1.79
Risk for Rejection	13 (17)	28 (24)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	127 (124)	177 (180)	2.35
Infant-Focused Anxiety	3 (6)	11 (8)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Self-Blame. Looking closer at interpersonal trauma, for those who felt that their birth trauma was their own fault, there was no significant relationship for PDD ($X^2(1)=2.77$, $p=.1$), bonding related rejection ($X^2(1)=.02$, $p=.89$) and general parenting dysfunction ($X^2(1)=3.28$, $p=.07$). There was a significant relationship for infant focused anxiety in bonding ($X^2(1)=7.57$, $f=.02$) impaired bonding ($X^2(1)=10.07$, $p=.002$) birth related PTSD ($X^2(1)=11.16$, $p=.001$). For those that felt the birth trauma was their fault, there was higher than expected reported probable PTSD ($n=23$ than expected $n=13$), bonding disorder ($n=32$ than expected $n=22$) and infant related anxiety ($n=6$ than expected $n=2$). For those who didn't feel they were at fault, there was lower than expected probable PTSD ($n=59$ than expected $n=69$), bonding disorder ($n=39$ than

expected n=48) and infant focused anxiety (n=8 than expected n=13). Table 19 includes details on these statistical analysis.

Table 19. Self-Blame and PDD, PTSD and Bonding

Postpartum Functioning	Self-Blame		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	70 (65)	8 (13)	2.77
Probable PDD	197 (202)	44 (39)	
<i>Birth- Related Trauma</i>			
No PTSD 11.16**	208 (198)	29 (39)	
Probable PTSD	59 (69)	23 (13)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	174 (168)	27 (33)	3.28
Parent Child Rel Dysfunction	93 (99)	25 (19)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder 10.07**	166 (156)	20 (30)	
Probable Bonding Disorder	101 (111)	32 (22)	
<i>Bonding Anger & Rejection (Subscale)</i>			

No Rejection	233 (233)	45 (45)	0.02
Risk for Rejection	34 (34)	7 (7)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	259 (255)	46 (50)	7.57**
Infant-Focused Anxiety	8 (12)	6 (2)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Partner at Fault. Chi squares were conducted to examine possible relationships between feeling that your partner was at fault for the traumatic birth and PDD, birth related PTSD and bonding. For those who felt their partner were responsible there was no significant relationship with birth related PTSD ($X^2(1)=4.52$, $f=.055$), PDD ($X^2(1)=.072$, $p=1$) and bonding: total ($X^2(1)=2.55$, $p=.11$), bonding disorder ($X^2(1)=1.44$, $p=.23$), bonding rejection ($X^2(1)=.96$, $p=.33$) and infant-focused anxiety ($X^2(1)=3.42$, $f=.12$). Appendix ii provides results for feeling that your partner was at fault for your birth trauma and PDD, PTSD and bonding.

Infant at Fault. A series of chi squares were utilized to examine possible relationships between feeling that your infant was at fault for the traumatic birth and PDD, birth related PTSD and bonding. Infant focused anxiety ($X^2(1)=0.23$, $f=.1$), total bonding ($X^2(1)=4.03$, $f=.06$), PDD ($X^2(1)=.05$, $p=.82$) and birth related PTSD ($X^2(1)=.54$, $f=.61$) were not significant. For bonding related rejection ($X^2(1)=10.08$, $f=.02$), there was a significant relationship found. Those feeling that their infant was at

fault had higher (n=3) than expected rates (n=1) of bonding related rejection. Of those who didn't feel that their infant was at fault, there was lower (n=33) than expected rates (n=40) of bonding related rejection.

There was also a significant relationship for feeling that your infant was at fault for the traumatic birth and a bonding disorder ($X^2(1)=7.10$, $f=.01$). For those who felt that their infant was at fault, there were higher (n=5) than expected rates (n=2) of probable bonding disorders. For those who thought that it wasn't the infant's fault, there were lower (n=128) than expected rates (n=131) of probable bonding disorders. These findings should be taken with caution as the groups have large differences between one another. Additionally, the number of individuals endorsing that their infant was to blame was very small. See Table 20 below.

Table 20. My Infant at Fault and PDD, PTSD and Bonding

Postpartum Functioning	My Infant at Fault		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	77 (77)	1 (1)	0.05
Probable PDD	237 (237)	4 (4)	
<i>Birth- Related Trauma</i>			
No PTSD	234 (233)	3 (4)	0.54
Probable PTSD	80 (81)	2 (1)	

<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	200	1	4.03
	(198)	(3)	
Parent Child Rel Dysfunction	114	4	
	(116)	(2)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	186	0	7.10**
	(183)	(3)	
Probable Bonding Disorder	128	5	
	(131)	(2)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	276	2	
10.08**		(274)	(4)
Risk for Rejection	38	3	
	(40)	(1)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	300	5	0.23
	(300)	(5)	
Infant-Focused Anxiety	14	0	
	(14)	(1)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Healthcare at Fault. Next, feeling that your healthcare provider was at fault for your birth related trauma was examined in relationship to PDD, birth related PTSD and bonding. There were no significant relationships found for infant focused anxiety ($X^2(1)=2.70$, $p=.10$), and bonding related rejection ($X^2(1)=1.39$, $p=.24$), PDD ($X^2(1)=0.97$, $p=.32$). There were however, significant relationships between feeling that your healthcare provider was at fault for birth trauma and bonding disorders ($X^2(1)=8.51$,

$p=.004$), general parent-infant relational dysfunction ($X^2(1)=4.76$, $p=.03$) and birth-related PTSD ($X^2(1)=8.06$, $p=.005$). For those who felt that the trauma around their birth occurred as a result of a healthcare provider, there were higher than expected rates of probable bonding disorders ($n=89$ compared to $n=76$), general parent-child dysfunction ($n=77$ versus $n=68$) and birth related post-traumatic stress disorder ($n=58$ versus $n=47$). For those who did not feel that their healthcare provider was responsible for the trauma around birth, there were lower than expected rates of bonding disorders ($n=44$ versus $n=57$), general parent-child relationship ($n=41$ versus $n=50$) and birth related post-traumatic stress disorder ($n=24$ versus $n=35$). Table 21 summarizes chi square results.

Table 21. Healthcare Provider at Fault and PDD, PTSD and Bonding

Postpartum Functioning	Healthcare Provider at Fault		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	37 (33)	41 (45)	0.97
Probable PDD	99 (102)	142 (138)	
<i>Birth- Related Trauma</i>			
No PTSD	112 (101)	125 (136)	8.06**
Probable PTSD	24 (35)	58 (47)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	95 (86)	106 (115)	4.76*

Parent Child Rel Dysfunction	41 (50)	77 (68)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	92 (79)	94 (107)	8.51**
Probable Bonding Disorder	44 (57)	89 (76)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	122 (119)	156 (160)	1.39
Risk for Rejection	14 (18)	27 (24)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	133 (130)	172 (175)	2.69
Infant-Focused Anxiety	3 (6)	11 (8)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

Analyses: Research Question Three: Infant Emotion Identification

Analyses were conducted to explore the third research question: are there significant differences infant emotion identification in those who have birth related PTSD and for those with impairment in parent-child bonding? Infant emotion identification was measured using the IFEEL Pictures Instrument (Esmde et al., 1993). Analysis followed the strategy articulated by DeOliveria (2001) exploring infant emotion identification and attachment style. Following DeOliveria's (2001) approach, this research began with an articulation of descriptive differences in frequency of infant emotions identified between

this sample of individuals who have experienced birth trauma and the standardized norm for the IFEEL images are articulated with effect size calculations.

Next, chi squares were utilized to examine differences between the identification of shame and disgust and parent-child relationship dysfunction and birth related PTSD. Shame and disgust are identified as atypical responses in the IFEEL Pictures meaning that they were very infrequently utilized by participants (Esmde et al., 1993). In the standard sample, 89% did not identify shame or guilt at all. Additionally, 82.8% did not identify the disgust-dislike category in any of the images (Esmde et al., 1993). As a result of the infrequency of identification of shame and disgust for the ambiguous images, DeOliveira (2001) advocates for utilizing chi squares (presence or absence of the identification of shame and disgust). In this analysis, the presence of shame was explored in relationship to birth related PTSD and disorganization in parent-child relationship. Disgust (presence or absence) was also explored in relationship to those who had the presence or absence of birth related PTSD and the presence or absence of disorganization in bonding.

Finally, the IFEEL Pictures were utilized to examine if there was a significant relationship between the identification of certain emotions from the ambiguous infant emotions and birth-related PTSD and parent-child parental dysfunction.

Infant Emotion Identification in Birth Trauma Sample

An effect size calculation was utilized to provide descriptive information regarding the infant emotion identification responses for those who had experienced birth trauma. Means and standard deviations for those who experienced birth trauma and the published statistic for the reference sample from the IFEEL measure are presented in

Table 22 along with effect sizes (Emde, Butterfield & Osofsky, 1993). The reference sample has been explored in comparison to a variety of different populations in past research including adolescent mothers, risk for maltreatment, depressed mothers, prematurity and attachment styles (Osofsky & Culp, 1993; Butterfield, 1993; Szajnberg & Skrinjaric; 1993; Zahn-Waxler & Wagner, 1993; DeOliveria, 2001). The sample who had experienced birth trauma had a small effect size difference for frequency of identification for surprise, joy, shame, disgust and fear as compared to the reference sample for the IFEEL pictures. There were small to medium effect size differences for content and other emotions identified. The birth trauma sample had medium differences in effect size for the frequency of identification of interest, passivity, sadness, cautious, anger and distress. There were no large effect size differences. More specifically, on average, the sample with birth trauma identified less interest and sadness in the ambiguous infant emotions, while also identifying more passivity, caution and more distress as compared to the published reference sample.

Table 22. IFEEL Pictures Descriptive Analysis

VARIABLE	Sample with Birth Trauma (N=319)				Reference Sample* (N=145)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Surprise	1.46	(1.23)	0	8	1.67	(1.37)	0	6
ES	0.15							
Interest	5.67	(3.26)	0	14	7.23	(3.42)	0	16
ES	0.47							
Joy	3.45	(1.31)	0	8	3.36	(1.30)	0	10
ES	0.07							
Content	3.29	(2.20)	0	14	2.82	(1.54)	0	9
ES	0.31							

Passive 0.41	1.67 (1.03)	0	12	1.12 (1.35)	0	6
Sad 0.41	2.80 (2.02)	0	14	3.75 (2.31)	0	10
Cautious 0.41	3.30 (2.41)	0	11	2.46 (2.03)	0	9
Shame 0.10	0.09 (0.32)	0	2	0.13 (0.41)	0	2
Disgust 0.05	0.23 (0.56)	0	3	0.27 (0.74)	0	5
Anger 0.41	1.25 (1.40)	0	7	1.88 (1.67)	0	7
Distress 0.50	2.71 (1.82)	0	9	1.88 (1.67)	0	7
Fear 0.22	1.80 (1.81)	0	9	2.22 (1.94)	0	11
Other 0.31	1.28 (1.39)	0	6	0.81 (1.21)	0	8

*Emde, R. N., Osofsky, J.D & Butterfield, P.M. (Eds.)(1993). The IFEEL pictures-A new instrument for interpreting emotions. Madison, CT: International Universities Press.

Infant Emotion Identification of Shame and Disgust

Chi squares were used to evaluate a relationship between respondents' endorsement of shame with PTSD and parental dysfunction (total bonding score). There were no significant relationships found for PTSD ($X^2(1)=1.6$, $p=.21$) or parent dysfunction ($X^2(1)=.343$, $p=.56$).

Additional chi squares were used to explore the relationships between respondents' endorsement of disgust with PTSD and parental dysfunction (total bonding score). There were also no significant relationships found for PTSD ($X^2(1)=.526$, $p=.47$) or parent dysfunction ($X^2(1)=.472$, $p=.52$).

Infant Emotion Identification and Birth-Related Trauma

In exploring the relationship between infant emotion identification and birth related trauma, independent samples *t*-tests were conducted to explore mean frequencies

for remaining emotion identification category between those who endorsed PTSD symptomology and those who did not report PTSD. There were no significant differences identified. See Table 23 below.

Table 23. IFEEL Pictures and Birth Trauma

	Low Birth Trauma (n=237)		Clinical Birth Trauma (n=82)	
	Mean	SD	Mean	SD
<i>Emotions</i>				
Surprise	1.45	1.24	1.48	1.33
Interest	5.76	3.24	5.44	3.31
Joy	3.41	1.28	3.55	1.38
Content	3.23	2.24	3.45	2.08
Passive	0.94	1.35	1.30	2.34
Sad	2.69	1.88	3.11	2.37
Cautious	3.36	2.46	3.12	2.26
Distress	2.71	1.82	2.72	1.83
Fear	1.73	1.75	1.99	1.99
Other	1.31	1.46	1.20	1.18

Infant Emotion Identification and Parent-Child Bonding

Finally, independent samples *t*-tests were conducted to explore possible relationships between mean frequencies of emotions endorsed in the picture set and parent-child relationship dysfunction. Passivity, Interest and Other emotion categories were statistically significant. Equal variances were not met for passivity and for other, so the appropriate alternative test was used accordingly. See Table 24 below.

Table 24
IFEEL Pictures and Parent-Child Bonding

	Low Impairment		High Impairment	
	Mean	SD	Mean	SD

<i>Emotions</i>				
Surprise	1.36	1.20	1.63	1.33
Interest	6.01**	3.23	5.09	3.23
Joy	3.53	1.31	3.31	1.29
Content	3.42	2.01	3.07	2.48
Passive	0.84*	1.24	1.36	2.18
Sad	2.74	2.08	2.89	1.92
Cautious	3.21	2.26	3.45	2.66
Distress	2.58	1.75	2.96	1.91
Fear	1.72	1.67	1.92	2.04
Other	1.14*	1.27	1.52	1.55

*Statistical significance $p < .05$

**Statistical significance $p < .01$

CHAPTER V

This chapter includes a summary of the results, a contextualized understanding of the meaning these results, recommendations for future research, and conclusions including limitations. The discussion section is organized by the three research questions that guided the study.

Summary

Attachment theory articulates the foundational importance of connection between parents and child. This relationship is understood to be a biologically based system that is fundamental to a child's survival (Bowlby, 1969; George & Solomon, 1999). Yet, despite the necessity of this relationship, research indicates that the quality of this attachment relationship is not always equal and that this relationship can be altered and impaired through traumatic experiences (Ainsworth et al., 1978; Lyons-Ruth, Block, & Parsons, 1993). Thus, this research study sought to enhance current understanding of traumatic birth experiences as they relate to the bonding and attachment between parent and child. The study proposed three research questions:

(1) Are there significant differences between low history of trauma and high history of trauma, as measured by the ACE checklist, in postnatal depression, post-birth PTSD, and bonding, in those who experienced birth trauma? (2) Are there significant differences between types of birth trauma in mothers' postnatal depression, post-birth PTSD, and bonding in those who have experienced birth trauma? (3) In those who have experienced traumatic birth experiences, are there significant differences in the number of infant emotions identified between those who report high and low birth-related trauma and bonding?

Researches advertised this study on social media in March 2020 by targeting mothering groups, postpartum support groups and birth trauma related support groups. Three-hundred and nineteen participants responded to an online survey and were asked to respond to measures of adverse childhood experiences, types of birth trauma, postpartum mental illness, parent-infant bonding and infant emotion identification.

The results of the study indicated that those who experience birth trauma report much higher rates of postpartum depression, postpartum post-traumatic stress disorder and parent-infant bonding disorders than rates reported by the general population. In this study, parental adverse childhood experiences did not appear to be related to rates of postpartum depression, postpartum posttraumatic stress disorder or disorders of parent-child bonding. Although parental adverse childhood experiences were not associated with birth trauma outcomes, some physical (forceps), psychological (fear for life, loss of control and dissociation) and relational aspects (physical and verbal abuse, separation from infant, degradation, betrayal) of traumatic birth experiences were associated with poorer outcomes for postpartum depression, post-natal post-traumatic stress disorder and/or bonding disorders. Additionally, some physical and relational aspects (c-sections, congenital abnormalities, admission to NICU) of birth trauma were associated with improved bonding. Additionally, differences in attributions of responsibility (self, infant and healthcare provider) in birth trauma demonstrated differing outcomes for postpartum PTSD and bonding. Finally, parents who identified higher rates of identification of passivity, unusual “other” responses and lower rates of interest in images of infants expressing ambiguous and mixed emotions endorsed more difficulty in parent-child

bonding in this sample. There were no differences for birth-related PTSD in frequency of emotions identified.

Discussion

Research Question One: Adverse Childhood Experiences and Birth Trauma

Statistical analyses of the relationship between adverse childhood experiences and postpartum depression, birth related PTSD and bonding did not yield any statistically significant relationships. These analyses were not significant for adverse childhood experiences measured between three and fewer and four or more adverse childhood experiences. In other words, there did not appear to be statistically significant differences in the group of individuals with high ACEs scores and those with low ACEs scores across measures for PDD, birth related trauma and bonding with children. This is surprising in light of attachment theorists' and researchers' argument that trauma, particularly early trauma that is internalized into patterns of caregiving, may disrupt attachment relationships (George & Solomon, 2008; Lyons-Ruth, Block, & Parsons, 1993). It is possible that since this study had such high rates of postpartum dysregulation, the sample population was too homogenous to identify differences between groups experiencing differing levels of childhood adversity.

The lack of significant findings between ACEs and birth related trauma is surprising as past research has indicated that in general, past traumatic experiences have been correlated with the development of non-birth related PTSD in pregnancy and in postpartum women (Anderson, Melvaer, Videbech, Lamont, & Jorgensen, 2012; Cigoli, Gilli, & Saita, 2006; Seng, Rauch, Resnick, Reed, King, Low, Mcpherson, Muzik, Abelson, & Liberzo, 2010). Additionally, Menke, Swanson, Erickson, Reglan,

Thompson, Bullard, Rosenblum, Lopez, and Muzik (2019) found that adverse childhood experiences were associated with PTSD (though not specific to birth related trauma) in postpartum women. Additionally, past metanalysis indicates a correlation between past trauma (childhood sexual abuse, trauma exposure and interpersonal violence) and severity of childbirth related PTSD (Dekel et al., 2017). As adverse childhood experiences have not been studied, it is possible that although there may be significant effects for specific childhood traumas, overall adversity is not connected with the impact of trauma in birth. Additionally, research should clarify if this finding is specific to this sample or holds with a more diverse sample. Additionally, this finding may represent a lack of power and further research may clarify this finding with alternative statistical analysis.

The finding that there was not a significant relationship between ACEs scores and postpartum depression may facilitate greater understanding of inconsistent research findings in those who have traumatic birth experiences. Past research on the connection between ACEs score and postpartum depression has been inconclusive with some research indicating a connection (McDonnell & Valentino, 2016; Spieker, Oxford, Fleming, & Lohr, 2018) and others finding no significant relationship between trauma during pregnancy and postpartum depression (Menke et al., & 2019). This finding may be of particular importance due to the high rates of PDD endorsed in this sample. Further research may clarify if this finding is specific only to this particular sample of white, highly educated individuals with birth trauma.

Finally, the lack of significance between rates of bonding disorder in those with low and high ACEs is unexpected. As previously articulated, attachment theory has

connected traumatic experiences to compromised attachment systems and thus should be correlated with impaired bonding (Lyons-Ruth, Block, & Parsons, 1993). To the author's knowledge, no research has examined ACEs scores with infant bonding, but other researchers have found a connection between ACEs and maternal attachment styles (Howard, Razuri, Copeland, Call, Nunez, & Cross, 2017; Khan & Renk, 2018; Thomson, & Jaque, 2017). Additionally, childhood abuse is a well-known correlate with disorganized childhood attachment and impaired bonding (Lyons-Ruth & Block, 1996; Muzik, Brockneck, Broderick, Richardson, Rosenblum, & Thelen, 2013). Past research has found that ACEs are correlated with related concepts: infant socioemotional symptoms and parental sensitivity (McDonnell & Valentino, 2016; Spieker, Oxford, Fleming, & Lohr, 2018). Thus, further research may clarify if this finding is related to the characteristics of specificity of this sample, lack of power in statistical analysis, or is truly representative of more general populations experiencing birth trauma.

Research Question Two: Types of birth Trauma and PDD, Birth Trauma and Bonding

Research indicates that specific characteristics of obstetric experiences, including mode of delivery, are connected with postpartum mental health (Cigoli et al., 2006; Dekel, Stuebe, & Dishy, 2017). Although past research has examined risk factors for developing postpartum PTSD after a traumatic birth, there has not been comprehensive research that examines specific physical, relational, and interpersonal aspects of traumatic birth as they relate to postpartum mental illness and bonding, particularly postpartum depression and bonding. Thus, this research sought to examine how a more

comprehensive review of the nuances of traumatic birth experiences may relate to postpartum depression, birth related PTSD, and bonding.

Physical Birth Trauma

The results of this data analysis found that there were no statistically significant differences in those who endorsed experiencing rapid delivery, prolonged labor, vacuum delivery, premature birth, fetal distress, hemorrhage, pre-eclampsia, loss of fertility, inadequate pain relief, manual placenta removal, injury to infant and injury to the birthing individual for postpartum depression, and birth-related PTSD or bonding. There were significant findings in the domains of forceps delivery, emergency cesarean section, and congenital abnormalities. The details of these findings are articulated further in this review.

Postpartum Depression and Physical Birth Trauma. In exploring the relationship between the physical aspects of trauma and postpartum depression in those who have experienced birth related trauma, length of labor, specific modes of delivery, pain, loss of fertility, maternal injuries and hemorrhage, fetal distress and prematurity were not significantly related to postpartum depression.

Length of Labor and PDD. The insignificant relationship between length of labor and PDD was surprising considering past research indicating that length of labor and postpartum depression were related. Smorti, Ponti & Pancetti (2019) found that anxiety and depression in pregnancy were correlated with length of labor and length of labor was correlated with postpartum depression. Additionally, Smorti, et. al. (2019) found that the longer the labor, the higher the severity of PDD. Since no research has examined PDD and length of labor in traumatic birth populations, the current finding

indicating a non-significant relationship between length of labor and PDD may indicate that in the context of traumatic births (and thus a typically negative appraisal of childbirth), the length of labor may not account for additional variation in PDD.

Mode of Delivery and PDD. The finding that mode of delivery is not significantly related to PDD in those exposed to traumatic births builds on previous understanding of the role of mode of delivery in PDD. Past research has primarily examined the mode of delivery (cesarean section, vaginal birth, and emergency cesarean or instrumental deliveries) for postpartum depression (Cirik, Yerebasmaz, Kotan, Salihoglu, Akpinar, Yalvac, Kandemir 2016; Eckerdal, Georgakis, Wikstrom, Hogberg, & Skalkidou, 2017; Sword, Kurtz, Thabane, Watt, Krueger, Farine & Foster, 2011). Thus, nonsignificant findings for mode of delivery in this study are consistent with and reinforce past research findings that risk for PDD is likely related to other factors. Moreover, this finding indicates that this lack of association holds true, even in high risk populations, like those experiencing birth trauma.

