

Copyright
by
Kathleen Pitts
2017

**The Dissertation Committee for Kathleen Pitts certifies that this is the approved
version of the following dissertation:**

**Maternal Reflective Functioning, Parental Beliefs, and Parenting Stress
of Mothers in a Residential Treatment Program**

Committee:

Alice S. Hill, RN, PhD, FAAN,
Supervisor

Debra Armentrout, RN, PhD, MSN,
NNP-BC

Thomas Mendez, RN-BC, PhD, CNS

Carolyn Phillips, RN, PhD

Lane Strathearn, MD, PhD

Dean, Graduate School

**Maternal Reflective Functioning, Parental Beliefs, and Parenting Stress
of Mothers in a Residential Treatment Program**

by

Kathleen Pitts, RN, MPH

Dissertation

Presented to the Faculty of the Graduate School of
The University of Texas Medical Branch
in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

**The University of Texas Medical Branch
December, 2017**

Dedication

This dissertation is dedicated to my mother, Violet E. Pitts, whose belief in me was always steadfast, and to my sisters, Leslie, Laura, and Lisa, for all their support in their hope to see the successful completion of this project.

I also would like to dedicate this dissertation to my extended family and friends who stood by me through this exceptionally long journey. A special word of gratitude goes to Dr. Alice Hill, for without her unrelenting patience, kindness, professional guidance, and friendship, I would have never been able to reach this endpoint.

Acknowledgements

I would like to thank all my family, friends, colleagues, and all those individuals whose names I may have never known that supported me during this long journey. Those specific persons who provided particular support, I am humbly grateful. They include, Dr. Connie Sixta, Dr. Sheryl Bishop, Ellen Boyd, Dr. Gilda Medina, Dr. Regina Lederman, and Dr. Mary Ann Best.

I thank my chair, Dr. Alice T. Hill, for her many years of mentoring, her humor and polite bluntness in directing my wandering ideas, her support beyond the usual, her friendship, and her scientific rigor that was always present in her discussions with me. My heartfelt thanks are extended to her for the belief in me during the multitude of trials and tribulations, leveraging those emotional waves of “uncertainty,” maintaining a positive constructive and supportive balance for weeks on end, and being pivotal in moving me forward even with my smallest bits of progress. You will always be a role model for me to emulate in all the future research endeavors I pursue.

Special thanks are extended to the members of my committee who gave willingly and generously of not only their time and expertise but also for their patience. Thank you to Dr. Debra Armentrout for her expertise in working with infants and families. Her quiet but insightful comments helped shaped the final dissertation. I am also grateful to Dr. Thom Mendez for his thoughtful suggestions in how to “frame my mind” in moving through the final writing of the dissertation and for sharing with me his tremendous belief in the mental health needs of special populations. His direction in formulations ideas and clarification of

how to portray the psychological aspects of problematic behavior was invaluable. I also show gratitude to Dr. Carolyn Phillips for her guidance in all her classes I was fortunate to attend, whereby the unfolding of the knowledge that helped formulate the backbone of this research served me well. Her honest, straight-forward commentary about my approach to clear presentation has always held me to higher standard about the direction one should take about communication. Your love and dedication to nursing always was evident and ingrained in those who desired to be true researchers. Finally, I thank Dr. Lane Strathearn whose friendship spans over a decade. It was you I reached out to for the initial thought of doing this research and over multiple meetings, work alongside you in your research endeavors with mothers and infants and continual encouragement inspired me to never give up. Your commitment as a researcher, clinician, and educator was truly valued and appreciated as you strategically pointed out my research strengths and patiently encouraged me to improve my weaker areas. I thank you for your mentorship over the many years.

I thank Dr. Alicia Kowalchuk, Nadine Scamp, and all the staff at Santa Maria Hostel in Houston, Texas, who taught me that the work with all the women I encountered hold a special place in our hearts to help them recover with dignity and hope. I am most appreciative to all of the women that participated as subjects in this study. My gratitude for your stories and shared experiences which were integral in this research—each valuable and heard.

I would like to acknowledge the financial support I received over the course of this dissertation from the John P. McGovern Chair of the Healing Practices of Nursing held by Dr. Alice Hill.

A final thank you to my dear mother, Violet Pitts, who although is not able to see me complete this dissertation, is the one person to whom I owe the most gratitude. My apologies for not completing this dissertation six months sooner.

Maternal Reflective Functioning, Parental Beliefs, and Parenting Stress of Mothers in a Residential Treatment Program

Publication No. _____

Kathleen Pitts, PhD

The University of Texas Medical Branch, 2017

Supervisor: Alice S. Hill

Mothers with a history of substance-use are at risk for maladaptive parenting. This population of women living with their children during a residential substance-use treatment program are at high risk not to complete the program, to undergo substantial emotional and physical changes immediately prior to admission, and to have multiple new responsibilities during the first ten days of the initial admission period. It is important for researchers to understand how maternal attributes (e.g., parenting stress [PS], parental beliefs [PB], maternal reflective functioning [MRF]) and characteristics interact during the early phase of admission for substance-use treatment.

The purpose of this study was to determine whether: (1) mothers of infants or toddlers admitted to a residential treatment program for substance-use differed on PS, PB, and MRF; and (2) MRF was influenced by PS, PB, and demographic characteristics of mother or child.

A descriptive explanatory design was used to study 39 mothers and their children in two intensive residential substance-use treatment programs. Parental Development Interview, Parenting Stress Index-SF, Concepts of Development Questionnaire, and a demographic form were used to gather data on maternal attributes and characteristics.

No significant relationship was found between PB and MRF with a trend toward significance between PS and MRF during the first 10 days following mothers' admission to the program. Moreover, MRF, PS, and PB did not differ based on child (infant/toddler) and cocaine/no-cocaine groups; and PS, PB, age of child, and drug of choice were not predictive of MRF.

TABLE OF CONTENTS

List of Tables	xi
List of Figures	xiii
List of Abbreviations	xiv
Chapter 1: Introduction to the Study.....	1
Problem Statement.....	1
Purpose Statement.....	2
Research Questions and Hypotheses	2
Significance of the Study.....	3
Conceptual Model Based on the Literature	4
Delimitations.....	5
Definition of Terms	6
Infant	6
Toddler.....	6
Residential Treatment Facility (Substance-Use Treatment Center)	6
Parenting Stress.....	7
Parental Beliefs	7
Maternal Reflective Functioning	7
Licit Substances	8
Illicit Substances	8
Organization of the Dissertation	8
Chapter 2: Review of the Literature.....	9
Introduction.....	9
Maternal RF and Substance-Using Mothers	10
Parenting Stress.....	13
Parenting Stress, Maternal RF and Substance-Using Mothers	13
Parental Beliefs	16
Parental Beliefs, Maternal RF and Substance-Using Mothers.....	17

Chapter 3: Methodology	21
Introduction.....	21
Research Design	21
Setting	21
Sample	22
Sample Size Calculation	23
Inclusion Criteria	24
Exclusion Criteria	25
Instruments.....	25
Concepts of Development Questionnaire (CODQ)	25
The Parenting Stress Index-Short Form (PSI-SF)	26
The Parent Development Interview (PDI)	27
Procedures.....	28
Recruitment.....	28
Protocol	29
Data Analysis.....	30
Protection of Human Subjects	33
Chapter 4: Results	35
Introduction.....	35
Description of the Sample.....	35
Preliminary Analysis.....	37
Psychometric Properties of the Instruments	37
Data Analysis	39
Specific Aim 1	39
Specific Aim 2	49
Specific Aim 3	60
Summary	62
Chapter 5: Discussion, Recommendations, and Conclusions.....	63
Introduction.....	63
Summary of the Study	63
Purpose Statement, Specific Aims, Research Hypotheses, and	

Questions.....	64
Review of the Methodology.....	65
Findings Related to the Literature	66
Conceptual Model.....	70
Limitations	71
Conclusions.....	71
Recommendations for Future Research	71
Concluding Remarks.....	72
Appendix A: Santa Maria Hostel Memorandum of Understanding	73
Appendix B: Volunteers of America Memorandum of Understanding.....	75
Appendix C: Demographic Information	76
Appendix D: Instruments.....	77
Appendix E: Recruitment Flyer	78
Appendix F: IRB Approval and Consent.....	79
Bibliography	85
Vita	106

List of Tables

Table 4.1. Demographic Characteristics of Women (N= 35)	36
Table 4.2. Infant and Toddler Age (N=35)	38
Table 4.3. Drug of Choice by Study Women.....	38
Table 4.4 Cross Tabulation Cocaine or No-Cocaine Use by Infant or Toddler (N = 35).....	38
Table 4.5. Instrument Reliability	38
Table 4.6. Spearman Rho Correlations between MRF, PS, and PB (N=35)	48
Table 4.7. Skewness and Kurtosis for Infants and Toddlers with MRF, PB, and PS	50
Table 4.8. Shapiro-Wilk Tests of Normality for Infants and Toddlers with MRF, PB, and PS	50
Table 4.9. Skewness and Kurtosis for Cocaine and No-Cocaine Groups with MRF, PB, and PS	54
Table 4.10. Shapiro-Wilk Tests of Normality for Cocaine and No-Cocaine Groups with MRF, PB, and PS	55
Table 4.11. Rank of MRF, PB, and PS by Infant Cocaine; Infant No-Cocaine; Toddlers Cocaine; Toddlers No-Cocaine	59

Table 4.12 Kruskal-Wallis H Values Between Four Groups on Three Dependent Variables (e.g., MRF, PB, PS).....	59
Table 4.13. Pearson's r Correlations between Predictor Variables and Criterion Variables	62

List of Figures

Figure 1.1. Maternal Reflective Functioning Conceptual Model	5
Figure 4.1. Distribution of MRF Scores	41
Figure 4.2. Distribution of PB Scores	42
Figure 4.3. Distribution of PS Scores	43
Figure 4.4. Box Plot for MRF no Outliers	44
Figure 4.5. Box Plot for PB with Outliers	45
Figure 4.6. Box Plot for PS with Outliers	46
Figure 4.7. Homoscedasticity, MRF, and PB	47
Figure 4.8. Homoscedasticity, MRF, and PS	48
Figure 4.9. Outliers of MRF by Child Group	51
Figure 4.10. Outliers of PB by Child Group	52
Figure 4.11. Outliers of PS by Child Group	53
Figure 4.12. Outliers of MRF by Cocaine Group	55
Figure 4.13. Outliers of PB by Cocaine Group	56
Figure 4.14. Outliers of PS by Cocaine Group	57

List of Abbreviations

AAP	American Academy of Pediatrics
CODQ	Concepts of Development Questionnaire
CPS	Child Protective Services
DC	Difficult Child
IRB	Institutional Review Board
MRF	Maternal Reflective Functioning
PB	Parental Beliefs
P-CDI	Parent-Child Dysfunctional Interaction
PDI	Parent Development Interview
PS	Parenting Stress
PSI-SF	Parenting Stress Index-Short Form
RQ	Research Questions
SUM	Substance-using Mother
UTMB	University of Texas Medical Branch

Chapter 1: Introduction to the Study

PROBLEM STATEMENT

In 2014 more than 500,000 women received treatment for substance abuse in the United States (SAMSHA, 2015). The primary substances used by women in Texas were reported to be alcohol, marijuana, methamphetamine, and cocaine (Maxwell, 2006; 2010). Women aged 18 to 44 years who entered treatment centers with children used various illicit and licit drugs, with cocaine being the most commonly used illicit drug (SAMSHA, 2015). Prior to entering a treatment center or during the initial period of treatment (depending on substance used and length of use), women completed detoxification, which often causes physical illness and emotional compromise. At admission and through the 10th day post-admission, women are expected to manage their children while recovering from detoxification and acclimating to the facility.

Numerous researchers have addressed substance abuse by women with children in residential treatment centers (Greenfield et al., 2007; Niccols et al., 2012; Pajulo et al., 2001; Pajulo, Suchman, Kalland, & Mayes, 2006; Paris, Herriott, Holt, & Gould, 2015). Many studies have focused on maternal reflective functioning (Jenkins & Williams, 2008; Kalland, Fagerlund, von Koskull, & Pajulo, 2016; Pajulo et al., 2006, 2012; Paris et al., 2015; Suchman, Decoste, Castiglioni, Legow, & Mayes, 2008), while other studies have centered on parental stress in substance-using women (Connors, Bradley, Whiteside-Mansell, & Crone, 2001; Killeen & Brady, 2000; Osofsky et al., 2007), parenting skills (Arria et al., 2013; Luthar, Cushing, Merikangas, & Rounsaville, 1995), and parental beliefs (Kettinger, Nair, & Schuler, 2000) during and after the treatment

program period. Nevertheless, to date, no studies have addressed maternal reflective functioning (MRF) with parenting beliefs and parenting stress of women during the initial period following admission for substance-use treatment. This population of women is at high risk not to complete treatment programs, to experience substantial changes immediately prior to admission, and to have multiple responsibilities during the admission period (Ashley, Marsden, & Brady, 2003; Evans, Li, Pierce, & Hser, 2013; Greenfield et al., 2004; Grella & Stein, 2006; Knight, Logan, & Simpson, 2001). Thus, it is crucial for researchers to further understand how maternal attributes and characteristics interact during early phases of admission for substance-use treatment.

PURPOSE STATEMENT

The purpose of this study was to determine whether mothers of infants or toddlers admitted to a residential treatment program for substance-use differed on parenting stress (PS), parental beliefs (PB), and maternal reflective functioning (MRF), as well as to determine whether MRF was influenced by demographic characteristics.

RESEARCH QUESTIONS AND HYPOTHESES

The specific aims and related research questions (RQ) and hypotheses (H) of this study were:

Specific Aim 1. Identify the relationship between MRF, PS, and PB of substance-using mothers in residential treatment programs during the first 10 days following admission.

H.1.1. There would be a negative relationship between MRF and PS during the first 10 days after admission to a residential treatment program.

H.1.2. There would be a negative relationship between MRF and PB during the first 10 days after admission to a residential treatment program.

Specific Aim 2. Determine the differences between mothers of infants and mothers of toddlers on MRF, PS, and PB.

RQ 2.1. Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in MRF while controlling for age of mothers?

RQ 2.2. Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in PS while controlling for age of mothers?

RQ 2.3. Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in PB while controlling for age of mothers?

Specific Aim 3. Determine whether demographic characteristics (e.g., age of mother, age of child), PB, PS, and drug of choice predict MRF.

RQ 3.1. Were PB, PS, age of mother, age of child (infant vs. toddler), and drug of choice (cocaine vs. no-cocaine) predictive of MRF in substance-using mothers at the time of admission to a residential treatment program?