Of note, Silverman, Reichenberg, Savitz, Cnattingius, Lichenstein, Hultman, Larsson, and Sandin (2017) found that women without history of depression, who had instrument or cesarean delivery, moderate preterm delivery, and were young had increased risk for postpartum depression. Thus, although there does not appear to be a general connection between mode of delivery and PDD, future research might benefit from examining more nuanced populations where several interacting variables increase risk for PDD in the context of birth trauma.

Pain, Maternal Injuries, Loss of Fertility and PDD. Research on the relationship between labor pain, maternal injuries and loss of fertility in labor and PDD

are rare. However, previous research has found a connection between pain, loss of fertility, and maternal injury in labor and PDD (Senturk, Cakmak, & Ozalp, 2017). Thus, the current lack of a significant relationship between PDD and pain, maternal injuries, and loss of fertility are unexpected. The number of maternal injuries and loss of fertility in labor were small in this study and further researcher with a larger sample size may be warranted. Furthermore, due to the lack of research, further research regarding the roles of pain management, maternal injuries and loss of fertility during traumatic labor, and birth and their connection to maternal mental health is warranted.

Hemorrhage and PDD. Similar to this study, Eckerfal, Kollia, Lofbad, Hellgren, Karlsson, Hogberg, Wikstrom, and Skalkidou (2016) found no association between maternal hemorrhage and PDD. Thus, this finding provides more support for the lack of overt relationship between birth related hemorrhage and PDD. However, research in this area is limited, so continued research may be warranted.

Fetal Distress, Prematurity and PDD. In this study, premature birth and fetal distress during labor were not associated with postpartum depression. This is in contrast to previous findings (Blom, Jansen, Verhulst, Hofman, Raat, Jaddoe, Coolman, Steegers, & Tiemeier, 2010; Tsivos, Calam, Sanders, & Wittkowski, 2015; Vigod, Villega, & Ross, 2010).

As a general summary of these findings, the current study found that the physical aspects of traumatic birth appear to provide little additional risk for increased rates of postpartum depression. Thus, investigation of other factors in relationship to postpartum depression might provide a more useful understanding.

Birth-Related PTSD and Physical Birth Trauma

Physical aspects of PTSD including duration of labor, emergency c-sections, vacuum extraction, prematurity, pain management, loss of fertility, preeclampsia, and manual removal of the placenta were not significantly related to PTSD. While, forceps delivery demonstrated a significantly different rate of birth related PTSD.

Duration of Labor and PTSD. Lack of findings in this study for the rate of delivery (rapid or prolonged) and PTSD are consistent with past research (Cohen, Ansara, Schei, Stuckless & Steward, 2004). The consistency in these findings indicate that length of labor, by itself, is not a productive way of screening for PTSD. These findings indicate that other aspects of birth should likely receive more focus in screening for trauma postpartum.

Emergency C-Section and PTSD. Previous research has been inconclusive on the relationship between emergency cesarean section and elevated risk for PTSD, with some research indicating emergency cesarean was a strong predictor and others finding no relationship (Cigoli et al., 2006). However, other research indicates that there appears to be a connection between emergency c-sections and increased risk of PTSD (Dekel, Stuebe, & Dishy, 2017). This contrasts with the findings of the current study, which did not find a significant relationship between emergency c-section and PTSD. Further research should clarify the interaction between emergency c-section and birth related trauma. Due to inconsistencies in findings, intervening variables should be examined more closely.

Forceps Delivery. For those individuals who endorsed experiencing a forcep delivery during their traumatic birth, there were higher rates of reported PTSD than would be expected. Research on risk factors for PTSD in traumatic births has found

contradictory results, but overall research indicates increased risk of PTSD for instrumental delivery (Cigoli et al., 2006). Ford, Ayers, and Bradley (2010) also found a relationship between the development of post-partum PTSD and forceps delivery. Additionally, general research on mode of delivery, has found increased risk for trauma and anxiety related symptomology for those who have experienced forceps delivery (Rowlands & Redshaw, 2012). These findings point to the potential impact that forceps delivery (separate from other forms of delivery) likely has on birth related trauma and PTSD. Additionally, it points to the importance of further research examining forceps delivery as separate from other forms of instrumental birth, as prior research has collapsed and studied these concepts collectively (Cigoli et al., 2006).

Prematurity and PTSD. Past research has found a connection between premature birth and high rates of PTSD (Anderson, et. al, 2012; Cigoli et al., & 2006). However, past research has also examined premature birth in comparison to term birth during the postpartum period in general and not exclusive to traumatic birth experiences (Olde, et.al., 2006; Ross & McLean, 2006). Thus, the nonsignificant finding between premature birth and postpartum PTSD in this sample may be related to the context of study within a general traumatic birth sample. Further research is needed to investigate this finding.

Pain management and PTSD. Previous research has been inconclusive regarding the role of pain in the development of PTSD following childbirth (Anderson, et al., 2012; Ayers, 2004; Cigoli et al., 2006; Ross, McLean, & 2006; Slade, 2006). Thus, the lack of connection between birth related PTSD and pain management in the current

study further supports the research that indicates that pain management may not have a direct effect on birth related trauma symptomology.

Loss of Fertility, Maternal Injury, Hemorrhage, Placenta Removal and PTSD. In contrast to the findings in this study, previous research indicates that loss of fertility, injury, and manual removal of the placenta are correlated with PTSD (Adewuya, Ologun, & Ibigbami, 2006; Cigoli et al., 2006; De la Cruz, Coulter, O'Rourke, Mbah, & Hamisu, 2016). Further research is needed to understand the nonsignificance of these findings within the context of a birth trauma sample.

Preeclampsia and PTSD. Research on the connection between preeclampsia and childbirth related PTSD has been inconsistent (Furuta, Sandall, & Bick, 2012; Ross & McLean, 2006). Thus, the lack of significant findings in this research study serves to further clarify the relationship. Furuta, Sandall, and Bick (2012) argue that these inconsistent findings are likely due to other mediating factors such as infant outcomes. Further evaluation of mediating factors and intervening variables is important to understand the full variety of pathways that birth trauma can impact individuals.

Overall, this research confirms prior findings which indicate a connection with operative birth and PTSD (Ayers, Bertullies, & Wijma, 2016). Additionally, this research indicates that forceps delivery may be particularly traumatic and should be investigated in more detail in future studies. However, the complexity of this topic highlights that concrete physical experiences within traumatic births likely only tell part of the story in the development of postpartum PTSD.

Bonding and Physical Birth Trauma

To the author's knowledge, no research has provided a comprehensive comparison of various physical aspects of traumatic birth and their relationship to bonding. As a result, this research provides further understanding that many of the physical aspects of traumatic birth do not appear to be connected to parent-infant bonding (at least on their own) including: preeclampsia, loss of fertility, insufficient pain management, maternal injury, hemorrhage, manual placental removal, forceps, vacuum delivery, prematurity, fetal distress, injury to mother, and injury to the infant during birthing. Additionally, this research indicates that emergency cesarean sections and congenital abnormalities are correlated with improved bonding. This may be in line with attachment theory which articulates that attachment is a biologically based system that is designed to ensure safety of the child, thus when activated by a threat (in this case cesarean sections or congenital abnormalities), children and parents seek proximity physically and emotionally (Ainsworth et al., 1978; Bowlby, 1969/1988; George & Solomon, 2008).

Emergency Cesarean Section and Bonding. Between groups of individuals who had endorsed experiencing an unexpected or emergency c-section and those who had not, there was a significant relationship with rates of endorsement for severe bonding disorders. In fact, for those who had experienced an emergency c-section there were lower rates of severe bonding disorders than would be expected for this group.

Previous research on cesarean deliveries and bonding has been inconclusive. Some research has evidenced less interactive behavior and other studies indicate no association (Pederson, Zaslow, Cain, & Anderson, 1981; Kochanevich-Wallace, McCluskey- Fawcett, Meck, & Siomons, 1988; Lobel & Deluca, 2007; Rowe-Murray &

Fisher, 2011). Previous research by Handelzaitz and colleagues (2019) also found that birth related trauma may have a positive impact on bonding. However, most research indicates, and obstetric providers consider, emergency caesarian sections to be a risk factor for bonding (Cigoli et al., 2006).

The current finding of a protective role of emergency c-section in bonding in this sample of individuals who have experienced traumatic births may indicate that in the context of trauma during birth, having a c-section may incline parents to attend more closely to their bond. Current cultural expectations around birth highlight the importance of bonding, immediate skin to skin contact, and breastfeeding (Moore, Anderson, Bergman, & Dowswell, 2012). Thus, in the context of a traumatic event, emergency c-sections may heighten concern about bonding and incline parents to attend more closely to their relationship with their child. This may provide protection from the most severe forms of bonding concerns.

Congenital Abnormalities and Bonding. In the group of individuals who endorsed congenital abnormalities as being part of their traumatic birth experience there were lower rates of suspected bonding disorders than would be expected for this group of individuals. There were also higher than expected rates of suspected bonding disorder in the group of individuals who reported not experiencing congenital abnormalities. For those where congenital abnormalities were part of their traumatic birth, there did not seem to be significantly different rates for risk of birth related trauma. This finding should be taken tentatively due to the small number of individuals endorsing this concern in their birth.

Qualitative research on birth trauma has identified congenital abnormalities as being traumatic, but to the researcher's knowledge no research has investigated the impact of congenital abnormalities on bonding. Ultimately, similar to the finding regarding emergency cesarean sections, within this sample, current cultural pressures about birth and bonding, having a child deemed at risk, may be protective for the parent-child bond (Kramer, 2010; Moore, et.al., 2012).

However, overall, mothers who reported experiencing congenital abnormalities and emergency cesarean sections appeared to have lower rates of bonding disorders in this sample. This research indicates that overall physical correlates of traumatic birth do not appear to significantly impact rates of bonding disorders beyond these two exceptions.

Psychological Domains of Birth Trauma

For psychological aspects of traumatic birth, the results of this data analysis found that there appeared to be no statistically significant differences in bonding, postpartum depression or birth related PTSD for those who endorsed fearing for the life of their infant and fearing for their partner.

In past research, fearing for the life of your infant, has been a significant predictor of PTSD (Adewuya et al., 2006; Cigoli et al., 2006; Czarnocka & Slade, 2000; Leeds & Hargreaves, 2008; Slade, 2006; Soderquist, Wiljma, & Thorbert, 2009; Soet et al., 2003; Tham et.al, 2007). Moreover, fearing for the life of someone you love during an event is consistent with the definition of PTSD (American Psychiatric Association, 2013). However, Harris and Ayers (2011) found that complications for the infant were less likely to be identified as a "hot spot" for PTSD and noted that individuals who experience

an ill infant or risk to the infant may experience more social support and this could be protective. Perhaps similarly, fearing for the life of your infant in this study was not connected with PTSD and this may be connected to more social support received when your infant is at risk during birth.

Past research has not examined the relationship between fearing for the life of your infant during birth trauma and PDD. However, past research on those who have feared for the life of their child during a natural disaster were at higher risk for postpartum depression (Harville, Xiong, Pridjian, Elkind-Hirsch, & Buekens, 2009). This finding may indicate that overwhelming fear for the life of your infant, may not be connected to postpartum depression. Instead, other pathways may better explain postpartum depression, particularly in the context of traumatic birth.

Fear for Own Life. For those individuals who reported fearing for their own life during their traumatic birth experience, there were significantly higher rates of infant focused anxiety than would be expected for this group. Additionally, for those who did not fear for their life, there were lower than expected rates of infant focused anxiety. This finding indicates that fearing for your life during the birth of your child may heighten anxiety and this heightened anxiety may be transferred to your child who was present during this traumatic event. This is in line with attachment theory, a threat to self is likely to activate the attachment system and may activate insecure or compromised attachment systems (George & Solomon, 2008; Lyons-Ruth, Block, & Parsons, 1993).

In past research fearing for one's life, has been correlated with the development of PTSD (Cigoli et al., 2006; Slade, 2006; Soderquist, Wiljma, & Thorbert, 2009; Tham & Christensson, 2007). Moreover, this fearing for your own life is consistent with the

definition of PTSD (American Psychiatric Association, 2013). Thus, the research finding that birth related PTSD was correlated to fear for your life is not surprising.

On the other hand, fearing for one's own life did not demonstrate significantly different rates of postpartum depression. Further investigation is needed to interpret this finding and evaluate if it is related to the sample in which the comparison (who did not fear for their own life) may also be experiencing trauma in other domains, length of time since birthing, or the statistical analysis utilized.

Loss of Control. In the group of individuals who endorsed experiencing a loss of control during their birth, there were higher than expected rates of probable PTSD. Additionally, those who did not experience a subjective loss of control during their birth, endorsed lower than expected rates of probable PTSD. This finding is consistent with previous research that found a correlation between loss of control and elevated rates of PTSD (Cigoli et al., 2006; Lyons, 1998; Menage, 1993). Previous birth trauma research has also endorsed feeling out of control as being a particularly difficult aspect of birth trauma (Beck, 2004).

For those who experienced a loss of control during their birth and those who did not, there were not significantly different rates of postpartum depression or bonding. There is a lack of research exploring the context of this, but conceptually, postpartum depression may have different etiological outcomes separate from loss of control during labor. Additionally, loss of control during birth may be psychologically painful, but be viewed as separate from the bonding experience. From an attachment theory perspective, loss of control may not have a particularly activating effect on internalized models of caregiving.

Dissociation. In evaluating differences between groups of individuals who experienced dissociation and those who did not, there were several significant results: general concerns for parent-child bonding, indications of a bonding disorder, concern for severe bonding disorder, and birth related PTSD.

For those who experienced dissociation during birth there were higher rates of general parent-child bonding dysfunction, scores indicative of a bonding disorder, and scores indicating probable severe bonding disorders than would be expected. Past research has also found that dissociation was correlated with PTSD and with impaired bonding (Seng, Sperlich, Kane, & Low, 2013). Dissociation may be indicative of higher levels of traumatization, which may in turn place individuals at risk for more impaired bonding (Seng, et.al., 2013). Moreover, dissociation has been correlated with insecure attachment styles, which in turn place children at risk for insecure attachment (Lahav & Elkit, 2016; Van Ijzendoorn, 1995). In other words, from the attachment theory perspective, dissociation may be indicative of insecurely attached parents which impairs ability to bond to one's infant.

Additionally, there were higher rates of probable PTSD than would be expected for the group of individuals who experienced dissociation during their birth. Those who did not experience dissociation during their birth reported lower than expected rates of probable birth related PTSD. Past research on the connection between PTSD and dissociation during labor has been inconsistent (Choi & Seng, 2016). Thus, this finding further substantiates a possible relationship between the development of postpartum PTSD and dissociation in labor. Moreover, Cole, Scoville, and Flynn (1996) argued that dissociation was often connected to past traumas that were triggered during childbirth.

Prior general trauma research indicates that recurrent dissociation may be indicative of the severity of pathology and coincide with severe forms of PTSD (Armour, Karstoft, & Richardson, 2014; Haaegen, Van Rijn, Kipscheer, Van Der Aa, & Kleber, 2018). Thus, dissociation and its correlation to PTSD may be indicative of higher traumatic experiences overall for those experiencing traumatic births.

In comparison to other aspects of traumatic experiences, dissociation during labor is connected with the most negative effects for parental mental health and bonding in this study. Dissociation may be particularly deleterious due to the nature of distance it causes in interpersonal relationships and the harmful impact it has for mental health. Connection between dissociation, PTSD and impaired bonding is particularly concerning due to the high rates of dissociation reported in traumatic birth experiences. For example, Engelhard, Van Den Hout, Kindt, Arntz, and Schouten (2003) found that rates were as high as 70% in their sample. Likewise, this research found concerning levels of dissociation: 27.6%. Thus, this finding further substantiates the importance of attending to dissociative experiences in treatment for birth related trauma.

Relational Domains of Birth Trauma

Childbirth often occurs within the context of relationships with healthcare and birthing providers, partners, and within the relationship with the infant (Ayers et al., 2008). At times, these relationships can have unequal power dynamics, perceived loss of choice/voice, and at times are reported to be abusive in nature (Beck, 2004). Yet, there has been little quantitative research examining possible relationships with these experiences and postpartum mental health and bonding. This study examined several relational aspects of traumatic birth and possible relationships with postpartum

depression, birth related trauma symptomology, and bonding. The results of this data analysis found that there were no statistically significant differences in those who reported sexual abuse during the birth of their children, separation from support partner, or feeling their healthcare provider was incompetent in rates of PDD or birth related PTSD symptomology. There were statistically significant relationships found for variables of interest and physical abuse, verbal abuse, separation from infant, NICU admission, feeling degraded during birth, and feeling betrayed during the birth of your child. The details of these relationships will be described below.

Lack of findings regarding sexual abuse during labor should be considered tentatively and would benefit from further research. Incidence of reported sexual abuse during labor in this study was 2.5% and included only eight participants. Thus, it is difficult to determine if results are true findings or are related to a lack of power.

The finding that separation from one's support partner during traumatic birth was not significant is interesting in the context of previous findings indicating that perceived level of support is an important aspect of birth trauma (Cigoliet al., 2006; Czarnocka & Slade, 2000; Lemola et al., 2007; Soet et al., 2003) and may point to the importance of a more nuanced understanding of what perceived support during birth (beyond physical proximity to partner) means. Finally, the lack of significance of belief that an individual received incompetent healthcare during birth and PDD, PTSD, and bonding may point to examining potential effects of interpersonal birth trauma in more detail or in combination with other intervening variables.

Physical Abuse. For those who experienced physical abuse during the birth of their child there were higher than expected rates of probable birth related PTSD and

probable PDD. Additionally, there were higher rates of scores indicating higher risk for rejection and higher risk for bonding disorder for those who had experienced physical abuse during their birth than would be expected. On the other hand, between groups who experienced physical abuse during birth and those who did not, there were no significant differences in infant focused anxiety. These finding builds on previous qualitative research indicating that birthing individuals report experiencing negative emotional sequelae as a result of physical abuse or aggressive care during childbirth (Beck, 2004). Significant relationships between experiencing physical abuse during labor and impairment in birth related PTSD, PDD and bonding domains are particularly concerning. In this study, a significant percentage of individuals reported experiencing physical abuse during their birth (7.2%). This percentage is even more concerning in light of the possible relationships with poorer postpartum functioning. Traumatic birth related research indicates high rates of comorbid PDD and PTSD and this finding may provide some indication of a unique relationship between physical abuse during labor and later risk for PDD. This is of particular note due to awareness of the severity of PDD on postpartum functioning and on relationship functioning with infants and children (Beck et al., 2011).

Additionally, a significant relationship between physical abuse during labor and severe bonding disorders including rejection of the infant indicates that there is a possible relationship between poor treatment during labor and later bonding with the infant. Perhaps most concerning is that there may be some connection to abusive treatment during labor and anger and rejection directed toward an infant later. From an attachment perspective, parents may have difficulty establishing a healthy attachment to their infant

when in the course of bringing that infant into the world, they are abused. Counselors, especially those specializing in perinatal or infant mental health, should be particularly attuned to the potential for abusive or perceived abuse within the birthing experience to be correlated with negative postpartum mental health and bonding.

Verbal Abuse. For those who experienced verbal abuse during the birth of their child, there were higher than expected rates of probable birth related PTSD. Additionally, there were lower than expected rates of birth related PTSD for those who did not report experiencing verbal abuse during the birth of their child. In contrast, between the groups who experienced verbal abuse and those who did not, there were no significant findings for postpartum depression or bonding. For those who reported experiencing verbal abuse during the birth, there were no significant differences in rates of probable bonding concerns or postpartum depression.

Separation from Infant. For those who experienced a separation from their infant during birth, there were lower than expected rates of probable birth related PTSD than expected. Additionally, there were higher than expected rates of birth trauma for those who had not experienced a separation from their infant. For those who did and did not experience a separation from their infant, there were not significant differences in the rate of bonding issues on any domain or postpartum depression. Further research might seek to differentiate between individual reasons for separation from infant to further clarify this finding. Separation from an infant may indicate concerns related to infant health and this may result in more emotional support from healthcare providers, families, and friends due to cultural expectations about illness in infancy.

NICU Admission. For those whose birth trauma involved the admission of their child to the NICU, there were lower than expected rates of scores indicative of general parenting dysfunction, bonding disorder and bonding related rejection. Additionally, there were higher than expected rates of general parenting dysfunction, bonding disorder and bonding related rejection for those who did not experience a NICU admission. For those whose infant was admitted to the NICU, there were no differences in rates of probable postpartum depression, birth related trauma or infant focused anxiety. Similar to the negative relationship found between c-section rates and bonding, this finding connecting NICU admission to improved bonding, may point to the effects of events that may signal cultural concern about bonding (Kramer, 2010; Moore, Anderson, & Bergman, & Dowswell, 2012). In the context of a traumatic event, which has the potential to increase the focus of a parent toward their own internal experience, events that signal possible effects on the relationships such as a NICU admission may serve to refocus onto the infant and bonding with the infant. From the attachment theory perspective, a NICU experience may activate the attachment system as a threat to the infant, thus pulling infant and parent closer together (proximity) and strengthening their bond.

Feeling Degraded during Birth. For those whose felt degraded by healthcare providers during their birth experience, there were higher than expected rates of probable PTSD. Additionally, there were lower than expected rates of probable PTSD for those who did not feel degraded during the birth of their child. In those who felt degraded during the birth of their infant, there were no significant rates of PDD or any areas of assessed bonding. In light of previous research, that has found that low support during

birth is correlated with PTSD (Cigoli et al., 2006; Czarnocka & Slade, 2000; Lemola et al., 2007; Soet et al., 2003), it makes sense that feeling degraded during birth would be correlated with increasing risk for the development of PTSD. Additionally, the quality and perceived intent of healthcare providers during birth might have ramifications for postpartum mental health.

Feeling Betrayed during Birth. General trauma research points to the significance of feeling betrayed by those on whom one is dependent (Freyd, 1997). During a vulnerable event in which an individual is reliant on others (healthcare providers, birth assistants and partners), perceived ruptures in these relationships may be particularly deleterious (Taghizadeh, Irajpour, & Arbabi, 2013). Beck's (2004) phenomenological research indicated that women endorsed betrayal as a significant theme of trauma for them in their birth trauma. However, to date, no one has explored this theme within a quantitative light. This research provides further support that betrayal might have significant ramifications for birth trauma. In this study, for those who felt betrayed by the individuals involved in their birth, rates of probable PTSD were endorsed more often than would be expected. Increased risk for trauma related symptomology in those feeling betrayed during their birth may conceptually be linked with feelings of low support during birth, a factor consistently correlated with traumatic birth experiences (Cigoli et al., 2006).