SIGNIFICANCE OF THE STUDY

Research focused on reflective functioning (RF) is essential for improvement of the parent-child relationship for substance-using mothers, particularly for mothers entering a residential program designed specifically for mothers and their children. RF in the mother-child relationship at the time of admission to these programs provides an understanding of mothers' competency, capacity to self-organize, and capability to execute tasks as well as mothers' ability to recognize and accurately interpret children's emotional cues. There is a gap in understanding of RF (also known as self-mentalization) of substance-using mothers

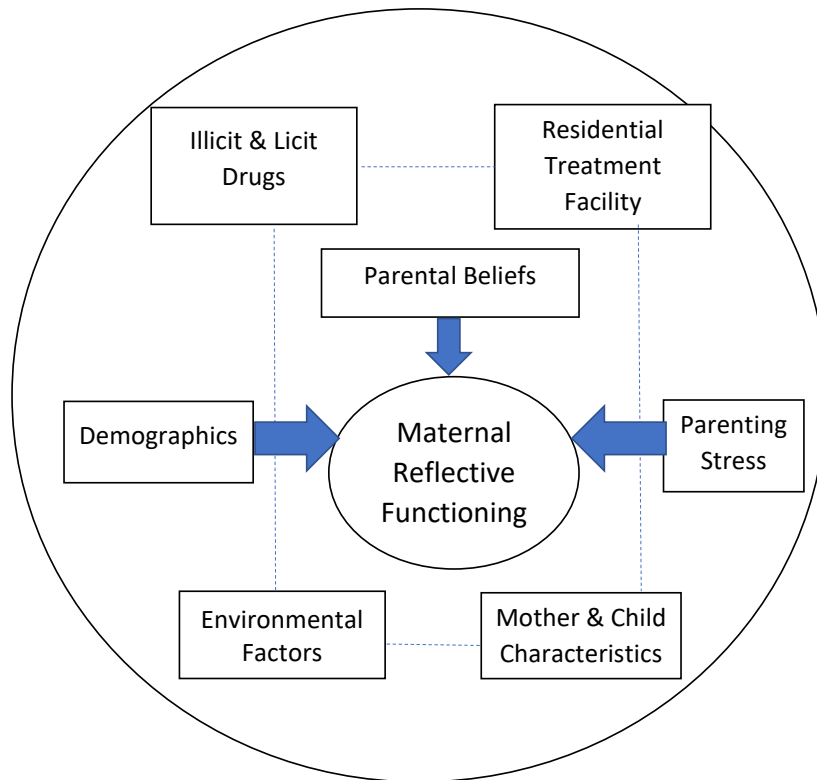
at the time of admission; mothers' RF may vary due to high levels of stress caused by admission and possible recent detoxification to prepare for admission. In addition, parenting beliefs associated with RF are expected to be challenged during this early admission period. An understanding of RF during this early admission time frame may allow for individualized interventions to be developed that would help mothers and children to transition from community settings to the treatment facility (Fonagy, Steele, Steele, Higgitt, & Target, 1994).

CONCEPTUAL MODEL BASED ON THE LITERATURE

Researchers have shown that PS and PB influence MRF (Bagner et al., 2009; Conners et al., 2001; Espinet et al., 2013; Kettinger et al., 2000; Killeen & Brady, 2000; Kotchick & Forehand, 2002; Levanthal & Brooks-Gunn, 2000; Nair, Schuler, Black, Kettinger, & Harrington, 2003; Osofsky et al., 2007). MRF, in turn, is related to mothers' age and the presence of infants and toddlers (Behnke et al., 2006; Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982). Moreover, researchers have shown that reflective functioning is negatively affected by PS and PB in women exposed to illicit drug use (Osofsky et al., 2007; Pajulo et al., 2001, 2006, 2008, 2012; Paris et al., 2015). For context, women who are enrolled in treatment programs have been exposed to various drugs, with cocaine being the most commonly used drug at the time this current study was conducted (Broz et al., 2014; Center for Behavioral Health Statistics and Quality, 2015; Maxwell, 2006; 2010).

These fundamental conceptions (Figure 1.1) were used to guide this study and were tested to determine the maternal reflective functioning of substance-using women with children at the time of admission to a residential treatment program.

Figure 1.1. Maternal Reflective Functioning Conceptual Model



DELIMITATIONS

1. Date for the study was collected from October 24, 2010 to December 20, 2011.
2. Only substance-using mothers with infants or toddlers admitted to an intensive residential treatment program from one of two centers in a Southwestern U.S. city

were included in this study. Additionally, the study included only those women (i.e., mothers) who matched the selection criteria established for the study.

DEFINITION OF TERMS

For the purposes of this study, the following terms were conceptually and operationally defined.

Infant

A child from 0 to 12 months of age (irrespective of walking status) as defined by the American Academy of Pediatrics (AAP) from the Recommendations for Preventive Pediatric Health Care (Committee on Practice and Ambulatory Medicine, 2007).

Toddler

A child from 12 months and one day to 4 years of age as defined by the American Academy of Pediatrics (AAP) from the Recommendations for Preventive Pediatric Health Care (Committee on Practice and Ambulatory Medicine, 2007).

Residential Treatment Facility (Substance-Use Treatment Center)

A state-funded and -regulated facility that provides a program for the treatment of chemical dependency pursuant to a written treatment plan that is approved and monitored by a physician or qualified credentialed counselor. Women are provided care 24 hours per day for 30 to 90 days. Two residential treatment facilities in southeast Texas were used for this study.

Parenting Stress

Parenting stress is considered a normal part of parenting unless the demands of parenting exceed the actual resources of parents and decrease their ability to succeed in the parenting role (Deater-Deckard, 1998; Deater-Deckard & Scarr, 1996). Three major domains of stress for parents include child characteristics, parent characteristics, and situational or demographic life stressors (Abidin, 1995). Parenting stress was operationalized in this study using the *Parenting Stress Index* (Abidin, 1995).

Parental Beliefs

Parental beliefs are attitudes; values; perceptions of children; perceptions of parents; conceptions of the developmental process; attributions, expectations, and knowledge of normative developmental markers; and preferred parenting techniques (Sameroff & Feil, 1985). Parental beliefs establish the level of complexity at which parents view their child's development. Parental beliefs were operationalized in this study by the Concept of Development Questionnaire (Sameroff & Feil, 1985).

Maternal Reflective Functioning

Maternal reflective functioning is a mother's capacity to hold in her own mind a representation of her child as having feelings, desires, and intentions. Reflective functioning is also a mother's capacity to reflect on the current mental state of the child and upon her own mental states. Maternal reflective functioning was operationalized in this study by the Parent Development Interview (Slade, Aber, Berger, Bresgi, & Kaplan, 1985).

Licit Substances

Licit substances are defined as legal substances, e.g., alcohol, tobacco, nonprescription cough or cold medicines.

Illicit Substances

Illicit substances are defined as illegal drugs and misused prescription medications or household substances (SAMHSA, 2008). For the purpose of this study, illicit drugs included marijuana (although legal in Washington, Colorado, Oregon, Washington, D.C., and California), cocaine (including crack), heroin, hallucinogens (including phencyclidine [i.e., PCP], lysergic acid diethylamide [i.e., LSD], Ecstasy [i.e., MDMA], ketamine, DMT, AMT [i.e., Foxy], and *Salvia divinorum*), inhalants, methamphetamine, and misused prescription psychotherapeutics (e.g., pain relievers, tranquilizers, stimulants, sedatives).

ORGANIZATION OF THE DISSERTATION

The dissertation is divided into five major chapters. Chapter one presents the introduction to the study and includes the statement of the problem, purpose, research questions, significance, overview of conceptual model, delimitations, and operational definitions. Chapter two presents a review of the literature, including an overview of maternal reflective functioning, parenting stress, parental beliefs, and relationships among variables. Chapter three presents an overview of the research design and methods, including the sample, instrumentation, procedures, data collection, and data analysis. Chapter four presents the results of the data analysis. Chapter five presents a discussion of the study, limitations, conclusions, recommendations, and implications.

Chapter 2: Review of the Literature

INTRODUCTION

Chapter two presents a literature review on parenting stress, parental beliefs, and maternal reflective functioning (RF). The relationship among these three variables is established. In addition, gaps in the existing literature are highlighted in relation to these variables. The purpose of the study was to determine whether mothers of infants or toddlers admitted to a residential treatment program for substance-use differ in levels of parenting stress, parental beliefs, and maternal RF.

Substance-use among mothers and pregnant women is a social issue that creates a burden on the health care system and society (Curet & His, 2002; Greenfield et al., 2007; Healthy People 2010; 2020). Children involved in substance-using home situations are often removed from their families due to neglect or abuse. The ability of women to engage in treatment for substance-use while living with their children could mitigate disruptions to family units (Ashley et al., 2003; Grella & Greenwell, 2004; McComish et al., 2003; Szuster, Rich, Chung, & Bisconer, 1996; Uziel-Miller & Lyons, 2000).

Unfortunately, studies have shown that women who enter treatment often fail to complete their programs (Bass & Jackson, 1997; Choi, Adams, MacMaster & Seiders, 2013; Conners, Grant, Crone, & Whiteside-Mansell, 2006; Scott-Lennox, Rose, Bohling, & Lennox, 2000; Simons, 2008). Possible reasons given for failure to complete treatment include the mother/child relationship (Cosden & Cortez-Ison, 1999), mothers' emotional and physical health, mothers' socio-economic status, and mothers' educational levels (Ashley et al., 2003; Fineman, Beckwith, Howard, & Espinosa, 1997; Havens, Simmons, Shannon, & Hansen, 2009). Although some studies contributed towards understanding

why the treatment programs were unsuccessful (Greenfield et al., 2007), other studies provided contradictory findings (McComish et al., 2003). Some studies followed women from entry to discharge or to voluntarily program exit, but no known studies have examined mothers' mental and emotional health during the initial admission to determine how they functioned prior to residential treatment program entry. Thus, the literature review focused on RF, parenting stress, and parental beliefs of substance-using mothers.

MATERNAL RF AND SUBSTANCE-USING MOTHERS

RF, or mentalization, is the psychological process underlying individuals' capacity to understand themselves and others in the context of mental states (e.g., feelings, beliefs, intentions, desires) and individuals' ability to reason about human behavior in relation to these states (Fonagy, Gergely, Jurist, & Target, 2002). RF is based conceptually in both object relations and attachment theory (Fonagy et al., 2002); George, Kaplan, & Main, 1985). RF has seven defining conceptual elements: 1) maintenance of curiosity; 2) opacity of the human mind; 3) an ability to engage in non-compulsive contemplation and reflectiveness; 4) an adhered-to perspective; 5) awareness of impact; 6) parental awareness of child development; and 7) parental trust that children's thoughts and feelings are unthreatening. These defining elements form the basis in making improvements to parent-child relationships (Fonagy et al., 2002).

Parental RF focuses on parent's (i.e., mothers') capacity to mentalize about self, child, and combined self-child relationship. Mothers' relationships are based on contingent mirroring of their child's behavior, emotions, and affect (e.g., smiling when children smile, displaying sadness when children cry). Likewise, children see, via their mothers, a reflection of their own emotions and behavior (e.g., mirroring of eyes, face, other physical

responses). This mirroring both signals mothers' compassion to their children yet reinforces mothers' individuality and separateness.

When maternal RF is well developed, children are prosocial, responsive, and better able to regulate their emotional state. Additionally, the dyadic relationship between mother and child is more congruent, less frustrating, and less stressful to the mother (Fonagy et al., 2002). Poor or insufficient parenting can leave children unable to modulate or interpret their own feelings and the feelings of individuals who surround them (Levy, Blatt, & Shaver, 1998). This theory (RF) has been supported and expanded upon by Arietta Slade (2005) through development of the Parent Development Interview measurement tool.

Previous studies have found that maternal RF was generally low among mothers in substance-using populations (Pajulo et al., 2008; Suchman et al., 2008; Suchman, Mayes, Conti, Slade, & Rounsaville, 2004; Truman, Levy, & Mayes, 2004). Research during the 2000s and 2010s examined parental RF in substance-using mothers found that higher RF can be successfully sustained over time (Suchman, Decoste, McMahon, Rounsaville, & Mayes, 2011). Substance-using mothers with high levels of distress demonstrated a moderate increase in their reflective capacities (i.e., increased interest and curiosity in mothers about their children); RF improved when the individual variability in parenting needs of the mothers was addressed (e.g., feeling safe, developing confidence in a maternal role, sharing deep feelings and experiences) (Paris et al., 2015)

Factors found to be significantly associated with RF include mothers' education, primary substance used (drug of choice), history of trauma (e.g., PTSD, domestic violence), history of abuse (e.g., sexual, physical, verbal), and maternal co-morbidity (e.g., depression, bipolar disorder, anxiety) (Pajulo et al., 2012; Smaling et al., 2015; Suchman,

DeCoste, Leigh, & Borelli, 2010). Conversely, other researchers found that maternal education as well as degree of maternal interaction, maternal psychiatric symptoms, and child development scores were not associated with maternal RF (Pajulo et al., 2012; Suchman et al., 2010).

Substance-using mothers (SUMs) from low socio-economic backgrounds and had experienced trauma yet remained highly reflective were more likely to have securely attached children. It was also found that SUMs who came from an environment of limited resources with low RF were shown to have insecure children (Fonagy, 1995; Fonagy, Steele, & Steele, 1991). Thus, RF has been found to be an important capacity that could improve the long-term socio-emotional development of SUMs' children.

Mayes et al. (1997) studied other types of resources and drugs that influenced maternal RF levels. Of note, higher education levels were associated with higher RF and the circumstances of drug use—drug use alone versus when used in combination with alcohol—resulted in higher positive changes in RF.

Previous research on substance-using mothers focused on postnatal maternal RF. Only recently were studies undertaken to identify RF early in the parenting process for high risk women (Pajulo et al., 2012; Sadler, Novick, & Meadows-Oliver, 2016). High risk mothers were motivated to consider change and were open to new behaviors during the prenatal and early postnatal periods (Pajulo et al., 2012). While in these studies, substance-using mothers in residential treatment centers were measured on both prenatal and postnatal RF. Maternal RF was low during the early postnatal period and there were large maternal individual variations identified.

The previous identified research provided the study rationale for focusing on RF in substance-using mothers. Moreover, the literature provided an argument for maternal RF to be further studied in the early postnatal period. Therefore, the current study focused on RF of mothers, of whom some were in the early postnatal period, during the initial phase (i.e., within 10 days) of their admission to a residential treatment center.

PARENTING STRESS

The transition to parenthood can be challenging and stressful for mothers with children and first-time mothers. Parenting involves diligence, adaptation, compromise, delayed attention to personal needs, and attentiveness to the daily strains of childcare. Parenting demands include not only children's basic survival needs (e.g., food, shelter, protection), but also the child's psychological needs for attention, affection, and help in managing emotions. These needs also must include those of the parent (i.e., mother) because without the mothers' involvement, the children's success may be compromised. Further, both the role of the mother and how that role is measured is critically important.

Parenting Stress, Maternal RF and Substance-Using Mothers

The chronic stress of parenting can become overwhelming for parents who lack coping mechanisms for dealing with parenting's daily challenges (Deater-Deckard, 2004). Parenting can be further complicated by mothers who use substances. Previous studies have documented that mothers who raise children while using substances interact with multiple stressors that can impact their ability to focus adequately on the needs of their children (Conners, Bradley, Whiteside-Mansell, & Crone, 2001; Coyer, 2001; Fraser, Harris-Britt, Thakkallapalli, Kurtz-Costes & Martin, 2010; Hans, 1999; Harmer, Sanderson, & Merton,

1999; Hardesty & Black, 1999; Kelley, 1998; Mansoor, et al., 2012; Niccols, et al., 2012; Pajulo, et al., 2001; Smith, Wilson & Committee on Substance use and Prevention, American Academy of Pediatrics, 2016). The source of parenting stress involve factors related to the mother; the child; and the direct and indirect environment (Abidin, 1992).

Mothers who have a history of substance use encounter hardships and challenges. In many cases motherhood or parenting “becomes their symbolic anchor: a culturally reinforcing, self-sustaining identity that grounds them amidst the turmoil in their lives” (Hardesty & Black, 1999, p. 607). Guilt, depression, and abuse (e.g., physical, sexual, emotional) of mothers have been associated with parenting stress (Espinete et al., 2013; Lamis et al., 2014; Lamis, Wilson, Tarantino, Lansford, & Kaslow, 2014; Liles et al., 2012; Silva, Pires, Guerreiro, & Cardoso, 2013). Moreover, substance-using mothers may exhibit hostility towards demanding children, possess more intrusive parenting styles, and have increased difficulty interpreting infant or child behavior accurately (Harmer, Sanderson, & Mertin, 1999; Mansoor et al., 2012; Rodgers, 1998). Conversely, factors that may decrease parenting stress include spiritual well-being and a support network consisting of friends and family (Douglas, Jimenez, Lin, & Frisman, 2008; Lamis et al., 2014).

Children of substance-using women often exhibit characteristics known to influence parenting stress. For example, substance-exposed infants may require more one-on-one attention, increased nurturing, and less stimulation (Harmer et al., 1999; Mansoor et al., 2012; Rodgers, 1998). In addition, the presence of boys and older children may be correlated with higher parenting stress levels (van Vugt, Loeber, & Pardini, 2016; Willinger, Diendorfer-Radner, Willnauer, Jorgl, & Hager, 2005).

Environmental factors that increase stress and affect parenting abilities of substance-using mothers include lack of support, poverty, poor housing, and neighborhood disorder (Lamis et al., 2014; Puff & Renk, 2014; Smith, Stagnitti, Lewis, & Pepin, 2015). Further, women who fail to complete residential treatment programs have higher parenting stress levels than individuals who stay longer in treatment (Conners et al., 2001, 2003; Killeen & Brady, 2000; Sanders & Woolley, 2005).

Some studies have shown no increase in parenting stress by substance-using mothers. Butz (2001) found that substance-using mothers were able to parent well even with high levels of parental stress in their lives; this finding, however, conflicts with widely-held concepts on the ways in which stress affects parenting (Lynch, Johnson, Kable, Carroll, & Coles, 2011). Parents (specifically mothers) with high parenting stress (high risk factors of stress as measured by poor economic status, homelessness, and higher number of children) have been shown to have a stronger influence on the child's behavior than substance-using mothers (Bagner et al., 2009; Brannan & Heflinger, 2001; Cain & Combs-Orme, 2005; Conners-Burrow, Johnson, & Whiteside-Mansell, 2009; Harmer et al., 1999; Kern et al., 2004; Kettinger et al., 2000; LaGasse, Seifer, & Lester, 1999; Liles et al., 2012; Marsh, Smith, & Bruni, 2011; Osterling & Austin, 2008; Sarfi, Sundet, & Waal, 2013). Moreover, marital status, single parenting, and family structure did not affect parenting stress in alternate family groups as is present in different ethnic/racial families when raising children (for example, co-parenting, grandparents, family members, or friends) (Cain & Combs-Orme, 2005). Other studies suggest that economic status and an absence of significant others or supportive family and friends increased overall parenting stress (Boyd, 1993; Coyer, 2001; Kelley, 1998).

Recent studies found that although higher parental RF was correlated to higher tolerance of infant distress, it was not correlated to higher general distress (Goldberg, 2011; Rutherford, Goldberg, Luyten, Bridgett, & Mayes, 2013). Although these studies did not involve substance-using mothers, they did support the belief that RF mitigates stress in parenting (Cain & Combs-Orme, 2005). Similarly, for substance-using mothers, low parental stress is an influencing factor that works in tandem with RF (Espinete et al., 2013). Espinete et al. (2013) concluded that although substance-using mothers were able to accurately identify factors in their children's behavior that contributed to complex familial relationships, parents were limited in their capacity to accurately identify how their own behaviors influenced their own distress levels. Other studies that investigated the relationship of mothers' RF and parenting stress addressed positive improvements in parenting stress (i.e., lower stress) for women who completed a substance-use residential program that incorporated reflective functioning in the program structure (Conners et al., 2001; Killeen & Brady, 2000). In addition, studies reviewed the influence of RF on the improvement of the mothering role, which yielded less parenting stress with increased and enhanced child interactions (Pajulo et al., 2008, 2012).

There is no consensus in the literature regarding the impact of parenting stress in substance-using women. Although it is generally believed that substance-use increases parental stress, some researchers have reported different outcomes. Further, researchers have shown that RF resulted in a decrease in parental stress when interacting with children. What the literature has not described is the association of RF and parental stress of mothers during the initial admission period to a residential treatment program for substance use.

Parental Beliefs

Parental beliefs include attitudes, core beliefs, strategies, and values that are expressed through behavior. Parental beliefs are formed through past experiences as children in families, previous child rearing practices, overall worldview, socio-economic status, cognitive ability, and personal communication style (Sameroff & Feil, 1985). Although parents tend to have well-defined beliefs about child development, these beliefs vary widely (Bornstein, Cote, & Venuti, 2001; Miller, 1988). Parental beliefs are correlated with parenting behaviors, i.e., how parents perceive children affects the ways in which they treat children (Miller, 1988). The belief system held by parents has both direct and indirect influence on the parenting practices that regulate interactions between infants and parents (Sigel & McGillicuddy-DeLisi, 2002). Mothers' parenting practices affect the child's long-term cognitive, emotional, and developmental outcomes (Cabrera, Fagan, Wight, & Schadler, 2011; Grusec, Rudy, & Martini, 1997; Harkness & Super, 1996).

Parental Beliefs, Maternal RF and Substance-Using Mothers

Many substance-using mothers find that sobriety requires not only creating a new life without substances but also recreating their lives as mothers. The restorative process of mothers' lives involves reclaiming their children and often becomes the primary motivation for reaching recovery (Hardesty & Black, 1999).

Maternal substance-use in stressful environmental conditions may interfere with effective parenting (Black et al., 1994; Connors-Burrow et al., 2009). Substance-using mothers have been found to have poor parenting attitudes (Kettinger et al., 2000), to engage in a poor model of parenting, and to have deficits in their childrearing skills (Luthar et al., 1995). Further, substance-using mothers may manifest guilt from past parenting failures; engage in increased punitive, authoritarian, and aggressive parenting methods; and mete

out discipline that is more severe and threatening than non-substance-using mothers (Hien & Miele, 2003; Miller, Smyth, & Mudar, 1999; Wellisch & Steinberg, 1980).

No definitive evidence exists to directly correlate substance use, poor parenting beliefs, and behavioral or child outcomes. Prenatal cocaine use in mothers has been correlated with greater maternal hostility and insensitivity, with less responsiveness, and more intrusive interaction styles (Mansoor et al., 2012). Subsequent research examined that caregiving environments contributed more intensely to maternal sensitivity and other researchers have drawn similar conclusions for substance-using mothers (Bakermans-Kranenburg, Van Ijzendoorn, & Juffer, 2003; Carta et al., 2001; Tronick et al., 2005).

Contextual factors also influence parenting beliefs, factors which include a history of maternal psychopathology (e.g., depression, bipolar disorder), exposure to harsh childhood discipline, and a history of abuse (Cohen, Hien, & Batchelder, 2008; Ertell, Rich-Edwards, & Koenen, 2011; Fraser, Harris-Britt, Thakkallapalli, Kurtz-Costes, & Martin, 2010; Friedman & Billick, 2015; Hans, 1999; Hummel, Kiel, & Zvirblyle, 2016; Lovejoy, 2000; Reid-Cunningham, 2009; Siqveland, Smith, & Moe, 2012; Sohr-Preston & Scaramella, 2006). Cohen (2008) found that life-long substance-use and depressive disorders in women were significant predictors of the potential for child abuse but were not significant predictors of punitiveness, psychological aggression, or physical discipline.

Strathearn and Mayes (2010) provided evidence that cocaine abuse may influence maternal care and infant development. Brain imaging studies of the neuroendocrine pathways suggest changes in the prefrontal cortex of substance-using mothers, specifically for those using cocaine. These changes have been found to affect mothers' response to infant cues, resulting in an altered ability to develop a rewarding maternal-infant interaction

which, in turn, “may impair parenting both by impairing maternal sensitivity to salient infant cues and by distorting infant cueing behavior” (Strathearn & Mayes, 2010, p. 2).

Maternal history of exposure to family violence and a history of psychopathology influence parental beliefs and behavior in the context of substance use (Cohen et al., 2008; Friedman, 2015; Hans, 1999; Reid-Cunningham, 2009; Siqueland et al., 2012). Individuals exposed to harsh discipline as children are more likely to engage in the same practices as parents (Simons et al., 1994). Similarly, Kim, Pears, Fisher, Connelly, and Landsverk (2010) studied 488 at-risk, ethnically diverse mothers. The researchers concluded that maternal contextual risk factors—in particular, unmarried, no prenatal care, and scoring highly on the Hawaii Risk Indicators checklist or Kempe’s Family Stress checklist—were not related to harsh parenting by the mother. Nonetheless, maternal intrapersonal risk factors (e.g., history of criminality, mental illness, abuse, alcohol use) were positively related to harsh parenting by the mother.

DiLillo and Damashek (2003) reported that substance-using women had difficulty establishing clear generational boundaries with their children, were more permissive as parents, and may be more likely to use harsh physical discipline. A correlation may exist between various contextual factors to which substance-using mothers have been exposed and parental attitudes or beliefs about parenting children. Mothers’ lived experiences (e.g., past childhood sexual trauma, psychopathology, family violence) and substance-use have been shown to impact parenting attitudes and belief systems. Unless identified early and treated appropriately, behaviors displayed by children may be misinterpreted by substance-using mothers, contributing to an altered mother-child relationship.

Previous studies have found consistently low maternal RF scores among substance-using mothers. Higher maternal RF was found in mothers who displayed higher sensitivity, lower interference, and fewer covertly hostile or frightening behaviors (Pitzen, Riggs, Morgan, & Huth-Bocks, 2011). Other researchers have found that mothers had mixed results in their maternal reflection capacities and parenting following involvement in recovery programs that incorporated reflective-functioning training. Although some studies found low to normal maternal RF scores, parenting attitudes took longer to change and were influenced by stress levels, feelings of safety, levels of co-occurring mental illness, and history of trauma and abuse (Ordway et al., 2014; Pajulo et al., 2006; Paris et al., 2015; Suchman et al., 2011).

In summary, the extant literature has focused on the role of parental beliefs in children's future development. Studies have shown that RF is low in substance-using women and is influenced by several contextual factors. No studies were found that detailed women's RF at the time of their early entry or admission into a treatment program. Further, the interaction of RF with parenting stress and parental beliefs during early entry or admission to substance-using residential treatment centers was not investigated. Therefore, the goal of this study was to fill this gap in the literature and add to the understanding of RF in vulnerable populations during critical early periods of treatment for substance-use.

Chapter 3: Methodology

INTRODUCTION

Chapter three presents the purpose, a brief description of the problem, an overview of the research design, and the methods—e.g., study sample, instrumentation, data collection procedures, data analysis. The purpose of this study was to determine whether mothers of infants or toddlers admitted to a residential treatment program for substance-use differed on parenting stress (PS), parental beliefs (PB), and maternal reflective functioning (MRF), as well as whether MRF was influenced by demographic characteristics.

RESEARCH DESIGN

A descriptive exploratory research methodology was used to examine MRF of mothers admitted to a residential treatment program. Exploratory research allows for exploration of a phenomenon's elements and the factors to which the phenomenon may be related. This study explored the phenomenon MRF in relation to PS and PB in substance-using women admitted to a substance-using residential treatment center.

SETTING

Two residential treatment facilities in a large, urban, southeastern Texas city were used to recruit subjects for this project. Site 1 was a 24-hour residential substance-abuse treatment facility for mothers and their children with approximately 32 beds designated for an intensive residential treatment program (Appendix A). During fiscal year 2008, 170 women (in addition to 221 infants and children aged 0-4 years) were admitted and completed treatment. Participants in the program range in age from 18-47 years and are

either self-referred, court mandated, or mandated by the Child Protective Services Division (CPS). The setting offers an intensive 24-hour residential substance abuse treatment program for mothers and their children. Women with a history of use of benzodiazepines, alcohol, or opiates sometimes are required to undergo detoxification prior to admission.

Site 2 was a 24-hour residential substance-abuse treatment program that followed the same state regulations as Site 1. The number of allotted spaces for women and children ranges from 7 to 11 (Appendix B). The total admission history of Site 2 for the year 2009 was 57 women and 90 children; 47 of the women completed the treatment program successfully. In 2010, 33 women and 75 children were admitted to the program; 24 of the women successfully completed the treatment program.

SAMPLE

The sample was a convenience sample. Convenience sampling is a method used to collect data in a naturally occurring group of subjects in a manner convenient to the researcher. Consecutive volunteers admitted to one of the two treatment centers were approached to participate in the project after meeting all eligibility criteria and agreed to meet within the first ten days. The advantage of convenience sampling was the ease in recruiting subjects, although due to the nature of self-selection there was a higher risk of bias. While convenience sampling often is considered weak in terms to generalizability, challenges in obtaining an adequate sample size from this high risk population made convenience sampling the most appropriate methodology (LoBiondo-Wood & Haber, 1998; Hulley et al., 2001; Polit & Hungler, 1999).