Of additional concern, for those who felt betrayed during their birth there were also higher than expected rates of risk for general parent-child related dysfunction, bonding disorder, and infant focused anxiety. There were no significant findings for postpartum depression and bonding related rejection. There is a lack of research on the

role that betrayal during birth might have on parent-infant bonding. Betrayal trauma, often described within the parent-child relationship in which the child is dependent on the individual that is causing the trauma, is correlated with impaired parenting (Babcock, Fenerci, & De Prince, 2015). Betrayal trauma may be relevant here as childbirth is a particularly vulnerable experience in which the birthing individual is largely reliant on others for safety and for the safety of their infant. Thus, feeling that the intimacy and the safety of a relationship within this vulnerable context is being betrayed may be particularly harmful to both an individual and to their early developing relationship with their child. From an attachment perspective, betrayal trauma may impair parents' internalized view of relationships and caregiving by making vulnerability and dependency on another feel unsafe. This in turn, may impair parents' internalized view of caregiving in which someone is vulnerable and dependent on them. These findings highlight the importance of attending to individuals' perspectives of their traumatic birth including feelings of betrayal and bonding in clinical work with postpartum individuals.

Responsibility and Attributions of Responsibility. Qualitative trauma birth research is increasingly recognizing that traumatic birth may occur as a form of interpersonal trauma (Beck, 2004; Elmir, Schmied, Jackson, 2010; Reed, Sharman, & English, 2017; Thomson & Downe, 2010). For those who experienced their traumas as interpersonal in nature, i.e. as a result of another, there may be unique outcomes (Kimmel, Gould, Kirmse, Gomez, Ressler, & Nemerogg, 2016). This study builds on initial qualitative research by articulating potential relationships between those experiencing birth trauma as interpersonal in nature and outcomes related to postpartum depression, PTSD, and bonding. In this study, for those who experienced their birth trauma as interpersonal in

nature there were higher than expected rates of probable PTSD and higher than expected bonding disorder. There were no significant findings for other aspects of bonding and postpartum depression. This finding is consistent with one previous study that found interpersonal conflict during labor, particularly anger and feeling ignored or alone or abandoned were correlated with PTSD (Harris & Ayers, 2011).

There has been a lack of research examining attributions of responsibility in interpersonally oriented birth trauma. This study examined how others made sense of, or attributed responsibility for, their traumatic experience in those who endorsed interpersonal birth trauma. In considering the root of the interpersonal trauma, those who felt that they, themselves, were responsible for the traumatic nature of their birth reported: higher than expected rates of infant focused anxiety, bonding disorders, and probable birth related PTSD. Other aspects of bonding and postpartum depression did not have a significant relationship with feeling responsible for the traumatic birth. Self-blame is a widely recognized phenomenon in trauma research (Herman, 1997). In the context of birth, in which a parent may feel responsibility for bringing their child safely into the world, self-blame may be particularly harmful to both one's personal sense of safety and the safety of the child (Allen, 1998; Ayers, Eagle, & Waring, 2007). Additionally, self-blame may erode an individual's sense of confidence and competence in parenting at its initiation. Thus, infant-focused anxiety, difficulty bonding, and higher rates of PTSD may be expected.

Moreover, from an attachment perspective, if a parent feels that they were responsible for a traumatic event involving their child, they may feel that they are the root of danger, the threat, that activates the attachment system (George & Solomon, 2008). If

a parent is both threat and safety, this may provide confusion for the parent as they attempt to navigate attaching and bonding to their child.

In those who felt that their infant was responsible for the trauma around the birth, there were no significant findings for rates of PDD and birth related PTSD. For those who felt that their infant was responsible for their traumatic birth, there were higher than expected rates of bonding related rejection. These findings, however, should be considered tentative due to low numbers of individuals endorsing infant responsibility. The relationship between attributing fault to the infant in the traumatic birth and bonding rejection has not previously been studied but makes conceptual sense. Feeling that your infant is responsible for a traumatic experience may negatively impact your relationship with your infant.

Attachment theory would highlight that a threat should bring parent and child into closer emotional and physical proximity to one another (George & Solomon, 2008). Moreover, George and Solomon (2008) articulate that in order to provide healthy attachment a parent has to shift away from their attachment figures and become the attachment figure to the child. In the case in which the child is viewed as a danger or a threat, the parent may not feel safe to shift away from their attachment figure, thus impairing healthy bonding with the child. This finding should be of particular clinical concern and signal the potential for a relationally oriented intervention to support healthy family functioning in the context of interpersonal birth trauma.

For those who felt that their healthcare provider was responsible for their traumatic birth, there were higher than expected rates of general parent-child dysfunction, probable bonding disorder and probable birth related PTSD. There were no significant

findings for infant-focused anxiety, bonding related rejection, or postpartum depression. Significant findings between attributing responsibility for the trauma to the healthcare provider and negative outcomes for birth related PTSD and bonding disorders indicate potential distress both intra-and inter-psychically. Additionally, disruptions may speak to the particular psychological and interpersonal harm of being both reliant on a healthcare provider for the safety/health of oneself, one's partner and/or one's infant and feeling that this person has violated or put one in danger (Mackintosh, Rance, Carter, & Sandall, 2017). Perhaps, it is not surprising, especially from the attachment theory perspective, that feeling that a traumatic event has occurred during a time of vulnerability in a relationship with another might be connected with difficulty in bonding with an infant present during this experience. The feeling of vulnerability in relationship with another may make it difficult to shift away from parents' own need for protection and attachment to their attachment figures to becoming the attachment figure that provides protection and care (George & Solomon, 2008).

Summary of Interpersonal Birth Trauma and Attributions of Responsibility.

Taken collectively, the relational and attributional findings in this study indicate the importance of attending to relational aspects of birth trauma in clinical assessment and treatment. There appears to be a relationship between viewing the trauma as a result of another and/or having other forms of interpersonal trauma involved in the birth (physical, verbal abuse, betrayal, degradation) with negative outcomes for birth-related PTSD, PDD and bonding. This is consistent with past differences found between interpersonal and non-interpersonal trauma (Janoff-Bulman, 1992).

In Assumptions Theory, Janoff-Bulman (1989) argues that trauma can harm our basic assumptions about ourselves and about the world. These basic assumptions include the idea that the world is benevolent and meaningful and that we are worthy. This is may be particularly concerning (both intra-psychically and relationally) during significant and vulnerable life shifts that occur with becoming a parent and meeting one's child during birth. Moreover, childbirth is often a time when sense of self and views or assumptions about the world are being revised (Curran, McCoyd, Munch, & Wilkenfeld, 2017; Rubin, 1984; Sharmilla, Kumiko, Marcia, & Sarita, 2019), thus, threats to basic assumptions about autonomy, sense of self and meaning in the world may be particularly harmful to oneself and to the developing relationship with one's infant (Taghizadeh, Irajpour, & Arbabi, 2013).

Additionally, the meaning made from traumatic events including particular attributions of responsibility appear to correlate with differing effects on the parent-child bond. For example, feeling that you are responsible for the traumatic event is correlated with higher rates of infant focused anxiety. While, feeling that your infant is responsible may indicate higher rates of anger and rejection towards an infant. These differences in bonding disruption speak to the importance of thorough clinical assessment and attention to potential harm within the parent-child bond during therapeutic work. Additionally, these differences in difficulty bonding may highlight the importance of attachment-based work that supports the parent in feeling confident enough to shift away from their own feelings of needing protection and comfort to providing that security for their child (George & Solomon, 2008).

Analyses: Research Question Three: Infant Emotion Identification

Accuracy of infant emotion identification and sensitivity in responding to those emotions and cues has been connected to parent-child bonding (Feldman, 2007).

Furthermore, attachment theory highlights the importance of reading children's and infants' cues as integral for establishing healthy attachment and as necessary to support security (Feldman, 2007). However, the impact of sensitive responding in families who have experienced traumatic births has not been studied. In this study, participants were asked to identify emotions in images of infants demonstrating ambiguous emotions utilizing the IFEEL Pictures (Emde et al., & 1993). Responses were examined in relationship to birth trauma related PTSD and bonding.

In this study of individuals who have experienced birth trauma, participants' responses to the images were articulated for descriptive purposes. In this study, individuals labeled ambiguous photos with lower average rates of interest, higher rates of passivity and sadness, and higher rates of cautious-shy and distress in the infants' expressions with medium effect sizes. There were also small effect size differences in average reported content, fear and other emotional responses. This sample reported similar average rates of surprise, joy, shame and disgust as the standardized control group. These differences in responding indicate some differences in emotional perception between the current sample of individuals who had experienced birth trauma and the standardized sample of the measure. Further analysis is needed to understand if these differences are due to differences in demographics or are representative of differences for those who experienced traumatic births.

In this sample of individuals who identified as experiencing birth trauma, participants' rates of identification of various emotions were explored in relationship to bonding and birth related trauma. There were no significant findings for any emotion identified and birth-related trauma (low or high). This appears to indicate that birth related PTSD alone is not significantly related to differences in emotional identification of ambiguous infant expression. Of interesting note, past researchers have found that those suffering from PTSD label ambiguous photos with higher rates of fear and lower rates of interest (Knezevic & Jovancevic, 2004). Additionally, Dayton, Huth-Bocks, and Busuito (2016) found that there was a higher incidence of ambiguous facial expressions being rated as negative for those experiencing interpersonal aggression. Thus, further research might examine if birth related trauma and accompanying PTSD symptomology affects overall positive and negative identification in infants' expressions. Additionally, further research utilizing alternative measures may be warranted to gather a complete picture of potential relationships between birth trauma, PTSD, and infant emotion identification.

For infant emotion identification and general parent-child relationship dysfunction (low or high) there were no significant differences in average rates of reported surprise, joy, content, sadness, cautious-shy, distress, shame, fear, or disgust.

There was a significant relationship with those who met criteria for low impairment in bonding and higher average rates of identification of interest. Similarly, there was a lower average rate of identification of interest in those indicating higher impairment in general parenting dysfunction in this sample of birth trauma. In past research, identifying more interest in the IFEEL images has correlated with higher rates

of affectionate touching, higher rates of appropriate responding and higher rates of patience (Osofsky & Culp, 1993). Higher rates of interest identified in the IFEEL pictures has also been correlated with higher sensitive behaviors and less controlling behaviors (Lodge et al., 1993). Additionally, Siddiqui and colleagues (2000) found that those with more positive attachment labeled photos with higher rates of interest.

Additionally, those who met criteria for lower impairment in parent-child relationship issues reported lower rates of average passivity identified in the ambiguous infant emotions, while those who reported higher bonding impairment, indicated higher rates of passivity. Similarly, DeOliveria (2001) found higher rates of passivity in mothers who had experienced unresolved trauma and attachment difficulties.

Finally, in this sample of those who experienced birth trauma, there were lower average rates of “other” emotions identified in the ambiguous infant emotions by those with lower rates of parent-child relationship dysfunction. In past research, higher rates of “other” category variables was correlated with higher risk for abuse (Butterfield, 1993).

Collectively, these findings indicate that in a sample of those who have experienced birth trauma, differences in identification of ambiguous infant emotions particularly in interest, passivity and unusual “other” responses may be indicative of healthy or disordered bonding. Additionally, these differences in emotion identification and their relationship to bonding in this birth trauma sample are consistent with past findings in other populations. Ultimately, these findings may support clinicians in assisting families experiencing birth trauma through building sensitive responding. More specifically, clinicians should pay particular attention to supporting parents in accurately

identify infant interest, passivity and by attending to unusual interpretation of infant emotion in their relationships with their children.

Findings in this study also seem to indicate that in a sample of individuals who have experienced traumatic births, healthier bonding may be related to engagement. In this sample, those with healthier bonds appeared to view infants as more interested, more engaged, and less as passive recipients. This view of infants as being interested and seeking engagement may lead to parents being more willing to connect with their infant. This explanation is consistent with attachment theory, in that infants seeking engagement or seeking proximity to the parent are an important component of the attachment relationship (Ainsworth et al., 1978; George & Solomon, 2008). Thus, if parents do not view the infant as seeking this interaction, they be more likely to miss these cues for connection and proximity for their own child, thereby impairing bonding.

Additionally, higher rates of “other” responses may indicate parents who are more likely to project their own emotional experience onto the child instead of sensitively responding to the child as separate from themselves (Butterfield, 1993). In attachment theory, these parents may have internalized models of caregiving that are impaired and thus deviate from more normative views of infants’ cues and caregiving (Albow, Marks, Feldman, & Huffman, 2013). Thus, counselors may provide particular support and psychoeducation around infant emotions, the importance of engagement in healthy parent-child relationships and support families in processing their own emotional experience separately from the child.

Recommendations for Clinicians

Related to the sample (women who had experienced birth trauma) it is interesting to note that when compared to the general population there was a very high rate of risk for postpartum depression at 75.5%. In the general population following childbirth it is estimated that 10-20% of women experience postpartum depression (Gavin et al., 2005; O'Hara & Wisner, 2014). Thus, this sample is reporting a much greater rate of depressive symptomology than would typically be expected. This may represent a clinical concern for those experiencing birth trauma.

Additionally, the sample reported a rate of birth-related PTSD at 26%. This rate is slightly higher, but generally comparable with, previously reported rates of at-risk populations such as those who experience a premature birth (Englehard, Van Den Hout, & Schouten, 2006). This finding reinforces concerns about rates of postpartum mental illness in populations endorsing traumatic birth experiences and the need for counselors to assess and monitor postpartum individuals.

As in past research, the participants in this sample reported significant comorbidity between PTSD and PDD: 23.3% of the sample reported comorbidity. More specifically, of those that endorsed probable PTSD, 85.5% also reported PDD. In general postpartum populations, comorbidity is also high, 48.4% of women with PTSD report comorbid Major Depressive Disorder (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Higher comorbid rates for those with PTSD in this sample than the general population, may be expected considering higher reported rates of postpartum depression overall in the sample. Nonetheless, high comorbidity speaks to possible severity of postpartum mental illness in the birth trauma population and reinforces the importance of comprehensive clinical assessments for counselors.

Participants in this study also reported higher than expected ACEs scores. More specifically, 26% of the sample reported a high ACEs score (four or above). This is in contrast to the 15% indicated in past ACEs research (Center for Disease Control and Prevention, 2016; Iniguez & Stankowski, 2016). Additionally, this study found that only 23% of respondents reported having one ACE. In comparison, 62-65% of respondents reported one ACE in past research (Center for Disease Control and Prevention, 2016; Iniguez & Stankowski, 2016). The participants in this study reported higher rates of verbal abuse in childhood (39.1%) than previously indicated in population studies 4.8-13.1% (Taillieu, Brownridge, & Sareen, 2016; Center for Disease Control and Prevention, 2016). However, participants reported lower rates of childhood sexual abuse (19.1% compared to 24.7%) and witnessing domestic violence (10.7% compared to 13.7%) than in previous research (Center for Disease Control and Prevention, 2016). Rates of childhood physical abuse were equivalent (Center for Disease Control and Prevention, 2016). Overall, this sample reports higher rates of adverse childhood experience and verbal abuse, but lower incidence of other forms of specific childhood trauma.

Of additional psychosocial concern, this sample reported high rates of bonding disorders (41%), severe anger and bonding rejection (12.9%) and infant focused anxiety (4.4%). General population rates for bonding disorders are estimated from 3% to 6% (Garcia-Esteve et al., 2016). The rates of bonding disorders in this study may be consistent with rates of bonding disorders reported in those with postpartum depression at 23%-70% (Garcia-Esteve et al., 2016; Siu et al., 2010). These high reported rates of bonding disorder in the study are particularly concerning due to the significant effects

that impaired bonding has on children including later healthy parenting practices, children's attachment styles as adults and children's biopsychosocial outcomes (Lyons-Ruth & Block, 1996; Ranson & Urichuk, 2008; Sbarra & Hazen, 2008; Senese, Miranda, De Falco, Venuti & Bornstein, 2017; Wright, Hill, Sharp, & Pickles, 2018). Ultimately, the high rates of postpartum depression, birth related PTSD and high rates of comorbidity in this sample may reinforce previous findings about the sequelae of birth related traumatic experiences and speak to the importance of psychological intervention in those who have experienced traumatic birth to address these sequelae.

In summary, exploration of adverse childhood experiences, postpartum mental illness, bonding, infant emotion identification and types of birth trauma has important implications for counselors, including:

- Descriptive analysis of this sample reinforces previous research that indicates rates of PTSD, PDD and bonding disorders are high and often comorbid in birth trauma populations.
 - High rates of mental health and relational disorder should highlight the importance of counselors providing thorough biopsychosocial assessment for individuals experiencing traumatic childbirth.
 - Due to high comorbidity, clinicians should be aware that they may need to provide interventions for not only trauma, but also depression in working with those who have experienced birth trauma.
- Psychological, physiological, and relational aspects of birth trauma should be explored in clinical assessment.

- Experiences during labor and delivery may have unique ramifications for postpartum health and bonding.
- During assessment, dissociation during labor should warrant additional clinical attention including assessment for possible impairment in trauma symptomology and bonding with the infant.
- Feelings of loss of control during labor should be evaluated in the context of post-traumatic symptomology.
- Some aspects of traumatic birth may be protective for bonding.
- Forceps delivery may have a unique relationship with trauma symptomology. This may be particularly important in the context of the lack of medical necessity.
- Interpersonal aspects of birth trauma may be particularly harmful.
 - Reports of physical abuse during labor should warrant assessment for trauma related symptomology and concerns for bonding. Bonding assessment should explore anger toward and rejection of infants.
 - Endorsement of verbal abuse and feeling degraded during labor and delivery should warrant additional exploration due to increased risk of trauma symptomology.
 - Clinician should consider that birth trauma may be interpersonal in nature and clinicians may have to attend to addressing trauma related shifts in views of self, views of others and views of the world to fully address traumatic birth experiences.

- Interpersonal betrayal during labor and delivery should be addressed in therapeutic work and ramifications for bonding, postpartum and post traumatic stress disorder should be evaluated.
- Attributions of responsibility in traumatic birth experiences may represent unique risk for postpartum individuals and their families.
 - Self-blame may represent particular concern for trauma symptomology, difficulty bonding, impaired confidence and anxiety in relationship with infants.
 - Trauma treatment should address and support clients in resolving any issues of self-blame to improve overall emotional and social functioning.
 - Endorsing infant responsibility should signal exploration of parent-child relationships and may warrant attachment based therapeutic work.
 - Healthcare responsibility may warrant evaluation of bonding related function and warrant particular attention to trauma related beliefs in trauma experience.
- In those who have experienced birth trauma, attention to supporting sensitive responding to infant's emotions and cues may be beneficial for bonding.
 - Particular attention to supporting enhancing recognition of infant's interest and engagement may be warranted.
 - Parents may benefit from psychoeducation about the role their own emotional processes may impact their interpretation of infant's emotions and cues.

- Clinicians may consider the use of interpersonal, attachment, and family systems work to support clients in healing from traumatic birth experiences.

Conclusions

This section will include general conclusions, limitations, and areas for future research. This study provided further understanding of relationships between ACES, postpartum PTSD, PDD, types of birth trauma and emotion identification in birth trauma. Some tentative conclusions from this study are that those experiencing birth trauma report significantly higher rates of postpartum depression, postpartum posttraumatic stress disorder, and bonding disorders with their infants than the general population. Moreover, birth trauma may be experienced as interpersonal trauma for some individuals, and this may indicate elevated concerns for postpartum mental illness and issues bonding with their infant. Clinicians should pay particular attention to reports of dissociation, feeling betrayed and degraded, difficult interactions with healthcare providers including abuse during labor and attribution of responsibility for self or for infants for the trauma of birth. Ultimately, clinical treatment should fully assess and treat for depression, trauma and interpersonal concerns in those recovering from traumatic births. Of note, supporting parents in identifying their infants' emotions may be supportive in enhancing the attachment between parent-child in those experiencing traumatic births.

Awareness that birth may have traumatic implications for some is a relatively new focus of research (Greenfield, Jomeen, & Clover, 2016). Currently, research in birth trauma has focused primarily on prevalence, risk factors and characteristic. Only recently

has birth trauma research begun to investigate the implications that trauma may have within the family system (Montagne, 2018).

This dissertation sought to expand the discussion about the role of birth trauma in parent-infant bonding with exploration of the unique roles that adverse childhood experiences, types of birth trauma and infant emotion identification may have in postpartum functioning and bonding.

Limitations and Areas of Future Study

As with most research, conclusions drawn from the findings should only be understood within the context of other research and within the confines of the characteristics of the sample.

The participants were predominately American, Caucasian, upper income, and highly educated (predominately having earned PhDs). As expected in this type of study, participants were generally of childbearing age. Due to high income levels and high educational achievement, this sample is not representative of the general population. It should be noted that this may limit the generalizability of the results. This is of particular importance as those who have lower educational achievement or are racial/ethnic minorities are at higher risk for maternal, infant mortality and birth trauma (Kothari, Paul, Dormitorio, Ospina, James, Lenz, Baker, Curtis, & Whiley, 2016; Modarres, et. al., 2012)

Additionally, this study included a fairly homogenous sample with high rates of PDD, birth related PTSD, comorbid PDD and PTSD and bonding disorder. The homogenous sample, particularly in relationship to high degrees of disorder, made comparisons between groups uneven.

Future research should gather information regarding differences in maternal/paternal impacts and number of children in understanding the relationships between postpartum PTSD, PDD, types of birth trauma, and emotion identification in infants. In collecting data, this research did not specify the gender or the role of the individual experiencing trauma during the birth of their child. Future research may clarify the role these variables and possible interactions with PTSD, bonding, PDD, types of birth trauma and emotion identification may play. Furthermore, additional information including years since the traumatic birth, and number of and experience with children should be further explored.

Ultimately, this research indicates that further research in the area of birth trauma and bonding is of particular importance and that understanding the impact of birth trauma is complex and requires attention to intervening variables and differing impacts between various populations. Of additional note, perinatal and infant mental health clinicians should recognize that birth trauma occurs within the context of the family, may have interpersonal dimensions, and should be viewed in light of the attachment relationships within the family.

References

- Ablow, J. C., Marks, A. K., Shirley Feldman, S., & Huffman, L. C. (2013). Associations between First-time expectant women's representations of attachment and their physiological reactivity to infant cry. *Child Development, 84* (4), 1373–1391.
- Adewuya, A.O., Ologun, Y.A., & Ibigbami, O.S. (2006). Post-traumatic stress disorder after childbirth in Nigerian women: Prevalence and risk factors. *An International Journal of Obstetrics & Gynecology, 113* (3), 284-8.

- Afuape, T. (2011). *Power, Resistance and Liberation in Therapy with Survivors of Trauma*. New York, NY: Routledge.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. (1971). Individual differences in Strange Situation behavior of one-year-olds. In H. R. Schaffer (Ed.), *The origins of human social relations* (pp. 17-57). London: Academic Press.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. F. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. In M. P. M. Richards (Ed.), *The integration of a child into a social world* (p. 99–135). London: Cambridge University Press University Press.
- Ainsworth M.S., Blehar M.C., Waters E., & Wall S. (1978). Patterns of attachment: A psychological study of the strange situation. Oxford, England: Lawrence Erlbaum.
- Ainsworth, M. S., & Bowlby, J. (1991). An ethological approach to personality development. *American Psychologist*, 46(4), 333–341
- Alder, J., Stadlmayr, W., Trschudin, S., & Bitzer, J. (2006) Post-traumatic symptoms after childbirth: What should we offer? *Journal of Psychosomatic Obstetrics & Gynecology*, 27, 107-112.
- Alhusen J. L. (2008). A literature update on maternal-fetal attachment. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 37(3), 315–328.
- Allen, S. (1998). A qualitative analysis of the process, mediating variables and impact of traumatic childbirth. *Journal of reproductive and infant psychology*, 16(2-3), 107-

131.

- Alvarez-Segura, M., Garcia-Esteve, L., Torres, A., Plaza, A., Imaz, M. L., Hermida-Barros, L., & Burtchen, N. (2014). Are women with a history of abuse more vulnerable to perinatal depressive symptoms? A systematic review. *Archives of Women's Mental Health, 17*(5), 343-357.
- Ambrose, J. A. (1963). The development of the smiling response in infancy. In B. Foss (Ed.), *Determinants of infant behavior*. New York: Wiley.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).
- Anda, R.F. Croft, J.B, Nordenberg, D. Giles, W.H., Williamson D.F. & Giovino, G.A. (1999). Adverse childhood experiences and smoking during adolescence and adulthood. *The Journal of the American Medical Association, 17*, 1652-8.
- Anderson, C., & McCarley, M. (2013). Psychological birth trauma in adolescents experiencing an early birth. *MCN: The American Journal of Maternal/Child Nursing, 38* (3), 170-176.
- Andersen, L.B., Melvaer, L.B., Videbech, P.; Lamont, R.F., & Joergensen, J.S. (2012). Risk factors for developing post-traumatic stress disorder following childbirth: a systematic review. *Acta obstetricia et gynecologica Scandinavica. 91*(11), 1261–72.
- Appelbaum, M. I., Butterfield, P. M., & Culp, R. E. (1993). Operating characteristics and psychometric properties of the IFEEL pictures. In R. N. Emde, J. D. Osofsky, & P. M. Butterfield (Eds.), *Clinical infant reports series of the ZERO TO*

THREE/National Center for Clinical Infant Programs. The IFEEL pictures: A new instrument for interpreting emotions (p. 97–130). International Universities Press, Inc. *American Psychologist*, 46 (4). Pp 333-341

- Armour, C., Karstoft, K. I., & Richardson, J. D. (2014). The co-occurrence of PTSD and dissociation: Differentiating severe PTSD from dissociative-PTSD. *Social Psychiatry and Psychiatric Epidemiology*, 49(8), 1297-1306.
- Ayers, S. (2004). Delivery as a traumatic event: prevalence, risk factors and treatment for post-traumatic stress disorder. *Clinical Obstet Gynecol.* 47(3). 552-67.
- Ayers, S., Bond, R., & Wijma, K. (2016). The aetiology of post-traumatic stress following childbirth: a meta-analysis and theoretical framework. *Psychological Medicine*, 46(6), 1121-34.
- Ayers, S. & Claypool, J. & Eagle, A. (2006). What happens after a difficult birth? Postnatal debriefing services. *British Journal of Midwifery*. 14, 157-161
- Ayers, S., Eagle, A., & Waring, H. (2006). The effects of childbirth-related post-traumatic stress disorder on women and their relationships: A qualitative study. *Psychology Health and Medicine*, 11 (4), 389-398.
- Ayers, S. Joseph, S., McKenzie-McHarg, K., Slade, P., & Wijma, K. (2008). Post-traumatic stress disorder following childbirth: current issues and recommendations for future research. *Journal of Psychosomatic Obstetrics and Gynecology*, 29(4), 240-50.
- Ayers, S, McKenzie-McHarg, K. & Eagle. A. (2007). Cognitive behavior therapy for postnatal post traumatic stress disorder: case studies. *Journal of Psychosomatic*

Obstetrics and Gynecology, 28(3), 177-84.

- Ayers, S., McKenzie-McHarg, K. & Slade, P. (2015). Post-traumatic stress disorder after birth. *Journal of Reproductive and Infant Psychology*, 33(3), 215-218
- Ayers, S. & Pickering, A.(2005). Women's expectations and experience of birth. *Psychology and Health*, 20, 79-92.
- Ayers, S. & Wright, D. & Wells, N. (2007). Post-traumatic stress in couples after birth: Association with the couple's relationship and parent-baby bond. *Journal of Reproductive and Infant Psychology*. 25, 40-50.
- Babcock Fenerci, R. L., Chu, A. T., & DePrince, A. P. (2016). Intergenerational transmission of trauma-related distress: Maternal betrayal trauma, parenting attitudes, and behaviors. *Journal of Aggression, Maltreatment & Trauma*, 25(4), 382-399.
- Bader, L. R., & Fouts, H. N. (2019). Parents' perceptions about infant emotions: A narrative cross-disciplinary systematic literature review. *Developmental Review*, 51, 1-30
- Bailham, D. & Joseph, S. (2003). Post traumatic stress following childbirth: A review of the emerging literature and directions for research and practice. *Psychology, Health and Medicine*, 8(2), 159–167.
- Baskett, T.F., & Sternadel, J. (1998). Maternal intensive care and near-miss mortality in obstetric. *British Journal of Obstetrics Gynecology*, 105 (9), 981-984
- Beck, C. (2004). Birth trauma—In the eye of the beholder. *Nursing Research*. 53(1), 28–35.

- Beck, C. (2006). The anniversary of birth trauma: Failure to rescue. *Nursing Research*, 55(6), 381
- Beck, C. (2008) Impact of birth trauma on breast-feeding: a tale of two pathways. *Nursing Research*, 57(4), 228-36.
- Beck, C.T. (2009). Birth Trauma and Its Sequelae, *Journal of Trauma & Dissociation*, 10 (2), 189-203.
- Beck, C. T. (2017). The anniversary of birth trauma: a metaphor analysis. *The Journal of Perinatal Education*, 26(4), 219.
- Beck C.T. & Watson S. (2010). Subsequent childbirth after a previous traumatic birth. *Nursing Research*. 59 (4), 241–9.
- Bell, S. M., & Ainsworth, M. D. S. (1972). Infant crying and maternal responsiveness. *Child Development*, 43, 1171-1190.
- Bergman, K., Sarkar, P., Glover, V., & O’connor, T. G. (2008). Quality of child–parent attachment moderates the impact of antenatal stress on child fearfulness. *Journal of Child Psychology and Psychiatry*, 49(10), 1089-1098.
- Bergman, K., Sarkar, P., Glover, V., & O’Connor, T. G. (2010). Maternal prenatal cortisol and infant cognitive development: Moderation by infant–mother attachment. *Biological psychiatry*, 67(11), 1026-1032.
- Bernstein, R. E., Tenedios, C. M., Laurent, H. K., Measelle, J. R., & Ablow, J. C. (2014). The eye of the begetter: Predicting infant attachment disorganization from women's prenatal interpretations of infant facial expressions. *Infant Mental Health Journal*, 35(3), 233–244.
- Bernstein R.E., Timmons A.C., Lieberman A.F.(2019).Interpersonal violence, maternal

- perception of infant emotion, and child-parent psychotherapy. *J. Fam. Violence*. 34(4), 309-320.
- Bienfait, M., Maury, M., Haquet, A., Faillie, J. L., Franc, N., Combes, C & Cambonie, G. (2011). Pertinence of the self-report mother-to-infant bonding scale in the neonatal unit of a maternity ward. *Early Human Development*, 87(4), 281-287.
- Bibring, G. L., Dwyer, T. F., Huntington, D. S., & Valenstein, A. F. (1961). A study of the psychological processes in pregnancy and of the earliest mother-child relationship. *The Psychoanalytic Study of the Child*, 16, 9–72.
- Blom, E. A., Jansen, P. W., Verhulst, F. C., Hofman, A., Raat, H., Jaddoe, V. W. V., & Tiemeier, H. (2010). Perinatal complications increase the risk of postpartum depression. The Generation R Study. *BJOG: An International Journal of Obstetrics & Gynaecology*, 117(11), 1390-1398.
- Bohlin, G., Eninger, L., Brocki, K. C., & Thorell, L. B. (2012). Disorganized attachment and inhibitory capacity: Predicting externalizing problem behaviors. *Journal of Abnormal Child Psychology*, 40(3), 449-58.
- Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Souza JP., (2015).The mistreatment of women during childbirth in health facilities globally: a mixed-methods systematic review. *PLoS Med*. 12(6) doi: 10.1371/journal.pmed.1001847
- Bomyea, J., & Allard, C. B. (2017). Trauma-related disgust in veterans with interpersonal trauma. *Journal of Traumatic Stress*, 30(2), 149-156.
- Bornstein, M. H., Putnick, D. L., Rigo, P., Esposito, G., Swain, J. E., Suwalsky, J. T., & De Pisapia, N. (2017). Neurobiology of culturally common maternal responses to

- infant cry. *Proceedings of the National Academy of Sciences*, 114(45), E9465-E9473.
- Bosquet, E.M., Kitts, R.L., Blood, E., Bizarro, A. Hofmeister, M., & Wright, R.J. (2011). Maternal posttraumatic stress symptoms and infant emotion reactivity and emotion regulation, *34*(4), 487-503.
- Bowlby, J. (1958). A Note On Mother-Child Separation as a mental health hazard. *Psychology and Psychotherapy*, 31 (3-4). p. 247-248.
- Bowlby, J. (1969). *Attachment. Attachment and loss: Vol. 1. Loss*. New York: Basic Books.
- Bowlby, J. (1973). Attachment and loss: Volume II: Separation, anxiety and anger. In *Attachment and Loss: Volume II: Separation, Anxiety and Anger*. London: The Hogarth Press and the Institute of Psycho-Analysis.
- Bowlby, J. (1982). Attachment and loss: retrospect and prospect. *American Journal of Orthopsychiatry*, 52(4), 664.
- Bowlby, J. (1988). A secure base: Parent-child attachment and healthy human development. Basic Books.
- Bowlby, J. (1988). Developmental psychiatry comes of age. *The American Journal of Psychiatry*, 145(1), 1-10.
- Brand, S.R., Brennan, P.A., Newport, J., Smith, A.K., Weiss, T. & Stowe, Z.N. (2010). The impact of maternal childhood abuse on maternal and infant HPA axis function in the postpartum period. *Psychoneuroendocrinology*. 35(5), 686-693.
- Brockington, I. (2004). Postpartum psychiatric disorders. *Lancet*,. 363, 303-10.
- Brockington, I., Fraser, C., & Wilson, D. (2006). The postpartum bonding questionnaire:

- a validation. *Archives of women's mental health*, 9(5), 233-242.
- Brockington, I., Oates, J., George, S. (2001) A screening questionnaire for mother-infant bonding disorders. *Archives of Women's Mental Health* 3, 133–140.
- Bretherton, I. (1992) The Origins of Attachment Theory: John Bowlby and Mary Ainsworth, *Developmental Psychology*, 28, 759-775.
- Bretherton, I. (2013). Revisiting Mary Ainsworth's conceptualization and assessments of maternal sensitivity-insensitivity. *Attachment & Human Development*, 15(5-6), 460-484.
- Bretherton, I., & Munholland, K. A. (2008). Internal working models in attachment relationships: Elaborating a central construct in attachment theory. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical Applications*, (pp.102–127). The Guildford Press.
- Bridson, E., Isaac, C., & Slade, P. (2015). The association between involuntary memory and emotional adjustment after childbirth. *British Journal of Health Psychology*, 20(4), 889-903.
- Brunet, A., St-Hilaire, A., Jehel, L., & King, S. (2003). Validation of a French version of the impact of event scale-revised. *The Canadian Journal of Psychiatry*, 48(1), 56-61.
- Bryanton, J., Gagnon, A. J., Johnston, C., & Hatem, M. (2008). Predictors of women's perceptions of the childbirth experience. *Journal of Obstetric, Gynecologic, Neonatal Nursing*, 37(1), 24-34
- Budden A. (2009). The role of shame in posttraumatic stress disorder: a proposal for a socio-emotional model for DSM-V. *Social science & medicine* (1982), 69(7),

1032–1039. <https://doi.org/10.1016/j.socscimed.2009.07.032>

Busonera, A., Cataudella, S., Lampis, J., Tommasi, M., & Zavattini, G. C. (2017).

Psychometric properties of the Postpartum Bonding Questionnaire and correlates of mother–infant bonding impairment in Italian new mothers. *Midwifery*, *55*, 15–22.

Butterfield, P. M. (1993). *Responses to IFEEL pictures in mothers at risk for child maltreatment*. In R. N. Emde, J. D. Osofsky, & P. M. Butterfield (Eds.), *Clinical infant reports series of the ZERO TO THREE/National Center for Clinical Infant Programs. The IFEEL pictures: A new instrument for interpreting emotions* (p. 161–173). International Universities Press, Inc.

Calkins, S. D. (1994). Origins and outcomes of individual differences in emotion regulation. *Monographs of the society for research in child development*, *53*–72.

Campbell, S.B., Brownell, C.A., Hugerford, A., Spieker, S.J. (2004) The Course of maternal depressive symptoms and maternal sensitivity as predictors of attachment security at 36 months. *Development and Psychopathology*, *16*(2), 231–252

Campos, J. J., Thein, S., & Owen, D. (2003). *A Darwinian Legacy to Understanding Human Infancy: Emotional Expressions as Behavior Regulators*. In P. Ekman, J. J. Campos, R. J. Davidson, & F. B. M. de Waal (Eds.), *Annals of the New York Academy of Sciences: Vol. 1000. Emotions inside out: 130 years after Darwin's: The expression of the emotions in man and animals* (p. 110–134). New York Academy of Sciences.

- Camras, L. A., & Shutter, J. M. (2010). Emotional facial expressions in infancy. *Emotion Review*, 2(2), 120-129.
- Carroll, W. (2018). Predicting Severe Maternal Morbidity and Mortality - An Informatics Opportunity. *Online Journal of Nursing Informatics (OJNI)*, 22(3).
- Ceballo, R., & McLoyd, V.C. (2002). Social support and parenting in poor, dangerous neighborhoods. *Child Development*, 73(4), 1310-24.
- Centers for Disease Control and Prevention. (2010). Childbirth. Retrieved from <http://www.cdc.gov/childbirth/>
- Center on the Developing Child at Harvard University (2010). *The foundations of lifelong health are built in early childhood*. <http://www.developingchild.harvard.edu>
- Centers for Disease Control and Prevention (2016). National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/pressroom/nchs_press_releases/2020/202001_MMR.htm
- Centers for Disease Control and Prevention, Kaiser Permanente. (2016) The ACE Study Survey Data [Unpublished Data]. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Center for Disease Control and Prevention (2020). Severe Maternal Morbidity in the United States. Retrieved from <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html>
- Check, J., & Schutt, R. (2012). *Research methods in education*. 55 City Road, London: SAGE Publications, Inc. doi: 10.4135/9781544307725
- Choi, K. R., & Seng, J. S. (2016). Predisposing and Precipitating Factors for Dissociation

During Labor in a Cohort Study of Posttraumatic Stress Disorder and Childbearing Outcomes. *Journal of midwifery & women's health*, 61(1), 68–76.

Cicchetti, D., & Schneider-Rosen, K. (1984). Theoretical and empirical considerations in the investigation of the relationship between affect and cognition in atypical populations of infants: Contributions to the formulation of an integrative theory of development. In *Emotions, cognition, and behavior* (pp. 366-406). Cambridge University Press.

Cigoli, V., Gilli, G., & Saita, E. (2006). Relational factors in psychopathological responses to childbirth. *Journal of Psychosomatic Obstetrics & Gynecology*, 27(2), 91-97.

Cirik, D. A., Yerebasmaz, N., Kotan, V. O., Salihoglu, K. N., Akpınar, F., Yalvac, S., & Kandemir, O. (2016). The impact of prenatal psychologic and obstetric parameters on postpartum depression in late-term pregnancies: A preliminary study. *Taiwanese Journal of Obstetrics and Gynecology*, 55(3), 374-378.

Cohen, M. M., Ansara, D., Schei, B., Stuckless, N., & Stewart, D. E. (2004). Posttraumatic stress disorder after pregnancy, labor, and delivery. *Journal of Women's Health*, 13(3), 315-324.

Cole, B. V., Scoville, M., & Flynn, L. T. (1996). Psychiatric advance practice nurses collaborate with certified nurse midwives in providing health care for pregnant women with histories of abuse. *Archives of Psychiatric Nursing*, 10, 229-234.

Cook, N., Ayers, S. & Antje, H. (2018). Maternal posttraumatic stress disorder during the perinatal period and child outcomes: A systemic review. *Journal of Affective*

Disorders. 225, 18-31.

Courtois, C. A., & Riley, C. C. (1992). Pregnancy and childbirth as triggers for abuse memories: Implications for care. *Birth*, 19(4), 222-223.

Cowan, C., Cowan, P., Heming, G., Garrett, E., Coysh, W., Curtis-boles, H., & Boles, A. (1986). Transitions to Parenthood His, Hers, and Theirs. *Journal of Family Issues*, 6, 451-81.

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry*, 150(6), 782-786.

Coyl, D. D., Roggman, L. A., & Newland, L. A. (2002). Stress, maternal depression, and negative mother–infant interactions in relation to infant attachment. *Infant Mental Health Journal: Official Publication of The World Association for Infant Mental Health*, 23(1-2), 145-163.

Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the impact of event scale—revised. *Behavior Research and Therapy*, 41(12), 1489-1496.

Creedy, D.K., Schochet, I.M. and Horsfall, J. (2000), Childbirth and the Development of Acute Trauma Symptoms: Incidence and Contributing Factors. *Birth*, 27, 104-111.

Crockenberg, S. C., & Leerkes, E. M. (2004). Infant and maternal behaviors regulate infant reactivity to novelty at 6 months. *Developmental Psychology*, 40(6), 1123.

Curran, L., McCoyd, J., Munch, S., & Wilkenfeld, B. (2017). Practicing maternal virtues prematurely: The phenomenology of maternal identity in medically high-risk pregnancy. *Health Care for Women International*, 38(8), 813-832.

- Czarnocka, J., & Slade, P. (2000). Prevalence and predictors of post-traumatic stress symptoms following childbirth. *British Journal of Clinical Psychology*, 39(1), 35-51
- Davies, J., Slade, P., Wright, I., Stewart, P. (2008). Posttraumatic stress symptoms following childbirth and mothers' perceptions of their infants. *Infant Mental Health Journal*. 29 (6), 537-54.
- D'Gregorio, R. (2010). Obstetric violence: a new legal term introduced in Venezuela. *International Journal of Gynaecological Obstetrics*, 111(3), 201-2.
- Dayton, C. J., Huth-Bocks, A. C., & Busuito, A. (2016). The influence of interpersonal aggression on maternal perceptions of infant emotions: Associations with early parenting quality. *Emotion*, 16(4), 436.
- De la Cruz, C. Z., Coulter, M. L., O'Rourke, K., Amina Alio, P., Daley, E. M., & Mahan, C. S. (2013). Women's experiences, emotional responses, and perceptions of care after emergency peripartum hysterectomy: a qualitative survey of women from 6 months to 3 years postpartum. *Birth*, 40(4), 256-263.
- Dekel, S., Thiel, F., Dishy, G. & Ashenfarb, A. (2018). Is childbirth-induced PTSD associated with low maternal attachment?. *Archives of Women's Mental Health*. 22.
- Dekel, S., Stuebe, C., & Dishy, G. (2017). Childbirth induced posttraumatic stress syndrome: A systematic review of prevalence and risk factors. *Frontiers in Psychology*, 8, Article 560.
- DeOliveira, C. A. (2001). *Understanding the function of emotions within the framework*

of attachment organization.

DeOliveira, C. A., Moran, G., & Pederson, D. R. (2005). Understanding the link between maternal adult attachment classifications and thoughts and feelings about emotions. *Attachment & human development, 7*(2), 153-170.

Dickerson, S. (2008). Emotional and psychological responses to social-evaluative threat. *The Journal of Child Psychology and Psychiatry, 2*(3), 1362-1378.

Dikmen-Yildiz, P., Ayers, S., & Phillips, L. (2017). Factors associated with post-traumatic stress symptoms (PTSS) 4-6 weeks and 6 months after birth: A longitudinal population-based study. *Journal of Affective Disorders, 221*, 238-245.

Dong, M., Anda, R. F., Felitti, V. J., Dube, S. R., Williamson, D. F., Thompson, T. J., Loo, C.M.

& Giles, W. H. (2004). The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child abuse & neglect, 28*(7), 771-784.

Douglas, S. J., Michaels, M. W. (2004). *The mommy myth. The idealization of motherhood and how it has undermined women.* New York, NY: Free Press.

Dube, S.R., Anda, R.F., Felitti, V.J. Chapman, D.P. Williamson, D.F., & Giles, W.H. (2001). Childhood abuse, household dysfunction and the risk of attempted suicide through the lifespan: findings from the adverse childhood experiences study. *Journal of American Medical Association, 286* (24), 3089-3096.

Dube, S. R., Williamson, D. F., Thompson, T., Felitti, V. J., & Anda, R. F. (2004). Assessing the reliability of retrospective reports of adverse childhood experiences among adult HMO members attending a primary care clinic. *Child Abuse &*

Neglect, 28(7), 729-37

- Easterbrooks, M. A., Bureau, J. F., & Lyons-Ruth, K. (2012). Developmental correlates and predictors of emotional availability in mother–child interaction: A longitudinal study from infancy to middle childhood. *Development and Psychopathology*, 24(1), 65-78.
- Eckerdal, P., Georgakis, M. K., Kollia, N., Wikström, A. K., Högberg, U., & Skalkidou, A. (2018). Delineating the association between mode of delivery and postpartum depression symptoms: a longitudinal study. *Acta obstetricia et gynecologica Scandinavica*, 97(3), 301-311
- Eckerdal, P., Kollia, N., Löfblad, J., Hellgren, C., Karlsson, L., Högberg, U., Wikstrom, & Skalkidou, A. (2016). Delineating the association between heavy postpartum haemorrhage and postpartum depression. *PLoS One*, 11(1), e0144274.
- Edhborg, M., Matthiesen, A. S., Lundh, W., & Widström, A. M. (2005). Some early indicators for depressive symptoms and bonding 2 months postpartum—a study of new mothers and fathers. *Archives of Women's Mental Health*, 8(4), 221-231.
- Egeland, B., & Hiester, M. (1995). The long-term consequences of infant day-care and mother-infant attachment. *Child Development*, 66(2), 474-485.
- El-Hachem, C., Rohayem, J., Khalil, R. B., Richa, S., Kesrouani, A., Gemayel, R., & Salameh, S. (2014). Early identification of women at risk of postpartum depression using the Edinburgh Postnatal Depression Scale (EPDS) in a sample of Lebanese women. *BMC psychiatry*, 14(1), 242.
- Ekman, P., Friesen, W. V., & O'Sullivan, M. (1988). Smiles when lying. *Journal of*

Personality and Social Psychology, 54(3), 414–420.