The study sample consisted of 39 mothers admitted to one of the two residential treatment facilities over a 14-month time period (i.e., October 2010—December 2011).

Only mothers with infants (aged 0-12 months) or toddlers (aged 12 months, 1 day-4 years) were eligible to participate in the study. Data from four mothers were not included in final analysis because 1) the interview tapes of two mothers were blank; 2) one mother transferred from the intensive program to the supportive program prior to being interviewed; and 3) one mother was unable to be interviewed within the specified 10-day after admission time frame. Therefore, the final sample size was 35 mothers whose ethnicity was self-reported as 28.5% Caucasian, 26% African American, 28.5% Hispanic, and 17% Other or Mixed. Mothers' ages ranged from 18 to 39 years; 71% were 30 years of age or older. Forty-three percent (N=15) of mothers had less than a high school education. Fifty-four percent (N=19) of the mothers reported using cocaine while 46% (N=16) did not use cocaine; 54% (N=19) of the overall sample total reported poly-drug use. The study included 19 infants (36.5% mixed ethnicity) and 16 toddlers (37.5% mixed ethnicity).

Sample Size Calculation

A non-probability convenience sampling method was used for this study. Power analysis was conducted using *a priori* sample size calculator with a small effect size of $r = 0.35$, $\alpha = .05$, and power of .80. Five predictor variables were entered into the equation. Based on the power analysis, a minimum sample size of 43 subjects was required, and 52 subjects were needed to permit a 20% attrition rate.

Inclusion Criteria

- 1) Mothers were included in the study if they were admitted to the intensive treatment program at one of two residential treatment facilities with one or more infants (aged 0-12 months) or toddlers (aged 12 months and 1 day-4 years).
- 2) Mothers who had custody or pending custody of their infant or toddler at the residential facility.
- 3) Mothers who could speak, read, write, and had basic understanding of English.
- 4) Mothers who had not been inpatients at either of the two residential treatment facilities in the previous 12 months.
- 5) Mothers who had infants or toddlers with no major visual or hearing impairment. This criterion was used because visual and hearing impairments may interfere with the identification of cues that children send to mothers. While there are unique parenting skills and psychosocial aspects that may develop between mothers and children when these impairments are present, this variable was beyond the scope of this research project.
- 6) Mothers who were 18 years or older. Mothers less than 18 years of age may have issues of adolescent development, which could potentially interfere with mother-child interactions.
- 7) Mothers who were living with their infants or toddlers at one of the two residential treatment facilities.
- 8) Mothers who had a child aged four years or less.

Exclusion Criteria

- 1) Mothers who had a positive urine drug screen at admission or within 10 days of admission. Urine drug screening was performed by the designated facility.
- 2) Mothers who did not complete an appointment with the investigator within 10 days of time of admission.
- 3) Women who did not speak, read, or understand English.
- 4) Women who were incapable of giving informed consent.
- 5) Women who had been separated from their infants or toddlers for more than one month prior to admission.

INSTRUMENTS

Three instruments and an investigator-developed form were used to collect data for this research study: 1) the Concepts of Development Questionnaire (CODQ) was used to measure PB; 2) the Parenting Stress Index-Short Form (PSI-SF) was used to measure PS; 3) the Parent Development Interview (PDI) was used to measure MRF; and 4) an investigator-developed demographic form was used to capture subject characteristics (Appendix C).

Concepts of Development Questionnaire (CODQ)

The Concepts of Development Questionnaire (CODQ) is a 20-item paper-based questionnaire that examines the extent to which mothers hold child-centered parenting beliefs (Sameroff & Feil, 1985). The CODQ reflects two levels of parental thinking about development: 1) a categorical level, which is defined as a unidimensional view of children as having intrinsic characteristics, and which uses a simplistic explanation of behavior; or

2) a perspectivistic level, which is defined as a multidimensional view of children's behavior (i.e., having multiple influences) that provides a more sophisticated interactional explanation. Response choices are on a four point Likert-type scale ranging from 0 ("Strongly Disagree") to 3 ("Strongly Agree"). A weighted average score is computed by summing the scores for the odd-numbered items (representing a "Perspectivistic" or child-centered approach) and summing the scores for the reverse scored even-numbered items (representing a "Categorical" or less child-centered approach). The predictive validity of this instrument has shown that higher CODQ scores predict better cognitive and social development for children (Landry, Garner, Swank, & Baldwin, 1996; Sameroff & Feil, 1985). Internal consistency of this instrument with families from various socioeconomic backgrounds has been reported as .82 and low SES as .67 (Landry et al., 1996; Sameroff & Feil, 1985) (Appendix D).

The Parenting Stress Index-Short Form (PSI-SF)

The Parenting Stress Index-Short Form (PSI-SF) is a 36-item, self-administered questionnaire that has a completion time of less than 15 minutes and is written at a 5th grade reading level (Abidin, 1995). The PSI-SF is derived from the full 120-item PSI. The test is based on the theory that the total stress experienced by a parent is a function of certain salient child characteristics, parent characteristics, and situations that are directly related to the role of being a parent. The PSI-SF has been used with parents of children ranging in age from 1-month old infants to adolescents. The test yields four scores and a defensive responding score. The four scores include a total score and three subscale scores, e.g., parental distress (PD), parent-child dysfunctional interaction (P-CDI), difficult child (DC). Items are rated on a five-point Likert scale from "strongly agree" to "strongly disagree."

There are two items that require a different response, requiring subjects to select a response from a scale of 1 to 5 (1: not a very good parent to 5: a very good parent; 1: much harder than expected to 5: much easier than expected). Higher scores indicate more stress. Abidin (1995) reported that the total score on the PSI correlated .94 with the PSI-SF total, the PSI Parent Domain correlated .92 with Parental Distress on the PSI-SF, and the PSI Child Domain correlated .87 with the Difficult Child subscale on the PSI-SF. A scale unique to the PSI-SF, Parent-Child Dysfunctional Interaction, used items drawn from both the Child Domain and the Parent Domain of the PSI to yield a .73 correlation with the Child Domain and a .50 with the Parent Domain. Roggman, Moe, Hart, & Forthun (1994) reported PSI-SF alpha reliabilities of .79 for PD, .80 for P-CDI, .78 for DC, and .90 for Total Stress score (Appendix D).

The Parent Development Interview (PDI)

The Parent Development Interview (PDI) is a semi-structured interview with a series of 40 questions that is administered in 60 to 90 minutes (Slade et al., 2002). The PDI measures MRF by asking mothers questions regarding views of their children, their relationship with their children, views of themselves as parents, the emotional upheavals and joys inherent in parenting, and ways in which they have changed as parents over the course of their children's lives. A single score (-1 to 9) is obtained through a process of scoring 14 specific passages (e.g., joy, guilt, separation, pain, "clicking," "not clicking," needy, angry, rejected, being like or unlike their own parents, losing, child changing subject, child being upset, relationship affecting child's personality) and assessing the overall interview gestalt. Some examples of questions are: (1) View of the infant: *"In an average week, what would you describe as his or her favorite things to do?"*; (2) View of

the relationship: *“I’d like you to choose three adjectives that you feel reflect the relationship between you and your infant?”*; and (3) Affective relationship of parenting: *“What gives you the most joy in being a parent?”* The range of possible scores are from – 1 (negative RF) to 9 (exceptional RF). Based on a sample of 200 subjects, the RF rating was found to correlate moderately with IQ ($r = .27-.33$) and correlate slightly with education ($r = .19-.35$) (Slade et al., 2002). There were no correlations with either age or socioeconomic group.

In this study, CODQ and PSI were scored by the PI. All PDI audiotaped interviews were transcribed verbatim and scored by the PI or two trained individuals who were blind to the research study (Appendix D). Inter-rater reliability was established through training and served to reduce bias in scoring of the PDI. Additionally, a small sample of the PDIs scored by the PI were reviewed by an outside PDI trainer scorer for reliability.

PROCEDURES

Recruitment

The admission staff (Site 1) or the Child Care Director (Site 2) provided all newly admitted mothers with a flyer inviting them to participate in the study (Appendix E). Women interested in participating contacted the designated individual at their facility or the PI directly. The PI met with mothers, introduced the study, and reviewed the eligibility criteria. If mothers were eligible, a mutually agreed upon date was set for data collection. Mothers were interviewed within 10 days of admission, which allowed them time to transition and settle into the inpatient environment. In addition, it provided time to satisfy all required WIC evaluations, MHMRA (Mental Health & Mental Retardation Authority; renamed in January 2016 to Harris Center for Mental Health & Intellectual or

Developmental Disabilities) evaluations, and other on- and off-campus requirements (e.g., prepare children for daycare, understand rules of conduct, comply to specific class schedule, undergo physical exam of self and children). Subjects were asked to attend the interview without their infant or toddler; childcare was available at both facilities during the time of data collection. At the time of the meeting, the PI explained the study to participants, the informed consent was reviewed and signed, and a copy of the informed consent was provided to subjects. A copy of the consent was not placed in subjects' medical records to comply with HIPPA guidelines. The confidentiality of the sessions provided mothers with the freedom to talk about their past experiences with drug use and their relationship with their children without facility staff members having access to the information. Additionally, material obtained during the interview would not be available by subpoena from courts or impact in any way their current court adjudication.

Protocol

A quiet room at each facility was used for meeting mothers and collecting data. Prior to any data collection, the informed consent was again reviewed and all questions were answered. If there were any concerns, another meeting time was scheduled. If the rescheduled meeting was not within the 10-day period following time of admission, the mother was not interviewed and not eligible to participate.

During data collection, the CODQ was administered first, followed by the PSI-SF. Each instrument took approximately 15 minutes to complete. The investigator remained with mothers until these instruments were completed. The PDI interview was conducted last; mothers were asked to focus their responses on the youngest child staying with them at the treatment facility.

Prior to audiotaping the PDI interviews, all mobile devices in the room were turned off and a “Do Not Disturb” sign was placed on the door of the room to ensure privacy and confidentiality. No children were present during the questionnaire or the interview. Mothers were reassured that care of their infants or toddlers was arranged by program staff and that they were officially excused from classes or group counseling participation during the meeting time with the PI. At the beginning of the interview, with the tape recorder on, mothers were asked for their consent to be audiotaped. All audio information was collected at one session. Following the session, with the tape recorder turned off, the mother was given time to ask questions. The mothers were reminded that all information was kept confidential and not entered in their records at the facility. Each interview took between 90-120 minutes. Following completion of the questionnaires and interviews, the demographic information was collected. Mothers were then escorted to pick up their infants or toddlers, pictures were taken of the child, and the photographs were given to mothers. The mothers were thanked for their participation and arrangements were made so the incentives could be delivered within one week of the interview.

DATA ANALYSIS

The Statistical Social Sciences software (SPSS, Version 24) was used for all data analyses. Descriptive statistics were calculated for all variables to determine data range, distribution, completeness, normality, and linearity.

For the purpose of this study, the significance level was set at alpha .05 for all research questions. The alpha level (α) or level of significance refers to the risk of committing a type I error or finding significance when significance does not exist (Portney & Watkins, 2009).

The specific aims, hypotheses, research questions, and plan of analysis of this study were:

Specific Aim 1. Identify the relationship between MRF, PS, and PB of substance-using mothers in residential treatment programs during the first 10 days following admission.

H.1.1. There would be a negative relationship between MRF and PS during the first 10 days after admission to a residential treatment program.

Planned Analysis: For research question 1.1, Pearson's Product Moment correlational analysis was planned. Pearson's correlation is a measure of the degree to which two variables vary together or a measure of the intensity of the association between two variables. A negative correlation suggests that as one variable increases the other variable decreases. In this hypothesis it was expected that as PS increases, MRF would decrease.

H.1.2. There would be a negative relationship between MRF and PB during the first 10 days after admission to a residential treatment program.

Planned Analysis: For hypothesis 1.2, Pearson's Product Moment correlational analysis was planned.

Specific Aim 2: Determine the differences between mothers of infants and mothers of toddlers on MRF, PS, and PB.

RQ 2.1. Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in MRF while controlling for age of mothers?

Planned Analysis: For research question 2.1, a 2x2 ANCOVA was planned. ANCOVA is a statistical procedure used "to compare two or more treatment groups while

controlling for the effect of one or more confounding variables (called covariates)” (Portney & Watkins, 2009, p. 863). Polit et al. (2001) defined a covariate as “typically an extraneous, confounding influence on the dependent variable or a baseline measure of the dependent variable” (p. 460). In this study, the covariate was mothers’ age. Two-way analysis refers to the number of independent variables in the ANCOVA. Also, in this study, there were two factors (independent variables) with two levels each. The first factor was age of child, with the two levels being infant and toddler. The second factor was drug of choice with the two levels being cocaine vs. no-cocaine. The dependent variables were MRF (research question 2.1), PS (research question 2.2), and PB (research question 2.3).

RQ 2.2. Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in PS while controlling for age of mothers?

Planned Analysis: For research question 2.2, a 2x2 ANCOVA was planned.

RQ 2.3. Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in PB while controlling for age of mothers?

Planned Analysis: For research question 2.3, a 2x2 ANCOVA was planned.

Specific Aim 3: Determine whether demographic characteristics (e.g., age of mother, age of child), PB, PS, or drug of choice predict MRF.

RQ 3.1. Were PB, PS, age of mother, age of child (infant vs. toddler), and drug of choice (cocaine vs. no-cocaine) predictive of MRF in substance-using mothers at the time of admission to a residential facility?

Planned Analysis: For research question 3.1, multiple regression was used. Regression analysis is used to investigate the relationships between variables. Multiple

regression analysis is used to examine the relationship of two or more independent variables on one dependent variable (Polit & Hungler, 1999, p. 507).

PROTECTION OF HUMAN SUBJECTS

Approval by the University of Texas Medical Branch at Galveston Institutional Review Board (IRB) was obtained prior to all recruitment activities and data collection (Appendix F). The IRB guidelines for the protection of human subjects were followed at all times. Each participant's enrollment and involvement in this study as a "human subject" was completely voluntary and fully informed. Research participants were informed that they could withdraw from this study at any time by contacting the PI or their assigned facility counselor. Additionally, should participants refuse to enroll or choose to withdraw at a later date, there was no penalty, loss of medical care, or effect on their substance-abuse treatment while admitted as an inpatient at either facility. Prior to participating in the study all subjects were required to sign informed consent documents and were given a copy with contact numbers circled. All participants in this study were over the age of 18 years.