- Ellison, K. & Martin, N. (2017). Severe complications for women during childbirth are skyrocketing-and could often be prevented. *ProPublica*.
<https://www.propublica.org/article/severe-complications-for-women-during-childbirth-are-skyrocketing-and-could-often-be-prevented>
- Elmir, R. Schmied, V. & Jackson, D. (2010). Women's perceptions and experiences of a traumatic birth: A meta-ethnography. *Journal of Advanced Nursing*, 66 (10), 2142-2153.
- Emde, R. N., Izard, C., Huebner, R., Sorce, J. F., & Klinnert, M. (1985). Adult judgments of infant emotions: Replication studies within and across laboratories. *Infant Behavior & Development*, 8(1), 79–88.
- Emde, R. N., Osofsky, J. D., & Butterfield, P. M. (1993). *The IFEEL pictures: A new instrument for interpreting emotions*. Madison, CO: International Universities Press, Inc.
- Engelhard, I. M., Van Den Hout, M. A., & Schouten, E. G. (2006). Neuroticism and low educational level predict the risk of posttraumatic stress disorder in women after miscarriage or stillbirth. *General hospital psychiatry*, 28(5), 414-417.
- Enlow, M. B., Kitts, R. L., Blood, E., Bizarro, A., Hofmeister, M., & Wright, R. J. (2011). Maternal posttraumatic stress symptoms and infant emotional reactivity and emotion regulation. *Infant Behavior and Development*, 34(4), 487-503.
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments & Computers*, 28(1), 1–

11. <https://doi.org/10.3758/BF03203630>

- Erickson, N., Julian, M. Muzik, (2019). Perinatal depression, PTSD, and trauma: Impact on Mother infant attachment and interventions to mitigate the transmission of risk. *Int. Rev. Psychiatry*, 31(3). 245-263.
- Everingham, C.R. & Heading, G., & Conner, L. (2006). Couples' experiences of postnatal depression: a framing analysis of cultural identity, gender and communication. *Social Science Medicine*, 62 (7), 1745-56.
- Fairbrother, N. & Woody, S.R. (2007). Fear of childbirth and obstetrical events as predictors of postnatal symptoms of depression and post-traumatic stress disorder. *Journal of Psychosomatic Obstetric Gynecology*, 28(4), 239-42.
- Feinman, S., Roberts, D., Hsieh, K.-F., Sawyer, D., & Swanson, D. (1992). A critical review of social referencing in infancy. In S. Feinman (Ed.), *Social referencing and the social construction of reality in infancy* (pp. 15–54). New York: Plenum Press.
- Felitti, V.J., Anda, R.F., Nordenberg D., Williamson, D.F. Spitz, A.M., Edwards V., Koss, M.P. , Marks, J.S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse childhood Experience (ACE) Study. *American Journal of Preventative Medicine*, 14 (4), 245-58.
- Feldman, R. (2007). Parent-infant synchrony and the construction of shared timing; physiological precursors, developmental outcomes and risk conditions. *Journal of Child Psychology and Psychiatry*, 48 (3-4), 29-54.

- Feldman, R., Magori-Cohen, G., Galili, M., Singer, Y. & Louzoun (2011). Mother and infant coordinate heart rhythms through episodes of interaction synchrony. *Infant Behavior and Development*, 34 (4), 569-577,
- Fenech, G. & Thomson, G. (2014). Tormented by ghosts from their past': a meta-synthesis to explore the psychosocial implication of a traumatic birth on maternal well-being. *Midwifery*, 30 (2), 185-93.
- Fingar, K.R., Hambrick, M.M., Heslin, K.C., Moore, J.E. (2018). Trends and Disparities in Delivery Hospitalizations Involving Severe Maternal Morbidity, 2006-2015. Retrieved from: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb243-Severe-Maternal-Morbidity-Delivery-Trends-Disparities.jsp>
- Fisher, V. (2018). Understanding the Discourses of Traumatic Birth and the Transition to Motherhood Using Relational Dialectics Theory.
- Fox, S. E., Levitt, P., & Nelson III, C. A. (2010). How the timing and quality of early experiences influence the development of brain architecture. *Child Development*, 81(1), 28-40.
- Flory, J.D. & Yehuda, R. (2015). Comorbidity between post-traumatic stress disorder and major depressive disorder: alternative explanations and treatment considerations. *Dialogues Clinical Neuroscience*, 17(2), 141-150
- Fonagy, P., Gergely, G., & Target, M. (2007). The parent-infant dyad and the construction of the subjective self. *The Journal of Child Psychology and Psychiatry*. 48 (3-4), 288-328.
- Forcada-Guex, M., Borghini, A., Pierrehumbert, B., Ansermet, F., & Muller-Nix, C.

- (2011). Prematurity, maternal posttraumatic stress and consequences on the mother–infant relationship. *Early human development*, 87(1), 21-26.
- Ford, E., Ayers, S., & Bradley, R. (2010). Exploration of a cognitive model to predict post-traumatic stress symptoms following childbirth. *Journal of anxiety disorders*, 24(3), 353–359.
- Forssén, A. S. K. (2012). Lifelong Significance of Disempowering Experiences in Prenatal and Maternity Care: Interviews With Elderly Swedish Women. *Qualitative Health Research*, 22(11), 1535–1546.
- Fraiberg, S., Adelson, E., and Shapiro, V. (1975). Ghosts in the nursery. A Psychoanalytic approach to the problems of impaired infant-mother relationships. *Journal of American Academy of Child Psychiatry*. 14, 387-421.
- Fraley, C., Neidenthal, P.M., Marks, M., Brumbaugh, C., & Vicary, A. (2006). Adult attachment and the perception of emotional expressions: Probing the hyperactivating strategies underlying anxious attachment. *Journal of Personality*. 74(4), 1163-1190.
- Franjenberger, D., Clements-Noelle, K. Yang, W. (2015). The association between adverse childhood experiences and alcohol use during pregnancy in a representative sample of adult women. *Women's Health Issues*, 25(6), 688-695.
- Freyd, J. J. (1997). Violations of power, adaptive blindness and betrayal trauma theory. *Feminism & Psychology*, 7(1), 22–32
- Freyd, J.J. (2019). *What is a Betrayal Trauma? What is Betrayal Trauma Theory?* Retrieved [November 12, 2019] from <http://pages.uoregon.edu/dynamic/jjf/defineBT.html>.

- Freyd, J. J., DePrince, A. P., & Gleaves, D. H. (2007). The state of betrayal trauma theory: Reply to McNally--Conceptual issues and future directions. *Memory, 15*(3), 295–311.
- Furuta, M., Sandall, J., Bick, D. (2012). A systematic review of the relationship between severe maternal morbidity and post-traumatic stress disorder. *BMC Pregnancy Childbirth, 12*, 125.
- Gagnon, K. L., DePrince, A. P., Chu, A. T., Gorman, M., & Saylor, M. M. (2016). Betrayal trauma and child symptoms: The role of emotion. *Journal of Trauma & Dissociation, 17*(2), 207-222.
- Garcia-Esteve, L., Torres, A., Lasheras, G., Palacios-Hernández, B., Farré-Sender, B., Subirà, S., & Brockington, I. F. (2016). Assessment of psychometric properties of the Postpartum Bonding Questionnaire (PBQ) in Spanish mothers. *Archives of Women's Mental Health, 19*(2), 385-394.
- Gattoni, A.L. (2013). Breaking the silence: The role of online community in the transition to motherhood. Dissertation. University of Wisconsin-Milwaukee.
- Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., Gartlehner, G., & Swinson, T. (2005). Perinatal depression: a systematic review of prevalence and incidence. *Obstetrics & Gynecology, 106*(5), 1071-1083.
- George, C., & Solomon, J. (1999). Attachment and caregiving: The caregiving behavioral system. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 649–670). New York: The Guilford Press.
- Gergely, G., & Watson, J. S. (1996). The social biofeedback theory of parental affect-mirroring: The development of emotional self-awareness and self-

- control. *International Journal of Psycho-Analysis*, 77, 1181-1212.
- Giles, W.H. (2004). The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse and Neglect*, 28(7), 771-84.
- Goldbort, J.G. (2009). Women's lived experience of their unexpected birthing process. *Journal of Maternal Child Nursing*, 34 (1), 57-62.
- Gosling, S. D., Vazire, S., Srivastava, S., & John, O. P. (2004). Should we trust web-based studies? A comparative analysis of six preconceptions about internet questionnaires. *American Psychologist*, 59(2), 93.
- Gottvall, K., & Waldenström, U. (2002). Does a traumatic birth experience have an impact on future reproduction? *An International Journal of Obstetrics & Gynecology*, 109(3), 254-260.
- Goulding, A. N., Grewen, K., Meltzer-Brody, S., Pearson, B., & Stuebe, A. M. (2019). 241: Maternal perception of birth trauma and its association with postpartum mood and parenting stress. *American Journal of Obstetrics & Gynecology*, 220(1), S173.
- Greenfield M, Jomeen J and Glover L (2019) "It Can't Be Like Last Time" – Choices Made in Early Pregnancy by Women Who Have Previously Experienced a Traumatic Birth. *Front. Psychol.* 10:56. doi: 10.3389/fpsyg.2019.00056
- Grekin, R. & O'Hara, MW. (2014). Prevalence and risk factors of postpartum posttraumatic stress disorder: a meta-analysis. *Clinical Psychology Review*, 34 (5). 389-401.
- Grote, N. K., Bridge, J. A., Gavin, A. R., Melville, J. L., Iyengar, S., & Katon, W. J. (2010). A meta-analysis of depression during pregnancy and the risk of preterm

- birth, low birth weight, and intrauterine growth restriction. *Archives of general psychiatry*, 67(10), 1012-1024.
- Gustafson, G., & Green, J. (1989). On the Importance of Fundamental Frequency and Other Acoustic Features in Cry Perception and Infant Development. *Child Development*, 60(4), 772-780.
- Guyon-Harris, K. L., Ahlfs-Dunn, S., & Huth-Bocks, A. (2017). PTSD symptom trajectories among mothers reporting interpersonal trauma: Protective factors and parenting outcomes. *Journal of Family Violence*, 32(7), 657-667.
- Haagen, J. F., Van Rijn, A., Knipscheer, J. W., van der Aa, N., & Kleber, R. J. (2018). The dissociative post-traumatic stress disorder (PTSD) subtype: A treatment outcome cohort study in veterans with PTSD. *British Journal of Clinical Psychology*, 57(2), 203-222.
- Hairston, I., E. Handelzalts, J., Assis, C., & Kovo, M. (2018). Postpartum bonding difficulties and adult attachment styles: The mediating role of postpartum depression and childbirth-related PTSD. *Infant Mental Health Journal*, 39(2), 198-208.
- Halberstadt, A. G., & Lozada, F. T. (2011). Emotion development in infancy through the lens of culture. *Emotion Review*, 3(2), 158-168.
- Halperin, O., Sarid, O. & Cwikel, J. (2015). The influence of childbirth experiences on women's postpartum traumatic stress symptoms: a comparison between Israeli Jewish and Arab women. *Midwifery*. 31, 625-632.

- Harris, R., & Ayers, S. (2012). What makes labour and birth traumatic? A survey of intrapartum 'hotspots'. *Psychology & Health, 27*(10), 1166–1177.
- Harville, E. W., Xiong, X., Pridjian, G., Elkind-Hirsch, K., & Buekens, P. (2009). Postpartum mental health after Hurricane Katrina: A cohort study. *BMC pregnancy and childbirth, 9*(1), 21.
- Haviland, J. M., & Lelwica, M. (1987). The induced affect response: 10-week-old infants' responses to three emotion expressions. *Developmental psychology, 23*(1), 97.
- Heinicke, C. M. (2002). *The transition to parenting*. In M. H. Bornstein (Ed.), *Handbook of parenting: Being and becoming a parent* (p. 363–388). Lawrence Erlbaum Associates Publishers.
- Herman, Judith Lewis. (1992) *Trauma and recovery*. New York, N.Y. : Basic Books.
- Hesse, E. (2008). The Adult Attachment Interview: Protocol, method of analysis, and empirical studies. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 552–598). New York: The Guilford Press.
- Hillis, S. D., Anda, R. F., Dube, S. R., Felitti, V. J., Marchbanks, P. A., & Marks, J. S. (2004). The association between adverse childhood experiences and adolescent pregnancy, long-term psychosocial consequences, and fetal death. *Pediatrics, 113*(2), 320–327.
- Hinton, L., Locock, L., & Knight, M. (2014). Partner experiences of “near-miss” events in pregnancy and childbirth in the UK: a qualitative study. *PloS one, 9*(4).
- Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic medicine, 41*(3), 209-218.

- Horsch A., Vial Y., Favrod C., Harari M.M., Blackwell S.E., Watson P., Holmes E.A. (2017) Reducing intrusive traumatic memories after emergency caesarean section: A proof-of-principle randomized controlled study. *Behavior Research and Therapy*, 94, 36–47
- Howard, H., Razuri, R., Becker, E., Copeland, R., Call, C., & Nunez, M., & Cross, D.R. (2017). The role of attachment classification on disclosure of self and rater-reported adverse childhood experiences in a sample of child welfare professionals, *Children and Youth Services Review*, 83, 131-136.
- Howell, David. (2002). *Statistical methods for psychology*. 10.2307/2348956.
- Hutchens, B. F., & Kearney, J. (2020). Risk factors for postpartum depression: An umbrella review. *Journal of Midwifery & Women's Health*, 65(1), 96-108.
- Iles, J. & Pote, H. (2015) Postnatal posttraumatic stress: A grounded theory model of first-time mothers' experiences. *Journal of Reproductive and Infant Psychology*, 33(3), 238-255.
- Iles, J., Slade, P., & Spiby, H., (2010). Posttraumatic stress symptoms and postpartum depression in couples after childbirth: The role of partner support and attachment. *Journal of Anxiety Disorders*, 4 (25), 520-530.
- Iniguez, K. C., & Stankowski, R. V. (2016). Adverse childhood experiences and health in adulthood in a rural population-based sample. *Clinical Medicine & Research*, 14(3-4), 126-137.
- Institute of Medicine and National Research Council. 2000. *From Neurons to Neighborhoods: The Science of Early Childhood Development*. Washington, DC:

The National Academies Press

- Ionio, C., & Di Blasio, P. (2014). Post-traumatic stress symptoms after childbirth and early mother–child interactions: an exploratory study. *Journal of Reproductive and Infant Psychology*, *32*(2), 163-181
- Izard, C. E. (1971). *The face of emotion*. Appleton-Century-Crofts.
- Izard, C. E., Fantauzzo, C. A., Castle, J. M., Haynes, O. M., Rayias, M. F., & Putnam, P. H. (1995). The ontogeny and significance of infants' facial expressions in the first 9 months of life. *Developmental Psychology*, *31*(6), 997.
- Izard, C. E., & Kobak, R. R. (1991). Emotions system functioning and emotion regulation. In J. Garber & K. A. Dodge (Eds.), *Cambridge studies in social and emotional development. The development of emotion regulation and dysregulation* (pp. 303–321). Cambridge University Press.
- Izard, C. E., Hembree, E. A., & Huebner, R. R. (1987). Infants' emotion expressions to acute pain: Developmental change and stability of individual differences. *Developmental Psychology*, *23*(1), 105.
- Izard, C. E., Huebner, R. R., Risser, D., & Dougherty, L. M. (1980). The young infant's ability to produce discrete emotion expressions. *Developmental Psychology*, *16*(2), 132–140
- Izard, C. E., & Malatesta, C. Z. (1987). *Perspectives on emotional development I: Differential emotions theory of early emotional development*. In J. D. Osofsky (Ed.), *Wiley series on*

personality processes. Handbook of infant development (p. 494–554). John Wiley & Sons.

Johnson, M. H., Posner, M. I., & Rothbart, M. K. (1991). Components of visual orienting in early infancy: Contingency learning, anticipatory looking, and disengaging. *Journal of Cognitive Neuroscience*, 3(4), 335-344.

Janoff-Bulman, R. (1989). Assumptive worlds and the stress of traumatic events: Applications of the schema construct. *Social cognition*, 7(2), 113-136.

Janoff-Bulman, R. (1992). Shattered assumptions: Towards a new psychology of trauma. Free Press.

Jotzo M., & Poets C.F. (2005). Helping parents cope with the trauma of premature birth: an evaluation of a trauma-preventive psychological intervention. *Pediatrics*. 115(4):915-919.

Junge, C., Garthus-Niegel, S., Slinning, K., Polte, C., Simonsen, T. B., & Eberhard-Gran, M. (2017). The impact of perinatal depression on children's social-emotional development: a longitudinal study. *Maternal and Child Health Journal*, 21(3), 607-615.

Kammermeier, M., Duran Perez, L., Konig, L. & Paulus, M. (2019). Attachment security and attention to facial emotional expressions in preschoolers: An eye-tracking study. *British Journal of Developmental Psychology*. 38(2). 167-185.

Keane, T. M., & Kaloupek, D. G. (1997). Comorbid psychiatric disorders in PTSD: Implications for research. *Annals of the New York Academy of Sciences*, 821(1), 24-34.

- Keedle, H., Schmied, V., Burns, E., & Dahlen, H. G. (2015). Women's reasons for, and experiences of, choosing a homebirth following a caesarean section. *BMC Pregnancy and Childbirth*, *15*(1), 206.
- Keltner, D., Sauter, D., Tracy, J., & Cowen, A. (2019). Emotional expression: Advances in basic emotion theory. *Journal of Nonverbal Behavior*, *43*, 133-160.
- Kestenbaum, R., Farber, E. & Sroufe, L.A. (1989). Individual Differences in Empathy Among Preschoolers: Relation to Attachment History. *New directions for child development*, *44*. 51-64. 10.1002/cd.23219894405.
- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of general psychiatry*, *52*(12), 1048-1060.
- Khan, M., & Renk, K. (2018). Understanding the pathways between mothers' childhood maltreatment experiences and patterns of insecure attachment with young children via symptoms of depression. *Child Psychiatry & Human Development*, *49*(6), 928-940.
- Kim, S. Fonagy, P. Allen, J. Martinez, S., Lyengar, U, Strathearn, L. (2014) Mothers who are securely attached in pregnancy show more attuned infant mirroring seven months postpartum. *Infant Behavior Development*, *37* (4), 491-504.
- Kimmel, A., Gould, F., Kirmse, R., Gomez, N., Ressler, K., & Nemeroff, C. (2016). Non-sexual interpersonal trauma and PTSD development. *Psychoneuroendocrinology*, *(71)*, 58.
- Kochanevich-Wallace, P. M., McCluskey-Fawcett, K. A., Meck, N. E., & Simons, C. J. R. (1988). Method of delivery and parent-newborn interaction. *Journal of*

Pediatric Psychology, 13(2), 213-221.

- Kochanska, G. (1995). Children's temperament, mothers' discipline, and security of attachment: Multiple pathways to emerging internalization. *Child development*, 66(3), 597-615.
- Kochanska, G., Coy, K. C., Tjebkes, T. L., & Husarek, S. J. (1998). Individual differences in emotionality in infancy. *Child development*, 69(2), 375-390.
- Kochanska, G., Gross, J., Lin, M. & Nichols, K. (2002). Guilt in Young Children: Development, Determinants, and Relations with a Broader System of Standards. *Child development*. 73. 461-82. 10.1111/1467-8624.00418.
- Kochanska, G., Philibert, R. A., & Barry, R. A. (2009). Interplay of genes and early mother-child relationship in the development of self-regulation from toddler to preschool age. *Journal of Child Psychology and Psychiatry*, 50(11), 1331–1338.
- Koenen, K. C., & Widom, C. S. (2009). A prospective study of sex differences in the lifetime risk of posttraumatic stress disorder among abused and neglected children grown up. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies*, 22(6), 566-574.
- Kothari, C.L.; Paul, R.; Dormitorio, B.; Ospina, F.; James, A.; Lenz, D.; Baker, K.; Curtis, A.; Wiley, J. The Interplay of Race, Socioeconomic Status and Neighborhood Residence Upon Birth Outcomes in a High Black Infant Mortality Community. *Popul. Health* 2016, 2, 859–867.
- Kotila, L.A., Schoppe-Sullivan, S.J., Kamp Dusch, C.M. (2013). Time in parenting activities in Dual-Earner Families at the Transition to Parenthood. *Family*

Relationships, 62(5), 795-807

Kottmel, A., Hoesli, I., Traub, R., Urech, C., Huang, D., Leeners, B., & Tschudin, S.

(2012). Maternal request: a reason for rising rates of cesarean section? *Archives of Gynecology and Obstetrics*, 286(1), 93-98.

Kitzinger, S. (2006). Birth as rape; There must be an end to 'just in case' obstetrics.

British Journal of Midwifery, 14 (9), 544-545.

Knezevic, M., & Jovancevic, M. (2004). The IFEEL pictures: Psychological trauma and

perception, and interpretation of child's emotions. *Nordic Journal of*

Psychiatry, 58(2), 139-146

Lahav, Y. & Elkhit, A. (2016). The cycle of healing - dissociation and attachment during

treatment of CSA survivors. *Child Abuse & Neglect*. 60. 10.

Laible, D. J., & Thompson, R. A. (1998). Attachment and emotional understanding in

preschool children. *Developmental Psychology*, 34(5), 1038.

Laerd Statistics (2015). *Statistical tutorials and software guides*. Retrieved from

<https://statistics.laerd.com/>

Laxton-Kane, M., & Slade, P. (2002). The role of maternal prenatal attachment in a

woman's experience of pregnancy and implications for the process of

care. *Journal of Reproductive and Infant Psychology*, 20 (4), 253-266.

Lee, C., Slade, P., & Lygo, V. (1996). The influence of psychological debriefing on

emotional adaptation in women following early miscarriage: a preliminary

study. *British Journal of Medical Psychology*, 69(1), 47-58.

Leeds, L. & Hargreaves, I. (2008) The psychological consequences of childbirth, *Journal*

of Reproductive and Infant Psychology, 26:2, 108-122.

Leerkes, E. M., Blankson, A. N., O'Brien, M., Calkins, S. D., & Marcovitch, S. (2011).

The Relation of Maternal Emotional and Cognitive Support During Problem Solving to Pre-Academic Skills in Preschoolers. *Infant and child development*, 20(6), 353–370. <https://doi.org/10.1002/icd.728>

Lefkovic, E., Baji, I., & Rigo, J. (2014) Impact of maternal depression on pregnancies and on early attachment. *Infant Mental Health Journal*, 35(4), 354-65.

Lehnig F, Nagl M, Stepan H, Wagner B, & Kersting A (2019). Associations of postpartum mother-infant bonding with maternal childhood maltreatment and postpartum mental health: A cross-sectional study. *BMC Pregnancy Childbirth*, 19(1), 278

Leinweber, J., Creed, D.K., Rowe, H., & Gamble, J. (2017). Responses to birth trauma and prevalence of posttraumatic stress among *Australian Midwives*. *Women Birth*, 30 (1) 40-45.

Legerstee, M., Markova, G., & Fisher, T. (2007). The role of maternal affect attunement in dyadic and triadic communication. *Infant behavior and Development*, 30(2), 296-306.

Lemerise, E. A., & Dodge, K. A. (2008). *The development of anger and hostile interactions*. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (p. 730–741). The Guilford Press.

Lemola, S., Stadlmayr, W., Grob, A., 2007. Maternal adjustment five months after birth: the impact of the subjective experience of childbirth and emotional support from the partner. *Journal of Reproductive and Infant Psychology*. 25, 190-202.

- Lenzi, D., Trentini, C., Pantano, P., Macaluso, E., Iacoboni, M., Lenz, G.L., & Ammaniti, M. (2009). Neural basis of maternal communication and emotional expression processing during infant preverbal stage. *Cerebral Cortex*, 19 (5), 1124-1133.
- Levendosky, A. A., & Graham-Bermann, S. A. (2001). Parenting in battered women: The effects of domestic violence on women and their children. *Journal of Family Violence*, 16(2), 171–192.
- Lewis, M. (2008). The emergence of human emotions. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (p. 304–319). New York: The Guilford Press.
- Lewis, M., & Ramsay, D. (2005). Infant emotional and cortisol responses to goal blockage. *Child Development*, 76(2), 518-530.
- Lewis, M., Ramsay, D. S., & Sullivan, M. W. (2006). The Relation of ANS and HPA Activation to Infant Anger and Sadness Response to Goal Blockage. *Developmental Psychobiology*, 48(5), 397–405
- Lobel, M., & DeLuca, R. S. (2007). Psychosocial sequelae of cesarean delivery: review and analysis of their causes and implications. *Social Science & Medicine*, 64(11), 2272-2284.
- Lodge, A., Blackwood, L. C., Kveton, E., McDowell, M., & Rountree, A. (1993). Prenatal and postnatal maternal perception of infant emotions and quality of mother-infant interaction. *The IFEEL pictures: A new instrument for interpreting emotions*, 237-251.
- Lovejoy, M.C., Graczyk, P.A., O'Hare, E., & Neuman G. (2000). Maternal depression And parenting behavior: A meta-analytic review. *Clin Psychology Review*, 20 (5),

561-92.

Ludmer, J. A., Gonzalez, A., Kennedy, J., Masellis, M., Meinz, P., & Atkinson, L.

(2018). Association between maternal childhood maltreatment and mother-infant attachment disorganization: Moderation by maternal oxytocin receptor gene and cortisol secretion. *Hormones and Behavior*, *102*, 23-33.

Lyons, S. (1998) A prospective study of post-traumatic stress symptoms 1 month following childbirth in a group of 42 first-time mothers, *Journal of Reproductive and Infant Psychology*, *16* (2-3), 91-105.

Lyons-Ruth, K., & Block, D. (1996). The disturbed caregiving system: Relations among childhood trauma, maternal caregiving, and infant affect and attachment. *Infant Mental Health Journal*, *17*(3), 257–275

Lyons-Ruth, K., & Jacobvitz, D. (2008). Attachment disorganization: Genetic factors, parenting contexts, and developmental transformation from infancy to adulthood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 666–697). New York: The Guilford Press.

Lyons-Ruth, K., & Spielman, E. (2004). Disorganized infant attachment strategies and helpless-fearful profiles of parenting: Integrating attachment research with clinical intervention. *Infant Mental Health Journal*, *25*(4), 318–335.

Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2005). Expanding the concept of unresolved mental states: Hostile/helpless states of mind on the Adult Attachment Interview are associated with disrupted mother–infant communication and infant disorganization. *Development and Psychopathology*, *17*(1), 1-23.

MacDonald, H., Beeghly, M., Grant-Knight, W., Augustyn, M., Woods, R., Cabral, H.,

- Frank, D. (2008). Longitudinal association between infant disorganized attachment and childhood posttraumatic stress symptoms. *Development and Psychopathology*, 20(2), 493-508.
- MacDorman, M. F., Declercq, E., Cabral, H., & Morton, C. (2016). Is the United States maternal mortality rate increasing? Disentangling trends from measurement issues
Short title: US Maternal mortality Trends. *Obstetrics and Gynecology*, 128(3), 447.
- Mackintosh, N., Rance, S., Carter, W., & Sandall, J. (2017). Working for patient safety: a qualitative study of women's help-seeking during acute perinatal events. *BMC Pregnancy and Childbirth*, 17(1), 232.
- Maggioni C, Margola D, Filippi F. (2006). PTSD, risk factors, and expectations among women having a baby: a two-wave longitudinal study. *J Psychosom Obstet Gynaecol*. 27(2),81-90.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, 50(1-2), 66–104.
- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *The John D. and Catherine T. MacArthur Foundation series on mental health and development. Attachment in the preschool years: Theory, research, and intervention* (p. 161–182). Chicago: University of Chicago Press.
- Malatesta-Magai, C. (1991). Emotional socialization: Its role in personality and

- developmental psychopathology. In D. Cicchetti & S. L. Toth (Eds.), *Rochester symposium on developmental psychopathology, Vol. 2. Internalizing and externalizing expressions of dysfunction* (pp. 203–224). New York: Lawrence Erlbaum Associates, Inc.
- Margerison-Zilko, C. E., Strutz, K. L., Li, Y., & Holzman, C. (2017). Stressors across the life-course and preterm delivery: evidence from a pregnancy cohort. *Maternal and Child Health Journal, 21*(3), 648-658.
- Martin, N. & Montagne, R. (2017). U.S. has the worst rate of maternal deaths in the developed world. ProPublica and NPR. <https://www.npr.org/2017/05/12/528098789/u-s-has-the-worst-rate-of-maternal-deaths-in-the-developed-world>
- Martorell, G. A., & Bugental, D. B. (2006). Maternal variations in stress reactivity: Implications for harsh parenting practices with very young children. *Journal of Family Psychology, 20*(4), 641–647
- McDonnell, C. G., & Valentino, K. (2016). Intergenerational effects of childhood trauma: evaluating pathways among maternal ACEs, perinatal depressive symptoms, and infant outcomes. *Child Maltreatment, 21*(4), 317-326.
- McElwain, N. L., & Booth-Laforce, C. (2006). Maternal sensitivity to infant distress and nondistress as predictors of infant-mother attachment security. *Journal of Family Psychology, 20*(2), 247-255.
- McKenzie-McHarg, Ayers, Ford, Horsch, Jomeen, Sawyer, Stramrood, Thomson & Slade (2015) Post-traumatic stress disorder following childbirth: an update of current issues and recommendations for future research. *Journal of Reproductive*

and Infant Psychology, 33(3), 219-237.

- McKinlay, A., Grace, R. C., Horwood, L. J., Fergusson, D. M., Ridder, E. M., & MacFarlane, M. R. (2008). Prevalence of traumatic brain injury among children, adolescents and young adults: prospective evidence from a birth cohort. *Brain injury*, 22(2), 175-181.
- McGoron, L., Gleason, M.M., Drury, S.S., Nelson, C.A., Gregas, M.C., Zeanah, C.H. (2012) Recovering from early deprivation: attachment mediates effects of caregiving on psychopathology. *Journal of American Academy Child Adolescent Psychiatry*, 51(7), 683-93
- Menage, J. (1993) Post-Traumatic Stress Disorder in Women Who Have Undergone Obstetric and/or Gynaecological Procedures. *Journal of Reproductive and Infant Psychology*, 11, 221-228.
- Menke, R. A., Morelen, D., Simon, V. A., Rosenblum, K. L., & Muzik, M. (2018). Longitudinal relations between childhood maltreatment, maltreatment-specific shame, and postpartum psychopathology. *Child maltreatment*, 23(1), 44-53.
- Menke, R. A., Swanson, L., Erickson, N. L., Reglan, G., Thompson, S., Bullard, K. H., ... & Muzik, M. (2019). Childhood adversity and sleep are associated with symptom severity in perinatal women presenting for psychiatric care. *Archives of Women's Mental Health*, 22(4), 457-465.
- Miljkovitch, R., Deborde, A. S., Bernier, A., Corcos, M., Speranza, M., & Pham-Scottez, A. (2018). Borderline Personality Disorder in adolescence as a generalization of disorganized attachment. *Frontiers in psychology*, 9, 1962.

- Miller, T. (2007). "Is this what motherhood is all about?" Weaving experiences and discourse through transition to first-time motherhood. *Gender & Society, 21*, 337-358.
- Milne, E., Johnson, S., Waters, G., & Small, N. (2018). understanding the mother-infant bond. *Community Practitioner, 91*(7), 45-47.
- Modarres, M., Afrasiabi, S., Rahnama, P., & Montazeri, A. (2012). Prevalence and risk factors of childbirth-related post-traumatic stress symptoms. *BMC pregnancy and childbirth, 12*(1), 88.
- Moleman, N., Van der Hart, O., & Van der Kolk, B. A. (1992). The partus stress reaction: A neglected etiological factor in postpartum psychiatric disorders. *Journal of Nervous and Mental Disease, 180*(4), 271–272.
- Monk, C., Spicer, J., & Champagne, F. A. (2012). Linking prenatal maternal adversity to developmental outcomes in infants: the role of epigenetic pathways. *Development and Psychopathology, 24*(4), 1361-1376.
- Moore, E., Anderson, G., Bergman, N. & Dowswell, T. 2012. Early skin-to-skin contact for mothers and their healthy newborn infants. Cochrane Database Systematic Review: 16(5).
- Morland, L., Goebert, L., & Onoye, J. (2007). Post-traumatic stress disorder and pregnancy health: traumatic stress disorder and pregnancy health: Preliminary update and implications. *Psychosomatics: Journal of Consultation Liaison Psychiatry, 58*, 304-308.

- Morelen, Diana M.; Muzik, Maria; and Rosenblum, Katherine L.. 2017. Childhood Maltreatment and Motherhood: Implications for Maternal Well-Being and Mothering. *Motherhood in the Face of Trauma: Pathways Towards Healing and Growth*. Maria Muzik and Katherine Lisa Rosenblum, Eds. Springer International Publishing.
- Moniek A. J. Zeegers, Cristina Colonnese, Geert-Jan J. M. Stams, Elizabeth Meins. (2017). Mind matters: A meta-analysis on parental mentalization and sensitivity as predictors of infant–parent attachment.. *Psychological Bulletin*, 143 (12): 1245
- Muller-Nix, C., Forcada-Guex, M., Pierrehumbert, B., Jaunin, L., Borghini, A., & Ansermet, F. (2004). Prematurity, maternal stress and mother–child interactions. *Early Human Development*, 79(2), 145-158
- Murphy, D., & Charlett, P. (2002). Cohort study of near-miss maternal mortality and subsequent reproductive outcome. *European Journal of Obstetrics, Gynecology, and Reproductive Biology*, 102, 173-178
- Musser, E. D., Kaiser-Laurent, H., & Ablow, J. C. (2012). The neural correlates of maternal sensitivity: an fMRI study. *Developmental Cognitive Neuroscience*, 2(4), 428-436.
- Muzik, M. Brockneck, El. Broderick, A. Richardson, P. Rosenblum, K.L. Thelen, K., & Seng, J.S. (2013). Mother-infant bonding impairment across the first six months postpartum: the primacy of psychopathology in women with childhood abuse and neglect histories. *Arch Women's Mental Health*, 16(1), 29-38.

- Muzik, M. McGinnis, E.W., Brockneck, E. Morelen, D. Rosenblum, K.L., Liberzon (2016). PTSD symptoms across pregnancy and early postpartum among women with lifetime ptsd diagnosis. *Depress Anxiety*, 33 (7), 584-591.
- Myers, B. J. (1984). Mother—infant bonding: the status of this critical-period hypothesis. *Developmental Review*, 4(3), 240-274.
- O'Connell , M. (2019). Preventing, recognizing, and responding to fear of childbirth and birth trauma *BMJ*; 365, doi: <https://doi.org/10.1136/bmj.l2279>
- O'Connor, T. G., Heron, J., Glover, V., & Alspac Study Team. (2002). Antenatal anxiety predicts child behavioral/emotional problems independently of postnatal depression. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(12), 1470-1477.
- O'Donovan A, Alcorn KL, Patrick JC, Creedy DK, Dawe S, Devilly GJ. (2014). Predicting posttraumatic stress disorder after childbirth. *Midwifery*. 30(8):935-941. doi:10.1016/j.midw.2014.03.011
- O'Hara, M. W., & Wisner, K. L. (2014). Perinatal mental illness: definition, description and aetiology. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 28(1), 3-12.
- Olde E., Van der Hart, O., Kleber, R., and Van Son, M. 2006. Posttraumatic stress following childbirth: A review. *Clinical Psychology Review*, 26, 1-16.
- Olza Fernández I. PTSD and obstetric violence. *Midwifery Today Int Midwife*. 2013;(105):48-68.
- Osofsky, J. D., & Culp, R. (1993). A relationship perspective on the transition to

- parenthood. In G. H. Pollock & S. I. Greenspan (Eds.), *The course of life, Vol. 5. Early adulthood* (p. 75–98). International Universities Press, Inc.
- Oster, H. (2005). *The repertoire of infant facial expressions: an ontogenetic perspective*. In J. Nadel & D. Muir (Eds.), *Emotional development: Recent research advances* (p. 261–292). Oxford University Press.
- Parfitt, Y. and Ayers, S. (2009). The effect of postnatal symptoms of post-traumatic stress and depression on the couple's relationship and parent-baby bond. *Journal of Reproductive and Infant Psychology*, 27(2), pp. 127-142.
- Parfitt, Y., & Ayers, S. (2014). Transition to parenthood and mental health in first-time parents. *Infant Mental Health Journal*, 35(3), 263-273.
- Pedersen, F. A., Zaslow, M. J., Cain, R. L., & Anderson, B. J. (1981). Cesarean childbirth: Psychological implications for mothers and fathers. *Infant Mental Health Journal*, 2(4), 257–263
- Peltola, M.J., Forssman, L., Can Ijzendoorn, M.H., Leppanen, J.M. (2015). Attention to faces expressing negative emotion at seven months predicts attachment security at fourteen months. *Child Development*, 86 (5), 1321-32.
- Ponto, J. (2015). Understanding and evaluating survey research. *Journal of the advanced practitioner in oncology*, 6(2), 168.
- Ponti, L., Guarnieri, S., Smorti, A., & Tani, F. (2010). A measure for the study of friendship and romantic relationship quality from adolescence to early-adulthood. *The Open Psychology Journal*, 3(1).
- Postpartum Post-Traumatic Stress Disorder (2020). Postpartum Support International.

Retrieved from: <https://www.postpartum.net/learn-more/postpartum-post-traumatic-stress-disorder/>

- Priddis, L.E., Matacz, R. Weatherston, D. (2015). Building a workforce competency-based training program in infant/early childhood mental health. *Infant Mental Health Journal*, 36 (6), 623-31.
- Qualtrics. (2019). Retrieved from <https://www.qualtrics.com>.
- Ranson, K. E., & Urichuk, L. J. (2008). The effect of parent-child attachment relationships on child biopsychosocial outcomes: A review. *Early Child Development and Care*, 178(2), 129–152.
- Reck, C., Klier, C.M., Pabst, K., Stehle, E., Steffenelli, U., Struben, K., Backenstrass, M. (2006). The German version of the postpartum bonding instrument: psychometric properties and Association with postpartum depression. *Arch Women's Mental Health*, 9, 265-71.
- Reed, R., Sharman, R. & Inglis, C. (2017) Women's descriptions of childbirth trauma related to care providers actions and interactions. *BC Pregnancy Childbirth*, 17 (1), 21.
- Repaccholi, B.M., & Meltzoff, A.N. (2007). Emotional eavesdropping: Infants selectively respond to indirect emotional signals. *Child Development*, 78, 503-521.
- Rizzo, K. M., Schiffrin, H. H., Liss, M. (2012). Insight into the parenthood paradox: Mental health outcomes of intensive mothering. *Journal of Child and Family Studies*, 22, 614–620.
- Rosenblum, K. L., Dayton, C. J., & Muzik, M. (2009). *Infant social and emotional*

- development: Emerging competence in a relational context.* In C. H. Zeanah, Jr. (Ed.), *Handbook of infant mental health* (p. 80–103). The Guilford Press.
- Ross, L. E., & McLean, L. M. (2006). Anxiety disorders during pregnancy and the postpartum period: A systematic review. *The Journal of clinical psychiatry*, 67(8), 1285–1298.
- Rothman, B. K. 1982. *Giving Birth: Alternatives in Childbirth*, New York: Penguin.
- Rowe-Murray, H. J., & Fisher, J. R. (2002). Baby friendly hospital practices: cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth*, 29(2), 124-131.
- Rowlands, I. J., & Redshaw, M. (2012). Mode of birth and women’s psychological and physical wellbeing in the postnatal period. *BMC Pregnancy and Childbirth*, 12(1), 138.
- Rubin, R. (1984). Maternal identity and the maternal experience. *The American Journal of Nursing*, 84(12), 1480.
- Ruschel, P., Zielinsky, P., Grings, C., Pimentel, J., Azevedo, L., Paniagua, R., & Nicoloso, L. H. (2014). Maternal–fetal attachment and prenatal diagnosis of heart disease. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 174, 70-75.
- Ryding, E.L., Wijma, B., Wijma, K. Rydhstrom, H. (1998). Fear of childbirth during Pregnancy may increase the risk of emergency cesarean section. *Acta Obstet Gynecol Scan.*, 77 (5) 542-547
- Sandström, M., Wiberg, B., Wikman, M., Willman, A. K., & Högberg, U. (2008). A pilot study of eye movement desensitization and reprocessing treatment (EMDR) for

post-traumatic stress after childbirth. *Midwifery*, 24(1), 62-73.

Sawyer, A. and Ayers, S. (2009). Post-traumatic growth in women after childbirth.

Psychol Health, 24 (4), 457-71.

Sbarra, D. A., & Hazan, C. (2008). Coregulation, dysregulation, self-regulation: An

integrative analysis and empirical agenda for understanding adult attachment, separation, loss, and recovery. *Personality and Social Psychology Review*, 12(2),

141–167.

Schechter, R., Pham, T., Hua, A., Spinazzola, R., Sonnenklar, J., Li, D., Papaioannou, H.,

& Milanaik, R. (2019). Prevalence and longevity of PTSD symptoms among parents of NICU infants analyzed across gestational age categories. *Clinical*

Pediatrics. 59 (2)

Schechter, D.S., Zeanah, C.H., Myers, M.M., Brunelli, S.A., Liebowitz, M.R., Marshall,

R.D., Coates, S.W., Trabka, K.A., Baca, P., Hofer, M.A. (2004). Psychobiological dysregulation in violence-exposed mothers: salivary cortisol of mothers with very

young children pre- and post-separation stress. *Bulletin of the Menninger*

Clinic. 68(4):319–336.

Scheering, M.S., & Zeanah, C.H. (2001). A relational perspective on PTSD in early

childhood. *Journal of Trauma Stress*. 14 (4), 799-815.

Schmidt, M. R., Narayan, A. J., Atzl, V. M., Rivera, L. M., & Lieberman, A. F. (2020).

Childhood maltreatment on the Adverse Childhood Experiences (ACEs) Scale versus the Childhood Trauma Questionnaire (CTQ) in a perinatal sample. *Journal*

of Aggression, Maltreatment & Trauma, 29(1), 38-56.

Schneider, B.H., Atkinsons, L. & Tardif, C. (2001). Child-parent attachment and

children's peer relationships: a qualitative review. *Developmental Psychology*, 37 (1), 86-100

Schore, A. N. (2001). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal: Official Publication of The World Association for Infant Mental Health*, 22(1-2), 7-66.

Schwerdtfeger, K. L., & Goff, B. S. N. (2007). Intergenerational transmission of trauma: Exploring mother–infant prenatal attachment. *Journal of traumatic stress*, 20(1), 39-51.

Senese, V. P., Shinohara, K., Esposito, G., Doi, H., Venuti, P., & Bornstein, M. H. (2017). Implicit association to infant faces: Genetics, early care experiences, and cultural factors influence caregiving propensities. *Behavioural Brain Research*, 325(Pt B), 163–172.

Seng, J.S., Low, L.M., Sperlich, M., Ronis, D. & Liberzon, I.L. (2009). Prevalence, trauma history, and risk for posttraumatic stress disorder among nulliparous women in maternity care. *Obstetric Gynecological*. 114(4), 839-847.

Seng, J.S., Low, L.K., Sperlich, M., Ronis, D.L. & Liberzon, I. (2011). Posttraumatic stress disorder, child abuse history, birth weight, and gestational age: A prospective cohort study. *BJOG*. 118 (11). 1329-1139.

Seng, J.S, Rauch, S.A., Resnick, H., Reed, C.R., King, A., Low, L., Mcpherson, M., Muzik, M., Abelson, J., & Liberzo, I. (2010). Exploring posttraumatic stress disorder symptom profile among pregnant women. *J Psychosom Obstet Gynaecol*. 31(3):176-187.