The subjects were not identified by name in study records. A code number was assigned to each participant and only the researcher had access to that number. The key to the code was kept in a locked file in the researcher's office. The study data responses on subjects' questionnaires were not linked to their responses. Instead, the data of subjects provided were compiled with data from all other participants and reported as an aggregate. The federal confidentiality law and regulations (codified as 42 U.S.C. § 290dd-2 and 42 CFR Part 2 ("Part 2")) and the privacy regulations issued by the Department of Health and Human Services pursuant to the Health Insurance Portability and Accountability Act (HIPAA) of 1996 (Pub. L. No. 104-191) were the guiding policies for not placing the

consent in subjects' inpatient treatment records. Further, the investigator obtained no information from inpatient treatment records. Any information provided verbally by the subjects during the interview process was the sole source of information used for this research and was protected by the same federal regulations.

There was no reimbursement of expenses for participation in this study (subjects completed the study on the campus of their respective facility). In appreciation for the time and possible inconvenience associated with their voluntary participation, subjects were given photos taken of them with their infant or toddler upon completion of the questionnaires, in addition a \$10 gift card was given to mothers within one week of completion of the session.

Chapter 4: Results

INTRODUCTION

Chapter four presents study results, including sample characteristics, instrument psychometric properties, and findings for each research question. The chapter concludes with a summary of the results. The purpose of the study was to determine if reflective functioning (RF) of mothers upon admission to a residential treatment program differed for mothers of infants and toddlers as well as whether demographic characteristics, parenting stress, and parental beliefs were predictive of RF in mothers of infants and toddlers.

DESCRIPTION OF THE SAMPLE

The sample was comprised of 35 women admitted to two substance-use residential treatment facilities in southeastern Texas. Of the 39 study participants, one woman was transferred out of the intensive program prematurely and one subject was not interviewed within 10 days of admission. Two additional subjects had inaudible audio tapes and were excluded from the final analysis.

The study sample ($n = 35$) was between the ages of 18 and 39 years, with a mean age of 27 years ($SD = 5.5$). The drug of choice for a majority of women ($n = 19$) was cocaine. Table 4.1 shows additional characteristics of study participants. Sixty-nine percent of women had two or more children; children's ages were from .43 weeks to 192 weeks, with a mean overall age of 63 weeks ($SD = 57$). A majority of the infants and toddlers was male ($n = 22$; 63%).

Table 4.1. Demographic Characteristics of Women (N= 35)

Variable	N	%*
Race/Ethnicity		
Caucasian	11	31
Hispanic	10	29
African American	8	23
Mixed Race	2	6
Other	2	6
Unknown	2	6
Drug of Choice		
Cocaine	16	46
Alcohol	4	11
Methamphetamine	2	6
Crack	4	11
Heroin	1	3
Poly/Unknown	8	23
Mothers' Highest Education Level		
Some High School or Less	8	23
High School	2	6
GED	7	20
Some College	3	9
College Graduate	15	43

*All categories may not equal 100% due to rounding.

PRELIMINARY ANALYSIS

To conduct additional analyses, two variables (e.g., child age, drug of choice) were dichotomized and descriptive analysis was used to further describe the variables' characteristics. Two groups were formed based on age of the infant (up to 52 weeks) or age of the toddler (52 weeks and one day to 192 weeks). Table 4.2 shows age of the women's children in the resulting group.

Because cocaine was found to be used heavily by the study participants at the time of data collection, a dichotomous group was formed for cocaine or no-cocaine drug use to understand the impact of cocaine on MRF, PS, and PB. Table 4.3 illustrates percentage of women grouped by cocaine and no-cocaine use.

Cross tabulation was conducted to determine if there were five or more subjects in the newly-formed infant/toddler and cocaine/no-cocaine drug use groups. Table 4.4 shows that each group had a minimum of five subjects, indicating there were enough subjects to conduct ANCOVA analyses for future research questions.

PSYCHOMETRIC PROPERTIES OF THE INSTRUMENTS

Reliability of the Concept of Development Questionnaire (CODQ), PB, and Parenting Stress Index (PSI) for this study sample was calculated using the Cronbach's alpha coefficient (Table 4.5). The PSI had acceptable reliability for this study and the CODQ was below the acceptable level. Nunnally & Bernstein (1994) suggested a value of 0.70 as an acceptable lower bound for α ; α between 0.70 and 0.80 was considered acceptable (DeVellis, 2012).

Table 4.2. Infant and Toddler Age (N=35)

Variable	Infants (N=19)			Toddlers (N=16)		
	M	Range	SD	M	Range	SD
Age (weeks)	19.3	.43-52	16.28	116.5	84-192	37.4

Table 4.3. Drug of Choice by Study Women

Drug of Choice	N	%
Cocaine	16	46
No-Cocaine	19	54

Table 4.4 Cross Tabulation Cocaine or No-Cocaine Use by Infant or Toddler (N = 35)

Group	Infant N (%)	Toddler N (%)
Cocaine	10 (52.6%)	9 (47.4%)
No-Cocaine	9 (60%)	6 (40%)

Table 4.5. Instrument Reliability

Instrument	α	Number of items
CODQ	.38	20
PSI	.88	36

Cronbach's alpha for the study's PSI was consistent with previous research using this instrument. For example, researchers who investigated PS using the PSI calculated a Cronbach's alpha of .84, .72, and .77, for the PD, P-CDI, and DC subscales, respectively (Kelley, 1998; Suchman, Ordway, Heras, & McMahon, 2016). Conversely, use of CODQ yielded higher reliability scores than those in the current study. One research study found internal consistency for this measure with families from a broad range of socioeconomic backgrounds to be .82 (Sameroff & Feil, 1985), and CODQ measures for low SES sample

were found to be .67 (Landry et al., 1996). Although the reliability for this current study was low, the analyses were conducted accordingly.

The Parent Development Interview (PDI) was used to measure maternal RF (MRF) and consisted of qualitative and quantitative questions. One score was calculated and entered for the instrument, and values were not entered for each scale item. Therefore, no α was calculated for this instrument.

DATA ANALYSIS

Following completion of reliability verification, the research hypothesis for each specific aim was analyzed. Each question was analyzed using SPSS version 24.

Specific Aim 1

The first specific aim was to identify the relationship between MRF, PS, and PB of substance-using mothers in residential treatment programs during the first 10 days of admission. Two questions were associated with the first specific aim, which were to determine the magnitude and direction of the relationship between MRF and the independent variables.

Pearson's Product Moment Correlation was the planned analysis for hypotheses 1.1 and 1.2. Prior to conducting the analysis, tests were performed on assumptions of level of measurement, outliers, normality of variables, and homoscedasticity. The variables met the assumptions of level of measurement, i.e., all variables were at interval level. The Shapiro-Wilk tests of normality were not significant for MRF (.07) but were significant for PB (<.001) and PS (.04). These findings suggested that the PS and PB distributions were not normal. Histograms provided a visual illustration of these distributions (Figures 4.1, 4.2,

and 4.3). Visual inspection of the box plots indicated no outliers for MRF; however, there were outliers for PB and PS (Figures 4.4, 4.5, and 4.6).

The scatterplots used to test homoscedasticity for the MRF, PB, PS showed that the distance of each data point from the straight line of best fit formed a tube-like shape rather than a cone-like shape along the line (Figures 4.7 and 4.8). This occurrence indicated equal variance of the variables from the line.

Due to outliers for PB and PS, the non-parametric statistic Spearman's rho was conducted. Hypothesis 1.1 aimed to determine the existence of a negative relationship between MRF and PS at time of admission to a residential treatment center. Spearman's rho indicated a negative, non-significant relationship between MRF and PS at the time of admission to the treatment facility in the study sample (Table 4.6). A weak coefficient existed with a trend toward significance.

Hypothesis 1.2 sought to determine if there was a negative relationship between MRF and PB at the time of admission. Spearman's rho showed a positive, non-significant relationship between the variables (Table 4.6).

Figure 4.1. Distribution of MRF Scores

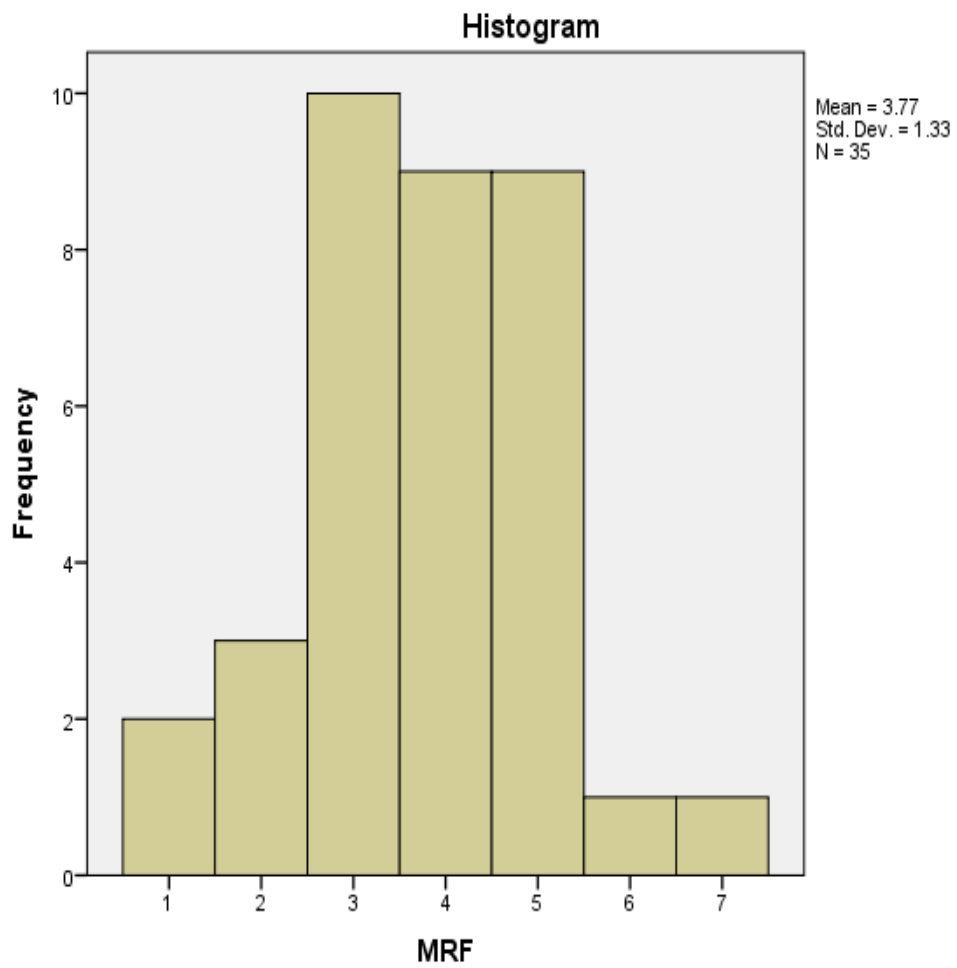


Figure 4.2. Distribution of PB Scores

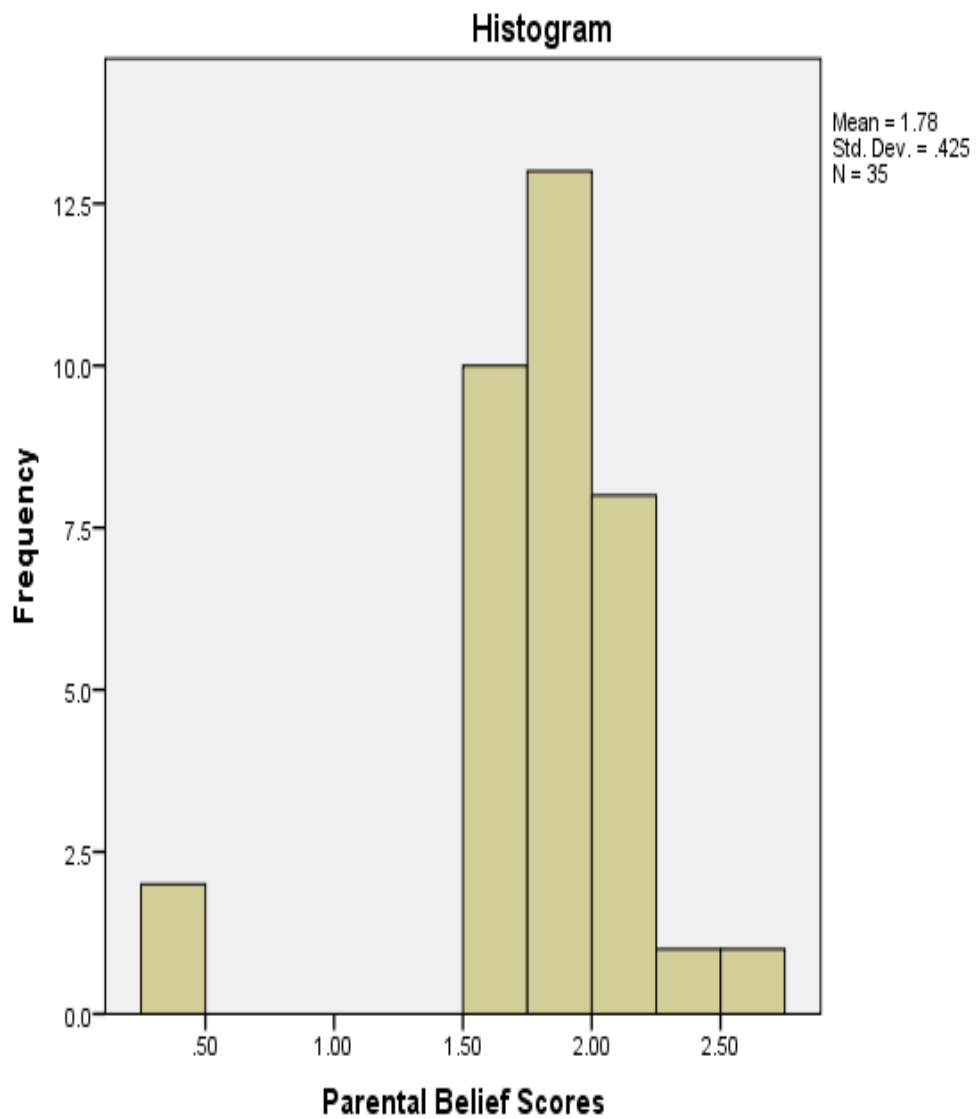


Figure 4.3. Distribution of PS Scores

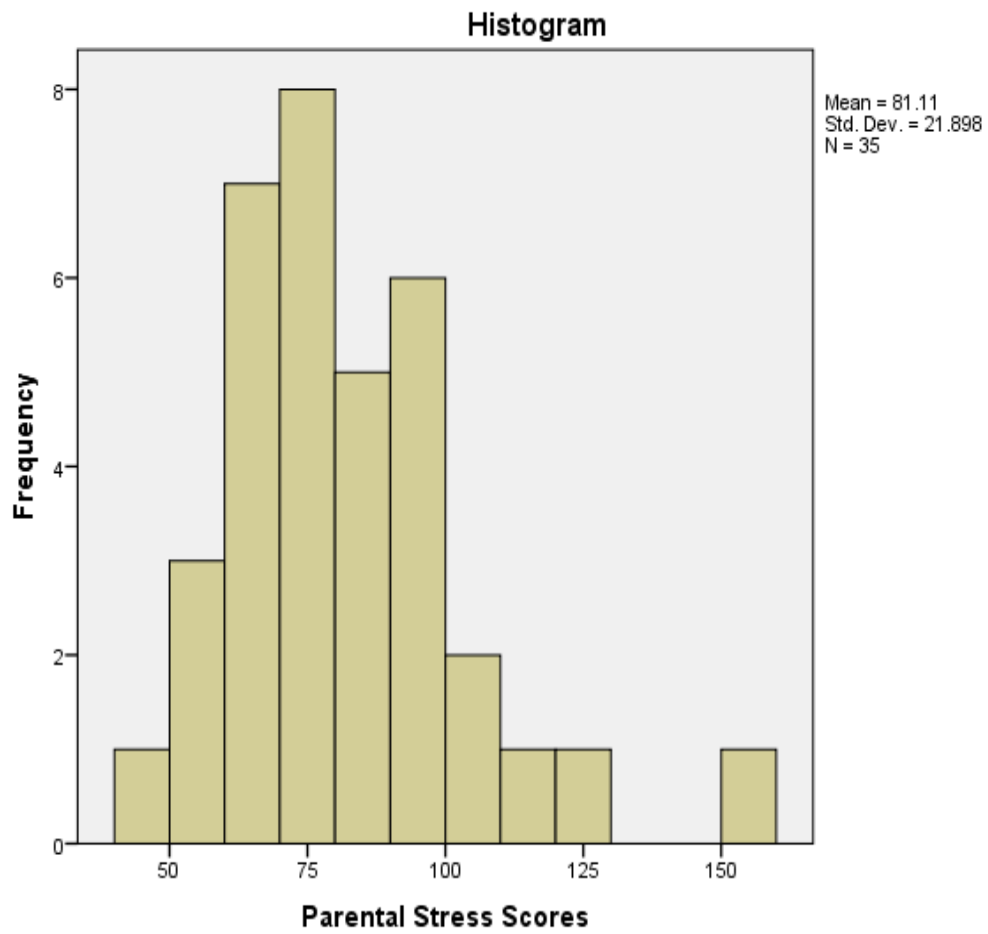


Figure 4.4. Box Plot for MRF no Outliers

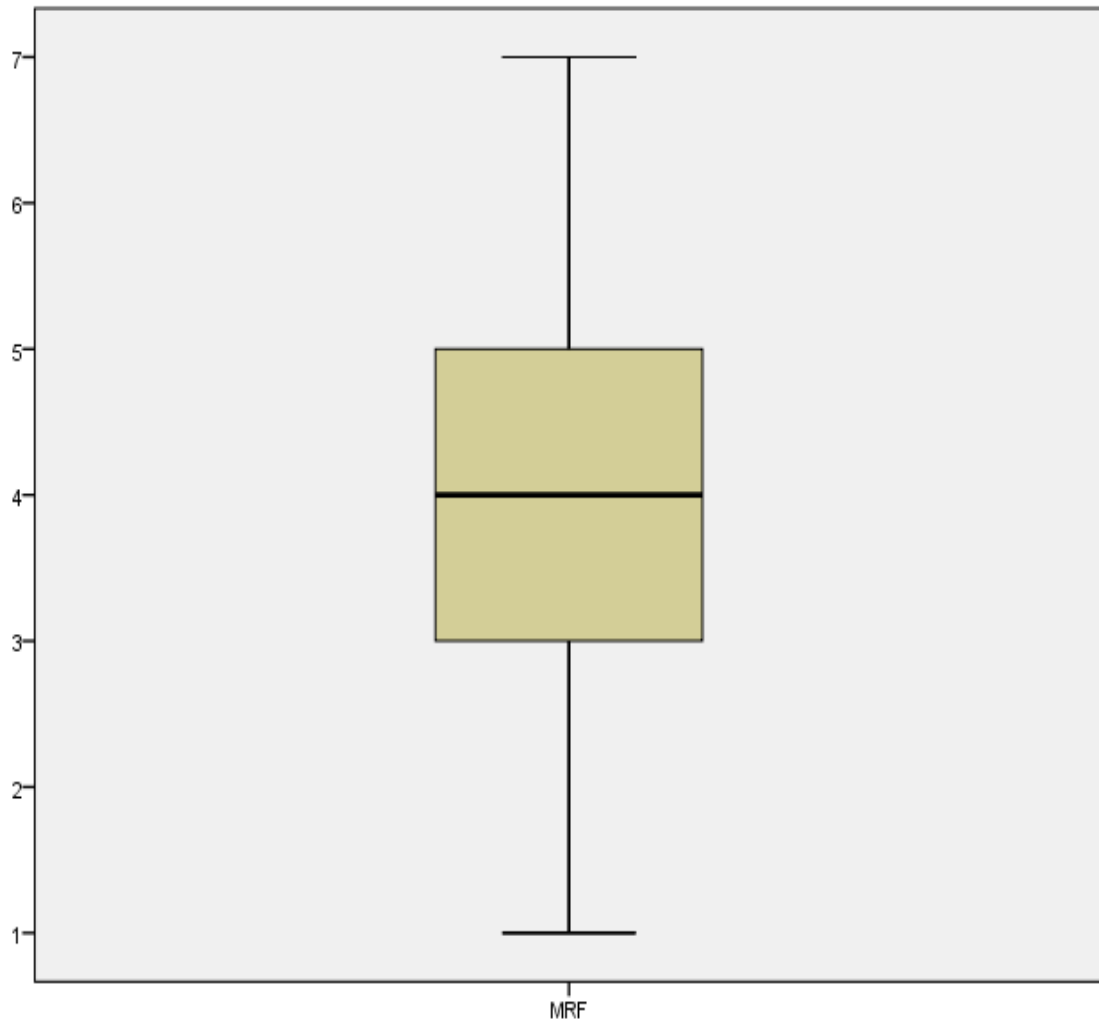


Figure 4.5. Box Plot for PB with Outliers

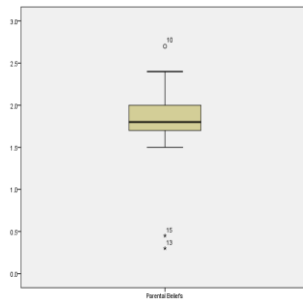


Figure 4.6. Box Plot for PS with Outliers

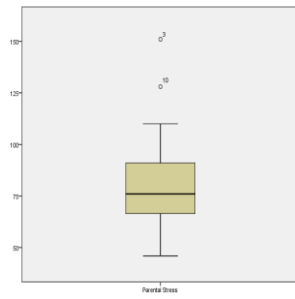


Figure 4.7. Homoscedasticity, MRF, and PB

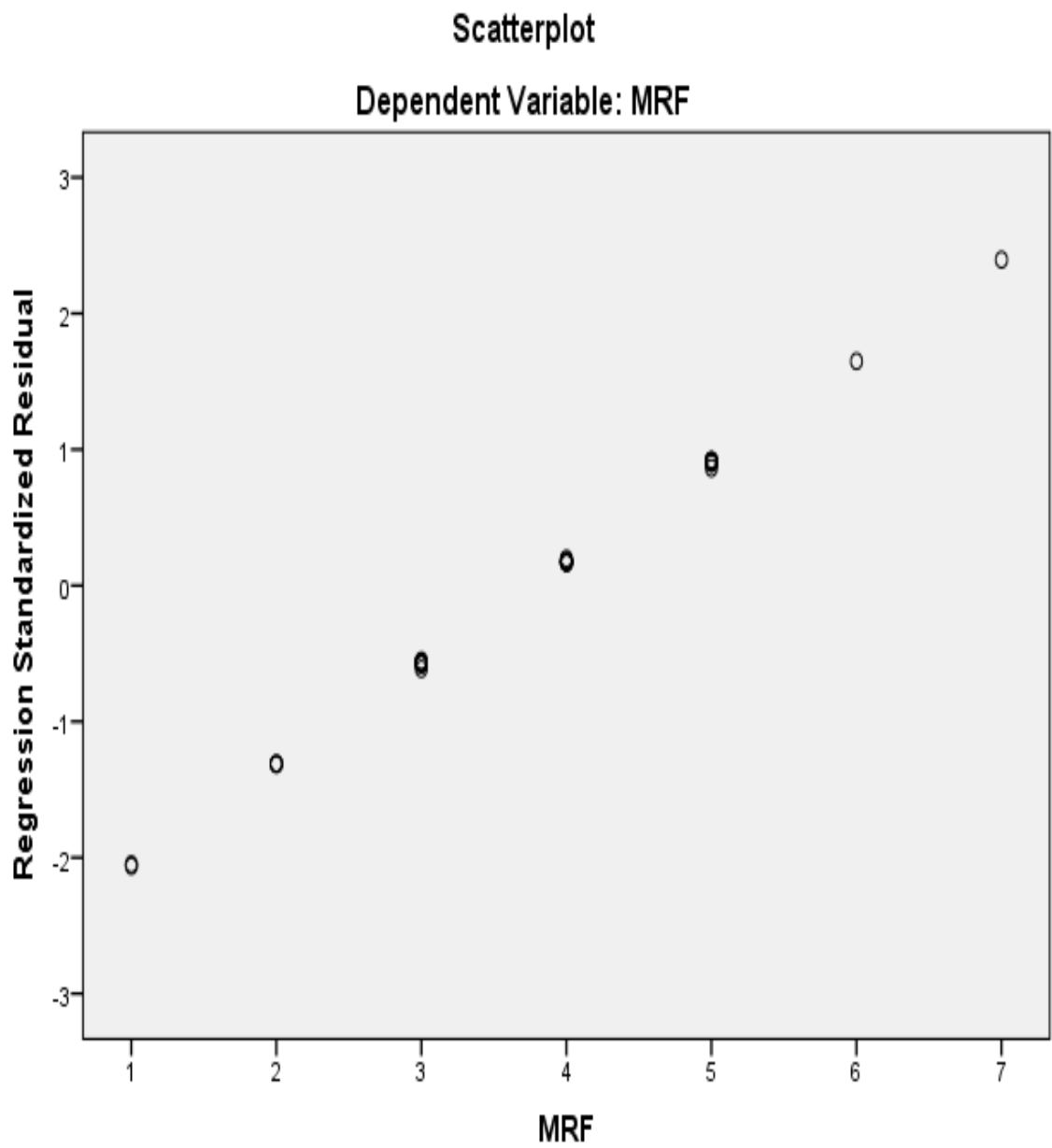


Figure 4.8. Homoscedasticity, MRF, and PS

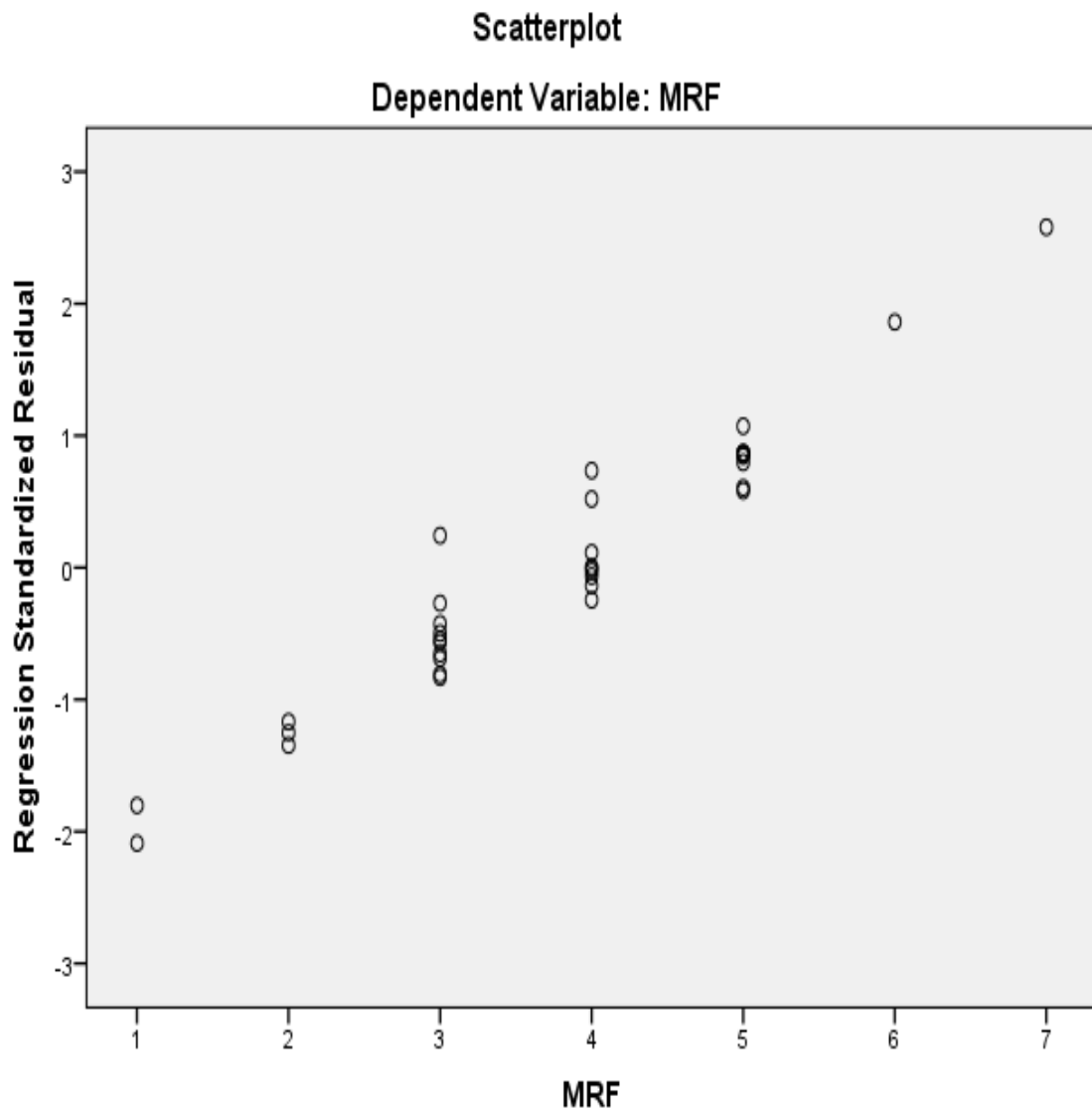


Table 4.6. Spearman Rho Correlations between MRF, PS, and PB (N=35)

Variable	MRF	
	Rho	p
PS	-.310	.07
PB	.025	.86

Specific Aim 2

The second specific aim was to determine the difference between mothers of infants and mothers of toddlers on MRF, PS, and PB. Two research questions were associated with this aim.