- Seng, J. S., Sperlich, M., Low, L. K., Ronis, D. L., Muzik, M., & Liberzon, I. (2013). Childhood abuse history, posttraumatic stress disorder, postpartum mental health, and bonding: a prospective cohort study. *Journal of midwifery & women's health*, 58(1), 57–68. <https://doi.org/10.1111/j.1542-2011.2012.00237.x>
- Senturk, M. B., Cakmak, Y., & Ozalp, A. (2017). Postpartum depression and associated factors after emergency peripartum hysterectomy. *J Pak Med Assoc*, 67(1), 49-53.
- Shapiro, J., & Applegate, J. S. (2002). Child care as a relational context for early development: Research in neurobiology and emerging roles for social work. *Child and Adolescent Social Work Journal*, 19(2), 97-114.
- Shrestha, S., Adachi, K., A Petrini, M., & Shrestha, S. (2019). Maternal Role: A Concept Analysis. *Journal of Midwifery and Reproductive Health*, 7(3), 1732-1741.
- Shonkoff, J. P., & Phillips, D. (Eds.). (2000). From neurons to neighborhoods. Washington, DC: National Academy Press.
- Siddiqui, A., Hagglof, B., & Eisemann, M. (2000). Own memories of upbringing as a determinant of prenatal attachment in expectant women. *Journal of Reproductive and Infant Psychology*, 18(1), 67-74.
- Silverman, M. E., Reichenberg, A., Savitz, D. A., Cnattingius, S., Lichtenstein, P., Hultman, C. M., & Sandin, S. (2017). The risk factors for postpartum depression: A population-based study. *Depression and Anxiety*, 34(2), 178-187.
- Simpson M, & Catling C. (2016). Understanding psychological traumatic birth experiences: A literature review. *Women Birth*. 29(3), 203-207.
- Siu, B. W. M., Ip, P., Chow, H. M. T., Kwok, S. S. P., Li, O. L., Koo, M. L., & Hung, S. F. (2010). Impairment of mother-infant relationship: validation of the Chinese

- version of Postpartum Bonding Questionnaire. *The Journal of nervous and mental disease*, 198(3), 174-179.
- Skari H, Skreden M, Malt UF, et al. Comparative levels of psychological distress, stress symptoms, depression and anxiety after childbirth--a prospective population-based study of mothers and fathers. *BJOG*. 2002;109(10):1154-1163.
- Skinner, E., Barnett, B., & Dietz, H.P. (2017). Psychological consequences of pelvic floor trauma following vaginal birth: a qualitative study from two Australian tertiary maternity units. *Archives of Women's Mental Health*, 21 (3).
- Slade P. (2006). Towards a conceptual framework for understanding post-traumatic stress symptoms following childbirth and implications for further research. *Journal of psychosomatic obstetrics and gynaecology*, 27(2), 99–105.
- Sleath, E., & Bull, R. (2010). Male rape victim and perpetrator blaming. *Journal of Interpersonal Violence*, 25(6), 969-988.
- Smorti, M., Ponti, L., & Pancetti, F. (2019). A Comprehensive Analysis of Post-partum Depression Risk Factors: The Role of Socio-Demographic, Individual, Relational, and Delivery Characteristics. *Frontiers in public health*, 7, 295.
- Smorti, M., Ponti, L., Simoncini, T., Mannella, P., Bottone, P., Pancetti, F., & Gemignani, A. (2020). Pregnancy after miscarriage in primiparae and multiparae: Implications for women's psychological well-being. *Journal of Reproductive and Infant Psychology*, 1-11.
- Söderquist, J., Wijma, K., & Wijma, B. (2002). Traumatic stress after childbirth: the role of obstetric variables. *J Psychosom Obstet Gynaecol*. 23(1):31-39.
- Söderquist, J., Wijma, B., Thorbert, G. and Wijma, K. (2009), Risk factors in pregnancy

- for post-traumatic stress and depression after childbirth. *BJOG: An International Journal of Obstetrics & Gynaecology*, 116: 672-680. doi:10.1111/j.1471-0528.2008.02083.x
- Soet, J. E., Brack, G. A., & DiIorio, C. (2003). Prevalence and Predictors of Women's Experience of Psychological Trauma during Childbirth. *Birth*, 30, 36-46.
- Solomon, J., & George, C. (1996). Defining the caregiving system: Toward a theory of caregiving. *Infant Mental Health Journal*, 17(3), 183–197.
- Somerstein, R. (2019). Difficult delivery: Pregnant women of color are more likely to be harassed, yelled at, or otherwise mistreated. *Boston Globe*.
- Soussignan, R. and Schaal, B. 1996. Forms and social signals value of smiles associated with pleasant and unpleasant sensory experience. *Ethology*, 102, 1020–1041.
- Spangler, G., Geserick, B., & von Wahlert, A. (2005). Parental perception and interpretation of infant emotions: Psychological and physiological processes. *Infant and Child Development*, 14(4), 345–363. <https://doi.org/10.1002/icd.398>
- Spieker, S. J., Oxford, M. L., Fleming, C. B., & Lohr, M. J. (2018). Parental childhood adversity, depressive symptoms, and parenting quality: Effects on toddler self-regulation in child welfare services involved families. *Infant Mental Health Journal*, 39(1), 5-16.
- Sroufe, L., & Wunsch, J. P. (1972). The development of laughter in the first year of life. *Child Development*, 43, 1326–1344.
- Stern D. (1985), *The interpersonal world of the infant*. New York: Basic Books.
- Sternberg, C. R., & Campos, J. J. (1990). The development of anger expressions in

infancy. In N.

- Stein, L., Leventhal, B., & Trabasso, T. (Eds.), *Psychological and biological approaches to emotion* (p. 247–282). New York: Lawrence Erlbaum Associates, Inc.
- Stramrood, CA., Paarlberg, KM., Huis, Berger, LW. Vingerhoets, AJ., Van Pampus, MG. (2001). Posttraumatic stress following childbirth in homelike- and hospital settings. *J. Psychosom Obstet Gynaecol*, 32(2), 88-97.
- Stuebe, A. (2009). The risks of not breastfeeding for mothers and infants. *Rev Obstet Gynecol*. 2 (4), 222-231.
- Suess, G. J., Grossmann, K. E., & Sroufe, L. A. (1992). Effects of infant attachment to mother and father on quality of adaptation in preschool: From dyadic to individual organization of self. *International Journal of Behavioral Development*, 15(1), 43-65.
- Sword, W., Kurtz Landy, C., Thabane, L., Watt, S., Krueger, P., Farine, D., & Foster, G. (2011). Is mode of delivery associated with postpartum depression at 6 weeks: a prospective cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology*, 118(8), 966-977.
- Szajnberg, N. M., & Skrinjaric, J. (1993). Perceptions of infant affect in mothers of prematures: The IFEEL pictures assessment. *The IFEEL pictures: A New Instrument for Interpreting Emotions. Madison, CT US: International Universities Press, Inc*, 185-194.
- Taghizadeh, Z., Irajpour, A., & Arbabi, M. (2013). Mothers' response to psychological birth trauma: a qualitative study. *Iranian Red Crescent Medical Journal*, 15(10).
- Taillieu, T. L., Brownridge, D. A., Sareen, J., & Afifi, T. O. (2016). Childhood emotional

maltreatment and mental disorders: Results from a nationally representative adult sample from the United States. *Child abuse & neglect*, 59, 1-12.

Tomsis, Y., Gelkopf, M., Yershalmi, H. & Zipori, Y. (2018). Different coping strategies influence the development of PTSD among first time mothers. *J Matern Fetal Neonatal Med*, 31(10), 1304-1310.

Tham, V., Christensson, K., & Lena Ryding, E. (2007). Sense of coherence and symptoms of post-traumatic stress after emergency caesarean section. *Acta Obstetrica et Gynecologica Scandinavica*, 86(9), 1090-1096.

Thomas, K. (2003). *Birth Trauma: A Guide for You, Your friends and Family to Coping with Post-traumatic Stress Disorder Following Birth*. Great Britain: Nell James Publishers.

Thompson, R. A. (2008). *Early attachment and later development: Familiar questions, new answers*. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (p. 348–365). The Guilford Press.

Thomson, G. (2013). *Birth Trauma: A guide for you, your friends and family to coping with post-traumatic stress disorder follow childbirth*. Nell James Publishers.

Thomson, G., & Downe, S. (2008). Widening the trauma discourse: the link between childbirth and experiences of abuse. *J Psychosom Obstet Gynaecol*, 29 (4) 268-73.

Thomson, G.M. and Downe, S. (2010) Changing the Future to Change the Past: Women's Experiences of a Positive Birth Following a Traumatic Birth Experience. *Journal of Reproductive and Infant Psychology*, 28, 102-112.

- Thomson, P., & Jaque, S. V. (2017). Adverse childhood experiences (ACE) and adult attachment interview (AAI) in a non-clinical population. *Child Abuse & Neglect, 70*, 255-263.
- Tronick, E., Adamson, L.B., Als, H., & Brazelton, T.B. (1975, April). Infant emotions in normal and pertubated interactions. Paper presented at the biennial meeting of the Society for Research in Child Development, Denver, CO.
- Tronick, E., & Beeghly, M. (2011). Infants' meaning-making and the development of mental health problems. *The American Psychologist, 66*(2), 107–119.
doi:10.1037/a0021631
- Trapolini, T. & Ungerer, J. & McMahon, C. (2008). Maternal depression: Relations with maternal caregiving representations and emotional availability during the preschool years. *Attachment & human development. 10*, 73-90.
10.1080/14616730801900712.
- Trevarthen, C. (2009). The functions of emotion in infancy: the regulation and communication of rhythm, sympathy and meaning in human development. In D.
- Tsivos, Z. L., Calam, R., Sanders, M. R., & Wittkowski, A. (2015). Interventions for postnatal epression assessing the mother–infant relationship and child developmental outcomes: a systematic review. *International Journal of Women's Health, 7*, 429.
- Van den Bergh, B. R., Mulder, E. J., Mennes, M., & Glover, V. (2005). Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: Links and possible mechanisms. A review. *Neuroscience & Biobehavioral Reviews, 29*(2), 237-258.

- Van Heumen, M. A., Hollander, M. H., van Pampus, M. G., van Dillen, J., & Stramrood, B. A. (2018). Psychosocial predictors of postpartum posttraumatic stress disorder in women with a traumatic childbirth experience. *Frontiers in Psychiatry, 9*, 348.
- Van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta-analysis on the predictive validity of the Adult Attachment Interview. *Psychological Bulletin, 117*(3), 387–403.
- Van IJzendoorn, M. H., & Hubbard, F. O. A. (2000). Are infant crying and maternal responsiveness during the first year related to infant–mother attachment at 15 months? *Attachment & Human Development, 2*(3), 371–391.
- Vigod, S. N., Villegas, L., Dennis, C. L., & Ross, L. E. (2010). Prevalence and risk factors for postpartum depression among women with preterm and low-birth-weight infants: a systematic review. *BJOG: An International Journal of Obstetrics & Gynaecology, 117*(5), 540-550
- Vignato, J. Georges, J.M., Bush, R.A. & Connelly, C.D. (2017), Post-traumatic stress disorder in the perinatal period: A Concept analysis. *Journal of Clinical Nursing, 26* (11), 3859-3868.
- Waldenstrom, U., Hildingsson, I., Rubertsson, C., & Radestad, I. (2004). A negative birth experience: prevalence and risk factors in a national sample. *Birth, 31* (1), 17-27.
- Waehrer, G. M., Miller, T. R., Silverio Marques, S. C., Oh, D. L., & Burke Harris, N. (2020). Disease burden of adverse childhood experiences across 14 states. *PLoS one, 15*(1), e0226134.
- Webb, R., & Ayers, A. (2015). Cognitive biases in processing infant emotion by women

- with depression, anxiety and posttraumatic stress disorder in pregnancy or after birth; A systematic review. *Cogn Emot.*, 29(7), 1278-94.
- Weindling A., (2003) The confidential enquiry into maternal and child health (CEMACH) *Archives of Disease in Childhood.*, 88, 1034-1037.
- Weiss, D. S., & Marmar, C. R. (1997). *The Impact of Event Scale—Revised*. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (p. 399–411). Guilford Press.
- Wenzel, A., Haugen, E.N., Jackson, L.C., & Brendie, J.R. (2005). Anxiety symptoms and disorders at eight weeks postpartum. *Journal Anxiety Disorder*, 19(3), 295-311
- Williams, C., Patricia Taylor, E., & Schwannauer, M. (2016). A web-based survey of mother–infant bond, attachment experiences, and metacognition in posttraumatic stress following childbirth. *Infant Mental Health Journal*, 37(3), 259-273.
- World Health Organization (2005). The world health report 2005- Make every mother and child count. <https://www.who.int/whr/2005/en/>
- White, T., Matthey, S., Boyd, K., & Barnett, B. (2006). "Postnatal depression and post-traumatic stress after childbirth: Prevalence, course and co-occurrence": Corrigendum. *Journal of Reproductive and Infant Psychology*, 24(3), 283.
- Wijma, K., Soderquist, J., Wijma, B. (1997). Posttraumatic stress disorder after childbirth: Cross sectional study. *Journal Anxiety Disorder*. 11 (6), 587-97.
- Wittkowski, A., Wieck, A., & Mann, S. (2007). An evaluation of two bonding questionnaires: a comparison of the Mother-to-Infant Bonding Scale with the Postpartum Bonding Questionnaire in a sample of primiparous mothers. *Archives of Women's Mental Health*, 10(4), 171-175.

- Wright, N., Hill, J., Sharp, H., & Pickles, A. (2018). Maternal sensitivity to distress, attachment and the development of callous-unemotional traits in young children. *Journal of Child Psychology and Psychiatry*, 59(7), 790–800.
- Yehuda, R., Engel, S. M., Brand, S. R., Seckl, J., Marcus, S. M., & Berkowitz, G. S. (2005). Transgenerational effects of posttraumatic stress disorder in babies of mothers exposed to the World Trade Center attacks during pregnancy. *The Journal of Clinical Endocrinology & Metabolism*, 90(7), 4115-4118.
- Yonkers, K. A., Smith, M. V., Forray, A., Epperson, C. N., Costello, D., Lin, H., & Belanger, K. (2014). Pregnant women with posttraumatic stress disorder and risk of preterm birth. *JAMA psychiatry*, 71(8), 897-904.
- Zahn-Waxler, C., & Wagner, E. (1993). Caregivers' interpretations of infant emotions: A comparison of depressed and well mothers. In R. N. Emde, J. D. Osofsky, & P.M. Butterfield (Eds.), *Clinical infant reports series of the ZERO TO THREE/National Center for Clinical Infant Programs. The IFEEL pictures: A new instrument for interpreting emotions* (p. 175–184). International Universities Press, Inc.
- Zeanah, C.H. (Ed.).(2019). Handbook of infant mental health (3rd ed.). New York: The Guilford Press.
- Zeifman, D. M. (2001). An ethological analysis of human infant crying: answering Tinbergen's four questions. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology*, 39(4), 265-285.
- Zimmerman, G.H. (2013). Birth trauma: Posttraumatic stress disorder after childbirth. *International Journal of Childbirth Education*, 328, 61-66.

APPENDIX A
INTERNAL REVIEW BOARD APPROVAL



University of Nevada, Reno

Research Integrity
 218 Ross Hall / 331,
 Reno, Nevada 89557
 775.327.2368 / 775.327.2369 fax
www.unr.edu/research-integrity

DATE: March 6, 2020
 TO: Brenda Freeman
 FROM: University of Nevada, Reno Institutional Review Board (IRB)

PROJECT TITLE: [1583219-1] Traumatic Birth Experiences and The Prediction of Infant Emotion Identification
 REFERENCE #: Social Behavioral
 SUBMISSION TYPE: New Project
 ACTION: DETERMINATION OF EXEMPT STATUS
 REVIEW TYPE: Exempt
 DECISION DATE: March 6, 2020
 REVIEW CATEGORY: Exemption Category # 2

--

An IRB member has reviewed this project and has determined it is EXEMPT FROM IRB REVIEW according to federal regulations. Please note, the federal government has identified certain categories of research involving human subjects that qualify for exemption from federal regulations.

Only the IRB has been designated by the University to make a determination that a study is exempt from federal regulations. The above-referenced protocol was reviewed and the research deemed eligible to proceed in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46.101).

--

Reviewed Documents

- Advertisement - Online posting.doc (UPDATED: 02/17/2020)
- Advertisement - In Person Recruitment.doc (UPDATED: 02/17/2020)
- Application Form - Core Application Research with Participants 013119-13-5.docx (UPDATED: 02/17/2020)
- Consent Form - Sample Script.docx (UPDATED: 02/24/2020)
- Other - Debrief.doc (UPDATED: 02/17/2020)
- Questionnaire/Survey - Qualtrics Survey .pdf (UPDATED: 02/17/2020)
- Training/Certification - citiCompletionReport5994235.pdf (UPDATED: 02/9/2020)
- University of Nevada, Reno - Part I, Cover Sheet - University of Nevada, Reno - Part I, Cover Sheet (UPDATED: 02/24/2020)

If you have any questions, please contact Nancy Moody at 775.327.2367 or at nmoody@unr.edu.

NOTE for VA Researchers: You are not approved to begin this research until you receive an approval letter from the VASNHCS Associate Chief of Staff for Research stating that your research has been approved by the Research and Development Committee.

Sincerely,

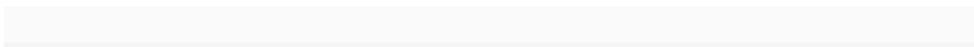


Richard Bjur, PhD
Co-Chair, UNR IRB
University of Nevada Reno



Janet Usinger, PhD
Co-Chair, UNR IRB
University of Nevada Reno

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Nevada, Reno IRB's record.



APPENDIX B
ADVERTISEMENT

Was The Birth of Your Baby A Difficult or Traumatic Experience

If so, would you be willing to help us learn more about traumatic birth experiences? We would like to understand them better so we can eventually help parents and their babies with these types of experiences

To participate in this research, you must be:
18 years old and speak English
Be able to take an online survey
Have a child under five

Participation in this study involves:
Completing a 20-30 minute online survey
The option to participate in a raffle for two, one hundred dollar gift cards

Link:

https://unr.az1.qualtrics.com/jfe/form/SV_cu6lQ83hCcgIsCx

Alex Dimitroff
775-786-2424
dimitrof@nevada.unr.edu

APPENDIX C

INFORMED CONSENT

We are conducting a research study to learn about any potential effects traumatic or difficult birth experiences may play in parent-infant relationship factors such as bonding and emotion identification.

If you volunteer to be in this study, you will be asked to answer questions about your birth, childhood experiences, mental health, and bond with your infant. You will also view images of infants and be asked to identify what emotion you believe they are showing. At the end of the study, you will be offered resources. If you choose, you may enter a raffle for that includes a chance of winning two, one-hundred dollar amazon gift cards.

Your participation should take about twenty to thirty minutes.

This study is considered to be minimal risk of harm. This means the risks of your participation in the research are similar in type or intensity to what you encounter during your daily activities. You may experience some discomfort in thinking about difficult life experiences from childhood or during your birth. You may also experience some discomfort in responding to questions about your mental health.

Benefits of doing research are not definite; but we hope to learn more about the impact of traumatic and difficult birth on individual's and their relationship with their infants. We hope that this information will support clinicians and healthcare providers in providing the best possible services. There are no direct benefits to you in this study activity.

The researchers and the University of Nevada, Reno will treat the information collected with professional standards of confidentiality and protect it to the extent allowed by law. You will not be personally identified in this study. The US Department of Health and Human Services, the University of Nevada, Reno Research Integrity Office, and the Institutional Review Board may look at your study records.

You may ask questions of the researcher at any time by calling Brenda Freeman at (775) 682-9353 or by sending an email to brendafreeman@unr.edu. You may also contact Alex Dimitroff at (775) 786-2424 or by sending an email to dimitrof@unr.nevada.edu

Your participation in this study is completely voluntary. You may stop at any time. Declining to participate or stopping your participation will not have any negative effects.

You may ask about your rights as a research participant. If you have questions, concerns, or complaints about this research, you may report them (anonymously if you so choose) by calling the University of Nevada, Reno Research Integrity Office at 775.327.2368.

If you would like to participate in this study, and meet the following criteria: over 18 years of age, experienced a traumatic or difficult birth, have a child the age of five or under, speak English and can navigate an online survey, please select next below. Thank you for your participation in this study!

APPENDIX D

DEBRIEF

What was the purpose of this study?

This study is concerned about the relationship between difficult or traumatic birth experiences and parent-infant relationship factors such as bonding and emotion identification. Previous studies have found that traumatic events may impact parent-child bonds and emotion identification. Although, we do not know much about how traumatic or difficult birth experiences may or may not impact these factors.

Why is this important to study?

We hope that further understanding of the impact of difficult or traumatic birth experiences will help healthcare professionals and clinicians provide more nuanced and relevant services to individuals and families who have experienced birth trauma.

Would you like to learn more?

Prevention and Treatment of Traumatic Childbirth: <http://pattch.org/resource-guide/>

Would you like more support?

Postpartum Support International:

1-800-944-4773

<https://www.postpartum.net>

Suicide Prevention Lifeline: 1(800) 273-TALK

The Birth Trauma Association: <https://www.birthtraumaassociation.org.uk>

Solace for Mothers: <http://www.solaceformothers.org>

The National Center for Traumatic Stress: <https://www.ptsd.va.gov>

The National Alliance on Mental Illness: <https://www.nami.org>

If you have concerns about your rights as a participant in this experiment, please contact University of Nevada, Reno Research Integrity Office at 775.327.2368.

Thank you again for your participation.

APPENDIX E

OBSTETRIC INFORMATION

Please check all that apply to the physical nature of your birth experience:

- Rapid delivery
- Prolonged labor
- Unplanned/emergency caesarian section
- Forcep delivery
- Vacuum extraction
- Premature birth
- Fetal distress
- Congenital abnormalities
- Cardiac arrest
- Hemorrhage
- Pre-eclampsia
- Loss of fertility
- Inadequate pain relief
- Manual removal of placenta
- Infant experienced birth related injury
- Tissue or organ damage

Please check all that apply to the psychological nature of your birth experience:

- I feared for my own life
- I feared for the life of my infant

- I feared for my partner
- I felt a loss of control and/or power during my birth
- I dissociated during my birth

Please check all that apply to the relational nature of your birth experience:

- I experienced physical abuse
- I experienced verbal abuse
- I experienced a sexual assault
- I was separated from infant during or shortly after their birth
- I was separated from my support partner(s)
- My infant was admitted to the NICU after birth
- I feel that I experienced incompetent healthcare
- I felt degrading by my experience with my healthcare provider
- I felt betrayed by others

I feel that the difficult or traumatic aspects of my birth occurred as a result of another's actions or inactions.

- Yes
- No

If you answered yes to the question above, please check all that apply. I felt that the difficult or traumatic aspects of my birth occurred because of:

- Myself
- My partner
- My infant
- My healthcare provider(s)

APPENDIX F
EDINBURGH POSTNATAL DEPRESSION

Edinburgh Postnatal Depression Scale¹ (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- Yes, all the time
 Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.
 No, not very often Please complete the other questions in the same way.
 No, not at all

In the past 7 days:

- | | |
|---|--|
| <p>1. I have been able to laugh and see the funny side of things</p> <ul style="list-style-type: none"> <input type="checkbox"/> As much as I always could <input type="checkbox"/> Not quite so much now <input type="checkbox"/> Definitely not so much now <input type="checkbox"/> Not at all | <p>*6. Things have been getting on top of me</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, most of the time I haven't been able to cope at all <input type="checkbox"/> Yes, sometimes I haven't been coping as well as usual <input type="checkbox"/> No, most of the time I have coped quite well <input type="checkbox"/> No, I have been coping as well as ever |
| <p>2. I have looked forward with enjoyment to things</p> <ul style="list-style-type: none"> <input type="checkbox"/> As much as I ever did <input type="checkbox"/> Rather less than I used to <input type="checkbox"/> Definitely less than I used to <input type="checkbox"/> Hardly at all | <p>*7. I have been so unhappy that I have had difficulty sleeping</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, most of the time <input type="checkbox"/> Yes, sometimes <input type="checkbox"/> Not very often <input type="checkbox"/> No, not at all |
| <p>*3. I have blamed myself unnecessarily when things went wrong</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, most of the time <input type="checkbox"/> Yes, some of the time <input type="checkbox"/> Not very often <input type="checkbox"/> No, never | <p>*8. I have felt sad or miserable</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, most of the time <input type="checkbox"/> Yes, quite often <input type="checkbox"/> Not very often <input type="checkbox"/> No, not at all |
| <p>4. I have been anxious or worried for no good reason</p> <ul style="list-style-type: none"> <input type="checkbox"/> No, not at all <input type="checkbox"/> Hardly ever <input type="checkbox"/> Yes, sometimes <input type="checkbox"/> Yes, very often | <p>*9. I have been so unhappy that I have been crying</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, most of the time <input type="checkbox"/> Yes, quite often <input type="checkbox"/> Only occasionally <input type="checkbox"/> No, never |
| <p>*5. I have felt scared or panicky for no very good reason</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, quite a lot <input type="checkbox"/> Yes, sometimes <input type="checkbox"/> No, not much <input type="checkbox"/> No, not at all | <p>*10. The thought of harming myself has occurred to me</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, quite often <input type="checkbox"/> Sometimes <input type="checkbox"/> Hardly ever <input type="checkbox"/> Never |

Administered/Reviewed by _____ Date _____

¹Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

²Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

Users may reproduce the scale without further permission providing they respect copyright by quoting the names of the authors, the title and the source of the paper in all reproduced copies.