ANCOVA was the planned analysis for research questions 2.1 and 2.2. Prior to conducting the analysis, the assumptions for ANCOVA were tested. The assumption of enough subjects per group, i.e., five or more subjects, was met and discussed under preliminary analysis. Next the assumptions of normality and outliers of the variables were tested for the dependent variables (e.g., MRF, PS, PB) and the grouping variables of 1) infants and toddlers; and 2) cocaine and no-cocaine. Normality of the dependent variables was tested with infants and toddlers. Skewness and kurtosis were normal for MRF and infants and toddlers but neither measure was normal for PB with infants and toddlers. For PS, skewness and kurtosis were normal for infants but not toddlers (Table 4.7).

The Shapiro-Wilk tests of normality were not significant for MRF with infants and toddlers but were significant for PB with infants and toddlers. The Shapiro-Wilk tests were not significant for PS with infants but were significant for toddlers. The significant findings for PB with infants and toddlers and PS with toddlers suggested that the distribution was not normal (Table 4.8). Visual inspection of the box plots for MRF with infants and toddlers showed outliers with infants but not with toddlers. There were extreme outliers with PB for both infants and toddlers, and there were outliers with PS for both infants and toddlers (Figures 4.9, 4.10, and 4.11).

Table 4.7. Skewness and Kurtosis for Infants and Toddlers with MRF, PB, and PS

Variables	Infants		Toddlers	
	Skewness	Kurtosis	Skewness	Kurtosis
MRF	.464	.493	-.753	.948
PB	-.1487	6.911	-2.248	7.191
PS	.748	.978	1.550	3.551

Note: In this study normal skewness is between -1 and 1; normal kurtosis is between -2 and 2.

Table 4.8. Shapiro-Wilk Tests of Normality for Infants and Toddlers with MRF, PB, and PS

Variables	Infants			Toddlers		
	Statistic	df	p	Statistic	df	p
MRF	.944	19	.307	.908	15	.126
PB	.778	19	.001	.771	15	.002
PS	.960	19	.566	.876	15	.042

Figure 4.9. Outliers of MRF by Child Group

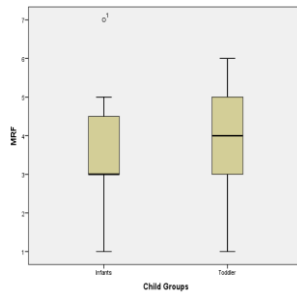


Figure 4.10. Outliers of PB by Child Group

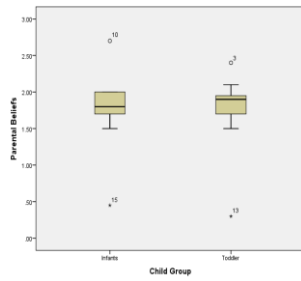
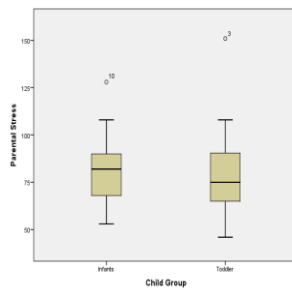


Figure 4.11. Outliers of PS by Child Group



Assumptions of normality and outliers were tested for the dependent variables with the cocaine and no-cocaine groups. For *normality*, skewness and kurtosis were normal for MRF with the cocaine and no-cocaine groups as well as with the PS cocaine group. Skewness was not normal for PS with the no-cocaine group and the kurtosis cocaine group. Neither skewness nor kurtosis were normal for PB with the cocaine groups; skewness and kurtosis, however, were normal for the no-cocaine groups (Table 4.9).

Table 4.9. Skewness and Kurtosis for Cocaine and No-Cocaine Groups with MRF, PB, and PS

Variables	Cocaine		No-Cocaine	
	Skewness	Kurtosis	Skewness	Kurtosis
MRF	.171	.106	.424	.892
PB	2.494	9.681	1.624	.640
PS	1.961	5.223	.630	.370

Note: In this study normal skewness is between -1 and 1; normal kurtosis is between -2 and 2.

The Shapiro-Wilk tests of normality in the cocaine no-cocaine groups were not significant for MRF but were significant with PB. Further, the normality tests indicated that PS was significant for the cocaine group but not significant for the no-cocaine group. The significant findings for PB and PS with the cocaine group suggested that the distributions were not normal (Table 4.10).

Visual inspection of the box plots for MRF with cocaine and no-cocaine groups indicated outliers for both groups. There were extreme outliers with PB for both groups, and there were outliers with PS for the cocaine group (Figures 4.12, 4.13, and 4.14).

Table 4.10. Shapiro-Wilk Tests of Normality for Cocaine and No-Cocaine Groups with MRF, PB, and PS

Variables	Cocaine			No-Cocaine		
	Statistic	df	p	Statistic	df	p
MRF	.934	19	.209	.918	15	.177
PB	.715	19	.001	.796	15	.003
PS	.823	19	.002	.949	15	.509

Figure 4.12. Outliers of MRF by Cocaine Group

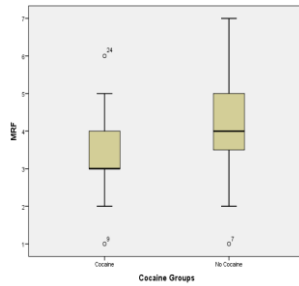


Figure 4.13. Outliers of PB by Cocaine Group

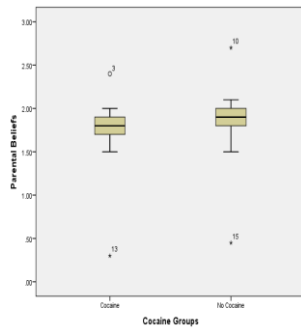
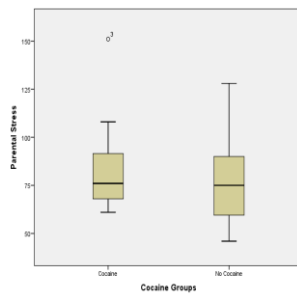


Figure 4.14. Outliers of PS by Cocaine Group



Removal of extreme outliers from the infant and toddler groups or cocaine and no-cocaine groups decreased the number of subjects in some cells below five, thus violating study assumptions. Because not all ANCOVA assumptions were met, the non-parametric statistic Kruskal-Wallis was used for analysis. Using this statistical method did not allow for the use of the covariate (i.e., mothers' age), but it did allow for investigation of the difference between mothers of infants and toddlers and drug of choice on the dependent variables of MRF, PB, and PS.

To conduct the Kruskal-Wallis test, the variables infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine were combined, resulting in four new groups. Prior to conducting the Kruskal-Wallis test, the following assumptions were assessed and met: the level of measurement was categorical or continuous, the independent variables were categorical, and the subjects in each group were independent of the other groups.

Revised research questions 1, 2, and 3 for specific aim 2 assessed whether there were differences in the dependent variables MRF, PB, and PS of mothers among the four different groups. These questions were:

RQ. 2.1: Were there differences in MRF scores between the infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups of mothers in residential treatment programs?

RQ 2.2: Were there differences in PB scores between infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups of mothers in residential treatment programs?

RQ 2.3: Were there differences in PS scores between infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups in residential treatment programs?

Table 4.11 shows the mean rank score for each of the four groups. The MRF and PB mean rank scores were higher for the infant no-cocaine and the toddler no-cocaine groups. The PS scores were higher for the infant cocaine and the toddler cocaine groups. The test statistics, however, showed no significant difference between the groups on either of the dependent variables (Table 4.12).

Table 4.11. Rank of MRF, PB, and PS by Infant Cocaine; Infant No-Cocaine; Toddlers Cocaine; Toddlers No-Cocaine

	Combined Groups	N	Mean Rank
MRF	Infant Cocaine	10	11.30
	Infant No-Cocaine	8	20.31
	Toddlers Cocaine	8	16.81
	Toddlers No-Cocaine	6	19.67
PB	Infant Cocaine	10	13.85
	Infant No-Cocaine	8	19.50
	Toddlers Cocaine	8	13.56
	Toddlers No-Cocaine	6	20.83
PS	Infant Cocaine	10	17.80
	Infant No-Cocaine	8	16.31
	Toddlers Cocaine	8	17.38
	Toddlers No-Cocaine	6	13.42

Table 4.12 Kruskal-Wallis H Values Between Four Groups on Three Dependent Variables (e.g., MRF, PB, PS)

Variables	H between groups	df	p
MRF	5.38	3	.15
PB	3.78	3	.29
PS	.91	3	.82

Grouping variables = Combined (infant cocaine, infant no-cocaine, toddler cocaine, toddler no-cocaine) $p < .05$

Specific Aim 3

The third specific aim was to determine whether demographic characteristics (e.g., age of mother, age of child), PS, PB, and drug of choice predicted MRF. The research question for this aim was to determine if PS, PB, age of mother, age of child (infant vs. toddler), and drug of choice (cocaine vs. no-cocaine) were predictive of MRF in substance-using mothers at the time of admission to a residential facility.

Multiple regression was the planned analysis for this research question. Study assumptions were tested prior to conducting the analysis, e.g., the “rule of thumb” adequate number of subjects per independent variable, absence of outliers for all variables, linearity between the independent variable and the dependent variable, the absence of collinearity between the independent variables. In this study there were five subjects per variable, which met the “rule of thumb” minimum (VanVoorhis & Morgan, 2007).

The Shapiro-Wilk test of normality for the dependent variable MRF was discussed previously under specific aim 1. The Cook’s maximum value was .334; because this value was less than 1, there were no outliers for the independent variables. None of the r -values between the independent and dependent variables was greater than .30, indicating a weak linear relationship between the dependent and independent variables. None of the independent variables were significantly related to each other because none of the r -values were greater than .60, thus denoting the absence of multicollinearity (Table 4.13).

Tolerance was PS = .62, PB = .89, age of child = .94, age of mother = .65, and drug of choice = .88. The variance inflation factors (VIF) were PS = 1.6, PB = 1.1, age of child = 1.0, age of mother = 1.5, and drug of choice = 1.1. These findings further suggested that multicollinearity was not a concern because a value of .10 was recommended as the

minimum level of tolerance (Tabachnick & Fidell, 2001) and a VIF (Variance Inflation Factor) value of 10 was recommended as the maximum level of tolerance (Hair, Anderson, Tatham, & Black, 1995).

Analyses from testing the assumptions showed only weak correlations between the independent and dependent variables; nonetheless, forward and backward multiple regression were conducted. When conducting forward regression with the criterion of $p = .05$, none of the variables were eligible for inclusion into the model. As a result, the predictor variables were not considered to be a good fit for the forward regression model.

Because forward regression assessed each variable's contribution separately and did not allow for the inclusion of combined effects between variables, backward multiple regression was conducted. Backward multiple regression determined whether combinations of variables were missed during the forward regression analysis or whether there were variables that may contribute jointly to the model but may not be good predictors individually.

A backward regression analysis that used all of the predictor variables resulted in a model for which PS, PB, age of child, and drug of choice were not significant. Thus, the predictor variables were not considered to be a good fit.

Table 4.13. Pearson's r Correlations between Predictor Variables and Criterion Variables

Predictor Variables	Criterion Variables			
	MRF (p)	PS (p)	PB (p)	Age of Child (p)
PS	-.271 (.06)			
PB	-.014 (.46)	.281 (.05)		
Age of Child	.157 (.19)	-.280 (.44)	.041 (.41)	
Age of Mother	-.127 (.24)	.508 (.001)	.140 (.22)	.166 (.17)

SUMMARY

Women in the study sample had a mean age of 27 years. Women's infants' mean age was 19.3 weeks and toddlers' mean age was 116.5 weeks. No significant relationships were found between PB and MRF. The relationship of PS and MRF had only a weak coefficient and a trend toward significance. In addition, there was no difference found between infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups on MRF, PS, or PB. Finally, the predictor variables of PS, PB, age of child, and drug of choice were not a good fit as a model for MRF. The psychometric properties for the CODQ in this study were below the lower bounds of an acceptable α level.

Chapter 5: Discussion, Recommendations, and Conclusions

INTRODUCTION

Chapter five presents the study summary, discusses study findings, and draws conclusions based on study results. The chapter also discusses the study implications and limitations. Chapter five concludes with recommendations for future research.

SUMMARY OF THE STUDY

Numerous studies have addressed substance abuse by women with children in residential treatment centers (Pajulo et al., 2001, 2006, 2012; Paris et al., 2015). Most studies have focused on maternal reflective functioning (Jenkins & Williams, 2008; Pajulo et al., 2001, 2006, 2012; Paris et al., 2015), while other studies have centered on parenting stress in substance-using women (Connors et al., 2001; Killeen & Brady, 2000; Osofsky et al., 2007), parenting skills (Arria et al., 2013; Luthar et al., 1995), and parental beliefs (Black et al., 2004; Kettinger et al., 2000) during and after the treatment program period. Yet, to date, no studies have addressed maternal reflective functioning (MRF) with parental beliefs and parenting stress of women during the initial period following admission for substance-use treatment. This population of women is at high risk not to complete treatment programs, to undergo substantial changes immediately prior to admission, and to have multiple responsibilities during the admission period (Ashley et al., 2003; Evans et al., 2013; Greenfield et al., 2004; Grella & Stein, 2006; Knight et al., 2001; Stark, 1992). Thus, it is crucial for researchers to further understand how maternal attributes and characteristics interact during early phases of residential treatment admission for substance use.

Purpose Statement, Specific Aims, Research Hypotheses, and Questions

The purpose of this study was to determine whether mothers of infants or toddlers admitted to a residential treatment program for substance use differed on parenting stress (PS), parental beliefs (PB), and maternal reflective functioning (MRF) as well as to determine whether MRF was influenced by PS, PB, and demographic. The specific aims, related hypotheses, and research questions of this study were:

Specific Aim 1: Identify the relationship between MRF, PS, and PB of substance-using mothers in residential treatment programs during the first 10 days following admission.

H.1.1: There would be a negative relationship between MRF and PS during the first 10 days after admission to a residential treatment program.