APPENDIX G

POSTPARTUM BONDING QUESTIONNAIRE

Please indicate how often the following are true for you. There are no “right” or “wrong” answers. Choose the answer which seems right in your recent experience:

	Always	Very often	Quite often	Some-times	Rarely	Never
I feel close to my baby	0	1	2	3	4	5
I wish the old days when I had no baby would come back	5	4	3	2	1	0
I feel distant from my baby	5	4	3	2	1	0
I love to cuddle my baby	0	1	2	3	4	5
I regret having this baby	5	4	3	2	1	0
The baby doesn't seem to be mine	5	4	3	2	1	0
My baby winds me up	5	4	3	2	1	0
I love my baby to bits	0	1	2	3	4	5
I feel happy when my baby smiles or laughs	0	1	2	3	4	5
My baby irritates me	5	4	3	2	1	0
I enjoy playing with my baby	0	1	2	3	4	5
My baby cries too much	5	4	3	2	1	0
I feel trapped as a mother	5	4	3	2	1	0
I feel angry with my baby	5	4	3	2	1	0
I resent my baby	5	4	3	2	1	0
My baby is the most beautiful baby in the world	0	1	2	3	4	5
I wish my baby would somehow go away	5	4	3	2	1	0
I have done harmful things to my baby	5	4	3	2	1	0
My baby makes me feel anxious	5	4	3	2	1	0
I am afraid of my baby	5	4	3	2	1	0
My baby annoys me	5	4	3	2	1	0
I feel confident when caring for my baby	0	1	2	3	4	5
I feel the only solution is for someone else to look after my baby	5	4	3	2	1	0
I feel like hurting my baby	5	4	3	2	1	0
My baby is easily comforted	0	1	2	3	4	5

APPENDIX H

IMPACT OF EVENTS SCALE-REVISED

IMPACT OF EVENT SCALE- REVISED

INSTRUCTIONS: Below is a list of difficulties people sometimes have after stressful life events. Please read each item, and then indicate how distressing each difficulty has been for you **DURING THE PAST SEVEN DAYS** with respect to _____, which occurred on _____. How much were you distressed or bothered by these difficulties?

Item Response Anchors are 0 = Not at all; 1 = A little bit; 2 = Moderately; 3 = Quite a bit; 4 = Extremely.

The **Intrusion** subscale is the **MEAN** item response of items 1, 2, 3, 6, 9, 14, 16, 20. Thus, scores can range from 0 through 4.

The **Avoidance** subscale is the **MEAN** item response of items 5, 7, 8, 11, 12, 13, 17, 22. Thus, scores can range from 0 through 4.

The **Hyperarousal** subscale is the **MEAN** item response of items 4, 10, 15, 18, 19, 21. Thus, scores can range from 0 through 4.

<ol style="list-style-type: none"> 1. Any reminder brought back feelings about it. 2. I had trouble staying asleep. 3. Other things kept making me think about it. 4. I felt irritable and angry. 5. I avoided letting myself get upset when I thought about it or was reminded of it. 6. I thought about it when I didn't mean to. 7. I felt as if it hadn't happened or wasn't real. 8. I stayed away from reminders of it. 9. Pictures about it popped into my mind. 10. I was jumpy and easily startled. 11. I tried not to think about it. 12. I was aware that I still had a lot of feelings about it, but I didn't deal with them. 	<ol style="list-style-type: none"> 13. My feelings about it were kind of numb. 14. I found myself acting or feeling like I was back at that time. 15. I had trouble falling asleep. 16. I had waves of strong feelings about it. 17. I tried to remove it from my memory. 18. I had trouble concentrating. 19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart. 20. I had dreams about it. 21. I felt watchful and on-guard. 22. I tried not to talk about it.
---	---

Score Interpretation (IES-R):

24-32: PTSD is a clinical concern. Those with scores this high who do not have full PTSD will have partial PTSD or at least some of the symptoms (Asukai & Kato 2002).

33-38: This represents the best cutoff for a probable diagnosis of PTSD (Creamer et al. 2002)

39 and above: This is high enough to suppress your immune system's functioning (even 10 years after an impact event) (Kawamura et al. 2001).

Contact Information:

Daniel S. Weiss, Ph.D., Professor of Medical Psychology, Department of Psychiatry, University of California, San Francisco, CA 94143-0984. Mail Code: UCSF Box 0984-F. Mail Code: UCSF Box 0984-F. Tel.: (415) 476-7557. Email: daniel.weiss@ucsf.edu

The Hartford Institute for Geriatric Nursing recognizes Steven Christianson, DO, MM and Joan Mazren, MEd, RN as the original authors of this issue.

ADVERSE CHILDHOOD EXPERIENCE (ACE) QUESTIONNAIRE

Adverse Childhood Experience (ACE) Questionnaire**Finding your ACE Score** ra hbr 10 24 06**While you were growing up, during your first 18 years of life:**

1. Did a parent or other adult in the household **often** ...
Swear at you, insult you, put you down, or humiliate you?
or
Act in a way that made you afraid that you might be physically hurt?
Yes No If yes enter 1 _____
2. Did a parent or other adult in the household **often** ...
Push, grab, slap, or throw something at you?
or
Ever hit you so hard that you had marks or were injured?
Yes No If yes enter 1 _____
3. Did an adult or person at least 5 years older than you **ever**...
Touch or fondle you or have you touch their body in a sexual way?
or
Try to or actually have oral, anal, or vaginal sex with you?
Yes No If yes enter 1 _____
4. Did you **often** feel that ...
No one in your family loved you or thought you were important or special?
or
Your family didn't look out for each other, feel close to each other, or support each other?
Yes No If yes enter 1 _____
5. Did you **often** feel that ...
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
or
Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Yes No If yes enter 1 _____
6. Were your parents **ever** separated or divorced?
Yes No If yes enter 1 _____
7. Was your mother or stepmother:
Often pushed, grabbed, slapped, or had something thrown at her?
or
Sometimes or often kicked, bitten, hit with a fist, or hit with something hard?
or
Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
Yes No If yes enter 1 _____
8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
Yes No If yes enter 1 _____
9. Was a household member depressed or mentally ill or did a household member attempt suicide?
Yes No If yes enter 1 _____
10. Did a household member go to prison?
Yes No If yes enter 1 _____

Now add up your "Yes" answers: _____ This is your ACE Score

APPENDIX J

ADVERSE CHILDHOOD EXPERIENCES TABLE

Appendix J. ACES and PDD, PTSD and Bonding

Postpartum Functioning	ACES		X ²
	Low	High	
<i>Postpartum Depression</i>			
No PDD	61 (58)	17 (20)	0.96
Probable PDD	175 (178)	66 (63)	
<i>Birth- Related Trauma</i>			
No PTSD	177 (175)	60 (62)	0.24
Probable PTSD	59 (61)	23 (21)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	155 (149)	46 (52)	2.77
Parent Child Rel Dysfunction	81 (87)	37 (31)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	143 (138)	43 (48)	1.95
Probable Bonding Disorder	93 (98)	40 (35)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	209 (206)	69 (72)	1.62
Risk for Rejection	27 (30)	14 (11)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	226	79	.05

	(226)	(79)
Infant-Focused Anxiety	10 (10)	4 (4)

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies

APPENDIX K

RAPID DELIVERY

Appendix K. Rapid Delivery and PDD, PTSD and Bonding

Postpartum Functioning	Rapid Delivery		X ²
	Yes	No	
<i>Postpartum Depression</i>			
Probable PDD	42 (46)	199 (195)	1.83
No PDD	19 (15)	59 (63)	
<i>Birth- Related Trauma</i>			
No PTSD	43 (45)	194 (192)	.57
Probable PTSD	18 (16)	64 (66)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	38 (38)	163 (163)	.02
Parent Child Rel Dysfunction	23 (23)	95 (95)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	34 (36)	152 (150)	.21
Probable Bonding Disorder	27 (25)	106 (108)	
<i>Bonding Anger & Rejection (Subscale)</i>			

No Rejection	31 (33)	227 (224)	.84
Risk for Rejection	10 (8)	51 (53)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	10 (12)	248 (247)	.85
Infant-Focused Anxiety	4 (3)	57 (58)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies

APPENDIX L

PROLONGED DELIVERY

Appendix L. Prolonged Delivery and PDD, PTSD and Bonding

Postpartum Functioning	Prolonged Delivery		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	48 (41)	30 (37)	3.26
Probable PDD	120 (127)	121 (114)	
<i>Birth- Related Trauma</i>			
No PTSD	131 (125)	106 (112)	2.52
Probable PTSD	37 (43)	45 (39)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	109 (106)	92 (95)	.53
Parent Child Rel Dysfunction	59 (62)	59 (56)	

<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	100	86	.21
	(98)	(88)	
Probable Bonding Disorder	68	65	
	(70)	(63)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	151	127	2.37
	(146)	(132)	
Risk for Rejection	17	24	
	(22)	19	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	161	144	.04
	(161)	(144)	
Infant-Focused Anxiety	7	7	
	(7)	(7)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies

APPENDIX M VACUUM DELIVERY

Appendix M. Vacuum Delivery and PDD, PTSD and Bonding

Postpartum Functioning	Vacuum Delivery		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	68	10	0.00
	(68)	(10)	
Probable PDD	210	31	
	(210)	(31)	
<i>Birth- Related Trauma</i>			
No PTSD	207	30	.03
	(207)	(31)	
Probable PTSD	71	11	
	(72)	(10)	

<i>Bonding Overall Score</i>				
Healthy Parent-Child Relation	173	28		0.56
	(175)	(26)		
Parent Child Rel Dysfunction	105	13		
	(103)	(15)		
<i>Bonding Disorder (Subscale)</i>				
No Bonding Disorder	162	24		0.00
	(162)	(24)		
Probable Bonding Disorder	116	17		
	(116)	(17)		
<i>Bonding Anger & Rejection (Subscale)</i>				
No Rejection	246	32		3.48
		(242)	(36)	
Risk for Rejection	32	9		
	(36)	(5)		
<i>Infant-Focused Anxiety (Subscale)</i>				
No Infant-Focused Anxiety	266	39		0.27
	(266)	(39)		
Infant-Focused Anxiety	12	2		
	(12)	(2)		

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies

APPENDIX N

PREMATURE BIRTH

Appendix N. Premature Birth and PDD, PTSD and Bonding

Postpartum Functioning	Premature Birth		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	64	14	0.05
	(63)	(14)	
Probable PDD	195	46	
	(195)	(45)	

<i>Birth- Related Trauma</i>			
No PTSD	195 (192)	42 (44)	0.71
Probable PTSD	64 (66)	18 (15)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	158 (163)	43 (38)	2.38
Parent Child Rel Dysfunction	101 (96)	17 (22)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	147 (151)	39 (35)	1.36
Probable Bonding Disorder	112 (108)	21 (25)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	224 (226)	54 (52)	0.54
Risk for Rejection	35 (33)	6 (7)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	247 (248)	58 (57)	0.20
Infant-Focused Anxiety	12 (12)	2 (3)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies

APPENDIX O

FETAL DISTRESS

Appendix O. Fetal Distress and PDD, PTSD and Bonding

Postpartum Functioning	Fetal Distress		X ²
	No	Yes	

<i>Postpartum Depression</i>			
No PDD	44	34	0.43
	(47)	(32)	
Probable PDD	146	95	
	(144)	(98)	
<i>Birth- Related Trauma</i>			
No PTSD	136	101	1.81
	(141)	(96)	
Probable PTSD	54	28	
	(49)	(33)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	118	83	0.17
	(120)	(81)	
Parent Child Rel Dysfunction	72	46	
	(70)	(48)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	109	77	0.17
	(111)	(75)	
Probable Bonding Disorder	81	52	
	(79)	(54)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	167	54	0.23
	(166)	(52)	
Risk for Rejection	23	18	
	(24)	(17)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	179	126	2.20
	(182)	(123)	
Infant-Focused Anxiety	11	3	
	(8)	(6)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies

APPENDIX P

HEMORRHAGE

Appendix P. Hemorrhage and PDD, PTSD and Bonding

Postpartum Functioning	Hemorrhage		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	62 (61)	16 (16)	0.04
Probable PDD	189 (190)	52 (51)	
<i>Birth- Related Trauma</i>			
No PTSD	185 (187)	53 (51)	0.21
Probable PTSD	66 (65)	16 (17)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	154 (158)	47 (43)	1.38
Parent Child Rel Dysfunction	97 (93)	21 (26)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	141 (146)	45 (40)	2.20
Probable Bonding Disorder	110 (105)	23 (28)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	217	61	0.51
		(219)	(59)
Risk for Rejection	34 (32)	7 (9)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	240 (240)	65 (65)	0.00
Infant-Focused Anxiety	11 (11)	3 (3)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies

APPENDIX Q

PRE-ECLAMPSIA

Appendix Q. Pre-Eclampsia and PDD, PTSD and Bonding

Postpartum Functioning	Pre-Eclampsia		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	66 (67)	12 (11)	0.08
Probable PDD	207 (206)	34 (35)	
<i>Birth- Related Trauma</i>			
No PTSD	185 (187)	53 (51)	0.21
Probable PTSD	66 (65)	16 (17)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	170 (172)	31 (29)	0.44
Parent Child Rel Dysfunction	103 (101)	15 (17)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	160 (159)	26 (27)	0.07
Probable Bonding Disorder	113 (114)	20 (19)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	237 (238)	41 (40)	0.19
Risk for Rejection	36 (35)	5 (6)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	261	44	0.00

	(261)	(44)
Infant-Focused Anxiety	12 (12)	2 (2)

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX R

LOSS OF FERTILITY

Appendix R. Loss of Fertility and PDD, PTSD and Bonding

Postpartum Functioning	Loss of Fertility		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	75 (76)	3 (2)	0.17
Probable PDD	234 (233)	7 (8)	
<i>Birth- Related Trauma</i>			
No PTSD	231 (230)	6 (7)	1.11
Probable PTSD	78 (80)	4 (3)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	195 (195)	6 (6)	0.40
Parent Child Rel Dysfunction	114 (114)	4 (4)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	181 (190)	5 (6)	0.29
Probable Bonding Disorder	128 (129)	5 (4)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	268 (269)	10 (9)	1.52

Risk for Rejection	41 (40)	0 (1)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	295 (295)	10 (10)	0.47
Infant-Focused Anxiety	14 (14)	0 (1)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX S

INADEQUATE PAIN RELIEF

Appendix S. Inadequate Pain Relief and PDD, PTSD and Bonding

Postpartum Functioning	Inadequate Pain Relief		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	53 (54)	25 (25)	0.02
Probable PDD	166 (166)	75 (76)	
<i>Birth- Related Trauma</i>			
No PTSD	168 (163)	69 (74)	2.14
Probable PTSD	51 (56)	31 (26)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	137 (128)	64 (63)	0.06
Parent Child Rel Dysfunction	82 (81)	36 (37)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	123	63	1.32

	(128)	(58)	
Probable Bonding Disorder	96 (91)	37 (42)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	194 (191)	84 (87)	1.29
Risk for Rejection	25 (28)	16 (13)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	210 (209)	95 (96)	0.13
Infant-Focused Anxiety	9 (10)	5 (4)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX T MANUAL PLACENTA REMOVAL

Appendix T. Manual Placenta Removal and PDD, PTSD and Bonding

Postpartum Functioning	Manual Placenta Removal		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	67 (68)	11 (10)	0.23
Probable PDD	212 (211)	29 (30)	
<i>Birth- Related Trauma</i>			
No PTSD	204 (207)	33 (30)	1.61
Probable PTSD	75 (71)	7 (10)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	172 (176)	29 (25)	1.77

Parent Child Rel Dysfunction	107 (103)	11 (15)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	158 (163)	28 (23)	2.57
Probable Bonding Disorder	121 (116)	12 (17)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	244 (243)	34 (35)	0.19
Risk for Rejection	35 (36)	6 (5)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	267 (267)	38 (38)	0.04
Infant-Focused Anxiety	12 (12)	2 (2)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX U

INJURY TO INFANT

Appendix U. Injury to Infant and PDD, PTSD and Bonding

Postpartum Functioning	Injury to Infant		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	72 (70)	6 (8)	0.95
Probable PDD	213 (215)	28 (26)	
<i>Birth- Related Trauma</i>			
No PTSD	211 (212)	26 (25)	0.09
Probable PTSD	74	8	

	(73)	(9)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	181	20	0.29
	(180)	(21)	
Parent Child Rel Dysfunction	104	14	
	(105)	(13)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	165	21	0.19
	(166)	(20)	
Probable Bonding Disorder	120	13	
	(119)	(14)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	251	27	2.03
	(248)	(30)	
Risk for Rejection	34	7	
	(37)	(5)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	273	32	0.20
	(273)	(33)	
Infant-Focused Anxiety	12	2	
	(13)	(2)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX V

ORGAN DAMAGE

Appendix V. Organ Damage and PDD, PTSD and Bonding

Postpartum Functioning	Organ Damage		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	70	8	0.77
	(68)	(10)	
Probable PDD	207	34	
	(209)	(32)	

<i>Birth- Related Trauma</i>			
No PTSD	208 (206)	29 (31)	0.70
Probable PTSD	69 (71)	13 (11)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	177 (175)	24 (27)	0.71
Parent Child Rel Dysfunction	100 (103)	18 (16)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	163 (162)	23 (25)	0.25
Probable Bonding Disorder	114 (116)	19 (18)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	243 (241)	35 (37)	0.63
Risk for Rejection	34 (36)	7 (5)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	264 (265)	41 (40)	0.47
Infant-Focused Anxiety	13 (12)	2 (2)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX W

FEAR FOR LIFE

Table 23. Fear for Life of Your Infant Removal and PDD, PTSD and Bonding

Postpartum Functioning	Fear for Life of Your Infant		X ²
	No	Yes	

Postpartum Depression

No PDD	31 (31)	47 (47)	0.00
Probable PDD	96 (96)	145 (145)	
<i>Birth- Related Trauma</i>			
No PTSD	98 (94)	139 (142)	0.91
Probable PTSD	29 (33)	53 (49)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	72 (80)	129 (121)	3.61
Parent Child Rel Dysfunction	55 (47)	63 (71)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	69 (74)	58 (52)	1.37
Probable Bonding Disorder	117 (112)	75 (80)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	106 (111)	172 (167)	2.56
Risk for Rejection	21 (16)	20 (25)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	122 (122)	183 (184)	0.10
Infant-Focused Anxiety	5 (6)	9 (8)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX X

FEAR FOR YOUR PARTNER

Appendix X. Fear for Your Partner and PDD, PTSD and Bonding

Postpartum Functioning	Fear for Your Partner		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	72 (71)	6 (7)	0.36
Probable PDD	217 (218)	24 (23)	
<i>Birth- Related Trauma</i>			
No PTSD	215 (214)	22 (22)	0.02
Probable PTSD	74 (74)	8 (8)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	179 (182)	22 (19)	1.51
Parent Child Rel Dysfunction	110 (107)	8 (11)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	166 (168)	20 (17)	0.95
Probable Bonding Disorder	123 (121)	10 (13)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	250 (251)	28 (26)	1.13
Risk for Rejection	39 (37)	2 (4)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	276 (276)	29 (29)	0.09
Infant-Focused Anxiety	12 (13)	1 (2)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX Y

SEXUAL ABUSE

Appendix Y. Sexual Abuse and PDD, PTSD and Bonding

Postpartum Functioning	Sexual Abuse		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	78 (76)	0 (2)	2.66
Probable PDD	233 (235)	8 (6)	
<i>Birth- Related Trauma</i>			
No PTSD	233 (231)	4 (6)	2.54
Probable PTSD	78 (80)	4 (2)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	196 (196)	5 (5)	0.00
Parent Child Rel Dysfunction	115 (115)	3 (3)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	182 (181)	4 (5)	0.23
Probable Bonding Disorder	129 (130)	4 (3)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	271 (271)	7 (7)	0.00
Risk for Rejection	40 (40)	1 (1)	
<i>Infant-Focused Anxiety (Subscale)</i>			

No Infant-Focused Anxiety	297 (297)	8 (8)	0.38
Infant-Focused Anxiety	14 (14)	0 (1)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX Z

SEPERATED FROM PARTNER

Appendix Z. Separated from Partner and PDD, PTSD and Bonding

Postpartum Functioning	Separated from Partner		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	57 (51)	21 (27)	2.41
Probable PDD	153 (159)	88 (82)	
<i>Birth- Related Trauma</i>			
No PTSD	155 (156)	82 (81)	0.08
Probable PTSD	55 (54)	27 (28)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	128 (132)	73 (69)	1.12
Parent Child Rel Dysfunction	82 (77)	36 (40)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	121 (122)	65 (64)	0.12
Probable Bonding Disorder	89 (88)	44 (45)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	179	99 (183)	2.00 (95)

Risk for Rejection	31 (27)	10 (14)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	202 (201)	103 (104)	0.49
Infant-Focused Anxiety	8 (9)	6 (5)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX i

INCOMPETENT HEALTHCARE

Table 33. Incompetent Healthcare and PDD, PTSD and Bonding

Postpartum Functioning	Incompetent Healthcare		X^2
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	49 (51)	29 (27)	0.19
Probable PDD	158 (157)	83 (85)	
<i>Birth- Related Trauma</i>			
No PTSD	158 (154)	79 (83)	1.28
Probable PTSD	49 (53)	33 (29)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	134 (130)	67 (71)	0.75
Parent Child Rel Dysfunction	73 (77)	45 (41)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	124 (121)	62 (65)	0.62

Probable Bonding Disorder	83 (86)	50 (47)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	184 (180)	94 (98)	1.60
Risk for Rejection	23 (27)	18 (15)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	198 (198)	107 (107)	0.00
Infant-Focused Anxiety	9 (9)	5 (5)	

Note. * p<.05, **p<.01. Expected frequencies appear in parentheses below actual frequencies.

APPENDIX ii

PARTNER AT FAULT

Appendix ii. Partner at Fault and PDD, PTSD and Bonding

Postpartum Functioning	Partner at Fault		X ²
	No	Yes	
<i>Postpartum Depression</i>			
No PDD	75 (74)	3 (3)	0.07
Probable PDD	230 (230)	11 (11)	
<i>Birth- Related Trauma</i>			
No PTSD	230 (226)	7 (10)	4.53
Probable PTSD	75 (78)	7 (4)	
<i>Bonding Overall Score</i>			
Healthy Parent-Child Relation	195 (192)	6 (9)	2.55
Parent Child Rel Dysfunction	110	8	

	(113)	(5)	
<i>Bonding Disorder (Subscale)</i>			
No Bonding Disorder	180	6	1.44
	(178)	(8)	
Probable Bonding Disorder	125	8	
	(127)	(6)	
<i>Bonding Anger & Rejection (Subscale)</i>			
No Rejection	267	11	0.96
		(266)	(12)
Risk for Rejection	38	3	
	(39)	(2)	
<i>Infant-Focused Anxiety (Subscale)</i>			
No Infant-Focused Anxiety	293	12	3.42
	(291)	(13)	
Infant-Focused Anxiety	12	2	
	(13)	(1)	

Note. * $p < .05$, ** $p < .01$. Expected frequencies appear in parentheses below actual frequencies