H.1.2: There would be a negative relationship between MRF and PB during the first 10 days after admission to a residential treatment program.

Specific Aim 2: Determine the differences between mothers of infants and mothers of toddlers on MRF, PB, and PS.

RQ 2.1: Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in MRF while controlling for age of mothers?

RQ 2.2: Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in PS while controlling for age of mothers?

RQ 2.3: Were there differences across age of child (infant vs. toddler) and drug of choice (cocaine vs. no-cocaine) in PB while controlling for age of mothers?

Specific Aim 3: Determine whether demographic characteristics (e.g., age of mother, age of child), PB, PS, or drug of choice predict MRF.

RQ 3.1: Were PB, PS, age of mother, age of child (infant vs. toddler), and drug of choice (cocaine vs. no-cocaine) predictive of MRF in substance-using mothers at the time of admission to a residential facility?

Review of the Methodology

A descriptive exploratory research methodology was used to examine MRF, PS, and PB of mothers admitted to a residential treatment program. A convenience sample was recruited from two residential treatment facilities in a large city in southeastern Texas. Following IRB approval, subjects who met eligibility criteria were enrolled in the study. The final study sample consisted of 35 mothers with infants and toddlers. Study questionnaires, PSI-SF, COQD, and PDI were administered within the first 10 days of admission. All interviews and questionnaires were conducted on the campuses of the designated residential treatment facility. As incentive, photos of the mother-child dyad and a \$10 gift card were given to mothers within a week of study completion. Data were analyzed using SPSS (v. 24). Major study findings indicated no relationship between PS, PB, and MRF. Because of assumption violations for ANCOVA, a Kruskal-Wallis test was used to examine differences between newly constituted groups. There were no differences between the following groups: infants and cocaine; infant and no-cocaine; toddlers and cocaine; and toddlers and no-cocaine on PS, PB, and MRF. Also, PS, PB, mothers' age, and drug of choice were not predictive of MRF.

FINDINGS RELATED TO THE LITERATURE

The overall sample consisted of 35 mothers and their infants or toddlers. Mothers' mean age was 27 years. The sample was fairly evenly distributed among Caucasians (31%), Hispanics, and African Americans, with there being slightly more Caucasians participants than other groups. The sample group in this study was different from groups in studies by Connor (2012) and Pajulo (2010), which were African-American and Finnish, respectively. The drug of choice for most women in this study was cocaine. There were more infants than toddlers and a majority of the children were male.

Specific aim 1 was to determine if there was a relationship between MRF, PS, and parenting beliefs of substance-using mothers.

H.1.1: There would be a negative relationship between MRF and PS during the first 10 days after admission to a residential treatment program.

It is widely accepted that stress affects parenting, and severely high levels of stress have been documented upon entry into a residential treatment program (Killen & Brady, 2000; Lynch et al., 2011). Additionally, it has been demonstrated that MRF predicts adaptability to parenting stress (Truman et al., 2004). Yet in contrast to the majority of other study findings, Butz (2001) found that substance-using mothers were able to parent well even with high levels of parental stress. Findings from the current study showed a non-significant negative relationship between parenting stress and MRF in mothers at the time of admission to a substance use treatment program. The non-significant negative relationship, which trended toward significance, may suggest that increased MRF could be related to decreased stress levels. Perhaps a larger sample size would have helped to determine whether relationships existed between these variables.

H.1.2: There would be a negative relationship between MRF and PB during the first 10 days after admission to a residential treatment program.

Previous studies found consistently low maternal RF scores among substance-using mothers (Pajulo et al., 2012; Pitzen et al., 2011). Although some studies found low to normal MRF scores, parenting attitudes changed more slowly and were influenced by stress levels (Ordway et al., 2014; Paris et al., 2015). Other researchers found that mothers had mixed results in their maternal reflection capacities and parenting following involvement in recovery programs with reflective-functioning training (Suchman et al., 2011).

Still other studies found low MRF scores in substance-using mothers when displaying fewer hostile parenting behaviors (perspectivistic parenting) (Pitzen et al., 2011). In this current study, there was a non-significant positive relationship between MRF and PB at the time of admission. One possible reason for this outcome was that the psychometric properties of CODQ instrument used to measure PB had an unacceptable alpha, potentially skewing the results.

Specific aim 2 was to determine the difference between mothers of infants and mothers of toddlers on MRF, PB, and PS when controlling for mothers' age. There were extreme outliers and other assumption violations in the infant and toddler and the cocaine and no-cocaine groups, which resulted in an inability to test the original hypotheses or use the original analysis as planned. Three new hypotheses were formed and appropriate analyses were applied. The new hypotheses centered on whether there were differences in PB, PS, and MRF among groups of infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine (i.e., child/drug groups). Findings from these three hypotheses are detailed below.

RQ. 2.1: Were there differences in MRF scores between the infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups of mothers in residential treatment programs?

Researchers have shown that when RF is well developed, children are prosocial, responsive, and better able to regulate their emotional states. Additionally, relationships between mothers and children are more congruent, less frustrating, and less stressful (Fonagy & Target, 1997). One factor found to be associated with RF levels included primary substance used (Pajulo et al., 2012). The current study revealed no difference in MRF scores between the child/drug groups. This finding does not reflect previous research regarding RF and substance use. The difference may be attributable to the types of drugs used by the women in the study vs. those used by women in other research studies. It is also possible that the resulting sample size in each of the four groups was not large enough to detect a difference in the scores.

RQ 2.2: Were there differences in PB scores between infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups of mothers in residential treatment programs?

Parents' belief systems have both direct and indirect influence on parenting practices that regulate interactions between infants and parents (Sigel & McGillicuddy-DeLisi, 2002). A correlation may exist between various contextual factors, the substances to which mothers have been exposed, the mother's history of childhood sexual abuse, and parental attitudes or beliefs about parenting children (DiLillo & Damashek, 2003). In addition, maternal substance use in stressful environmental conditions may interfere with effective parenting (Black et al., 1994). In the current study, however, there were no

differences in parental belief scores for age of children and mothers' drug of choice. As mentioned previously, this finding was expected given the unacceptable psychometric properties of the PB scale.

RQ 2.3: Were there differences in PS scores between infant and cocaine; infant and no-cocaine; toddler and cocaine; and toddler and no-cocaine groups in residential treatment programs?

The source of parenting stress may involve factors related to mothers, children, and environment (both direct and indirect). Children of substance-using women often exhibit characteristics known to influence parenting stress (Harmer et al., 1999; Mansoor et al., 2012; Rodgers, 1998). Moreover, the presence of boys and older children may be correlated with higher parenting stress levels whereas infants require more one-on-one attention and increased nurturing (Harmer et al., 1999; Mansoor et al., 2012; van Vugt et al., 2016; Willinger et al., 2005). Connors (2001) studied 72 mostly single African American mothers and their children during treatment and at multiple times post-discharge from a residential treatment program. Three groups were examined for early dropouts, late dropouts, and graduates. No differences were noted in the negative effects of substance use between groups on PSI-SF scores at intake. This outcome, in part, indicates that the effects of substance use can be measured by the PSI-SF at time of admission.

The current study revealed no differences in PS scores between the child/drug groups, though the reasons for this finding were unclear. Perhaps the age range of the children's group was not large enough to yield differences in mothers' stress levels. It also remains unclear whether controlling for mothers' ages would have affected outcomes. Another possible reason for there being no observed differences in PS scores may have

been the age of infants, i.e., 4 infants were less than 13 days of age (12 days, 8 days, 5 days, and 3 days). Interviewing women so soon after the infant's birth may not have allowed mothers to have sufficient opportunities to interact with their infants and answer the questions in the PS and PB questionnaire or in the PDI.

Specific aim 3 was to determine whether demographic characteristics (e.g., age of mother, age of child), PS, PB, and drug of choice predicted MRF.

RQ 3.1: Were PS, PB, age of mother, age of child (infant vs. toddler), and drug of choice (cocaine vs. no-cocaine) predictive of MRF in substance-using mothers at the time of admission to a residential facility?

The predictor variables of PS, PB, age of child, and drug of choice were not a good fit as a model for MRF. PS and PB were not correlated with MRF, and thus it could be expected that these variables would not contribute to the model. Pajulo et al. (2012) found that prenatal and postnatal reflective functioning scores for substance-using mothers were low but that larger positive changes were found in mothers who used drugs than mothers who used drugs and alcohol. These findings differed from those of the current study.

Conceptual Model

The findings of this study did not support the model proposed for the study. There was no relationship between PB and MRF or PS and MRF for substance-using women living in a residential treatment program. Further demographic characteristics of the children (i.e., infants, toddlers) and type of drugs used made no difference in MRF, PS, and PB scores.

LIMITATIONS

The main limitation of this study was the small sample size. Two urban residential treatment facilities were used in the study for sample selection. Because only two urban facilities with similar regulations were used, the source of the information obtained may be incomplete. These two factors may affect the generalizability of the findings to other residential treatment facilities.

The substances (licit and illicit) used by the women and recorded at the time of intake for admission to the facility were considered for this study. The mothers had the opportunity to share their history of substance-use when interviewed and this was also recorded on the demographic information form.

CONCLUSIONS

For this sample of substance-using women, PS and PB were not associated with MRF during the first 10 days following admission to a residential treatment program. Moreover, MRF, PS, and PB did not differ based on mothers' drug of choice when parenting their infants or toddlers.

Recommendations for Future Research

Future studies should use a larger sample size, which may decrease the likelihood of rejecting the null hypotheses. A second recommendation would be to interview pregnant women in the last trimester of the pregnancy and compare their MRF, PS, and PB with women during the first 10 days of their admission to residential treatment programs. The third recommendation would be to incorporate video recording of mothers interacting with their infants or toddlers. The pairing of verbal interviews and written questionnaires with

an observational component may yield additional nuance and feedback when viewing the interplay between mother-child interactions.

Concluding Remarks

Although results yielded no correlation between PS and PB to MRF during the first 10 days of admission to a residential substance use treatment program, nor did MRF, PS, or PB differ based on mothers' use or non-use of cocaine, there remains a need to identify variables that can direct a tailored program to improve MRF during the critical early stage of admission. Other researchers found improved MRF to be influenced by gender-specific mentalization-based interventions and increased mother-child interactions. Therefore, it is important to determine if similar results can be duplicated during the initial admission period. This duplication is only possible if relationships are found to exist between crucial variables during this critical time period.

Appendix A: Santa Maria Hostel Memorandum of Understanding

SANTA MARIA



MEMORANDUM OF UNDERSTANDING

This agreement is entered into by and between **SANTA MARIA HOSTEL, INC.** (hereinafter referred to as **SMH**) and **Kathleen Pitts** (hereinafter referred to as **Pitts**) for the purpose of research to describe and analyze the parenting beliefs, parenting stress and maternal functioning of mothers admitted to a treatment residential SA TX facility. This research will be conducted through a non-experimental, quantitative research design.

SMH will:

- Allow Pitts to interview clients on a voluntary basis who are mothers with infants (0-12 months) or early childhood (12 months to 4 years); mothers with custody or pending custody of infant or child at SMH; mothers who read or have a basic understanding of English; mothers with no visual or hearing impairment; and mothers who have not been a residential client of SMH in the last 12 months;
- Permit Pitts to collect data from the interviews and questionnaires used for such investigation;
- Require that all data be kept confidential, without disclosing names or other identifying information personal to each client in a locked file cabinet until the completion of the study and the completion of the full research analysis; and
- Require that all data compiled for the purpose of this study be shredded by Pitts and reported to the CEO of SMH.

Pitts will:

- Obtain written consent from each subject (voluntary client of SMH) to participate in the research project.
- Conduct all interviews on the premises of SMH, Bonita House:
- Explain potential risks to all subjects both verbally and in writing:
- Insure that all information collected that identifies each subject's confidentiality follows both HIPAA and federal confidentiality laws covering those services for alcohol/drug use:
- Insure that all materials regarding clients participating in the study are kept locked in a secure file cabinet until the completion of such study; and
- Insure that the original materials are shredded once the data has been analyzed.

Both parties agree that if at any time a client of SMH chooses to discontinue her participation, she will not be interviewed further and her information will be destroyed.

This Memorandum of Understanding shall remain in effect from January 1, 2010 until December 31, 2012 or until cancelled by written notice of either party.

Kathleen Pitts

BY: Kathleen Pitts Date 4/14/10

Kathleen Pitts

SANTA MARIA HOSTEL INC.

BY: Kay Austin Date 4-12-2010

Kay Austin
Chief Executive Officer

Appendix B: Volunteers of America Memorandum of Understanding



Melody Timinsky
President/CEO
Nadine Scamp, LMSW
Gulf Coast Region COO

MEMORANDUM OF UNDERSTANDING

This agreement is entered into by and between Volunteers of America Texas, Inc. (VOA) and Kathleen Pitts for the purpose of research to describe and analyze the parenting beliefs, parenting stress and maternal functioning of mothers admitted to a residential substance abuse treatment facility.

VOA will:

- Allow Ms. Pitts to interview clients on a voluntary basis who are mothers with infants (0-12 months) or early childhood (12 months to 4 years); mothers with custody of infant or child at VOA; mothers who read or have a basic understanding of English; mothers with no visual or hearing impairment; and mothers who have not been a residential client of VOA in the last 12 months;
- Permit Ms. Pitts to collect data from the interviews and questionnaires used for such investigation
- Require that all data be kept confidential without disclosing names or other identifying information personal to each client in a locked file cabinet until the completion of the study and the completion of the full research analysis; and
- Require that all data compiled for the purpose of this study be shredded by Ms. Pitts and ported to the CPO of VOA

Ms. Pitts will:

- Obtain written consent from each subject (voluntary client of VOA) to participate in the research project;
- Conduct all interviews on the premises of VOA property;
- Insure that all information collected that identifies each client's confidentiality follows both HIPAA and federal confidentiality laws covering those services for alcohol/drug use;
- Insure that the original materials are shredded once the data has been analyzed.

Both parties agree that if at any time a client of VOA chooses to discontinue her participation, she will not be interviewed further and her information will be destroyed.

This Memorandum of Understanding shall remain in effect from June 20th, 2010 until June 19th, 2011 or until canceled by either party.

By: Kathleen Pitts
Kathleen Pitts

Date: 6/25/10

By: Nadine Scamp
Nadine Scamp, LMSW
Chief Program Officer
Volunteers of America Texas, Inc.

Date: 7/20/11

Committed to serving people in need, strengthening families, and building communities
4808 Yale Street, Houston, Texas 77018 • Tel: 713.460.0781 • Fax: 713.460.0988 • www.voatx.org

Appendix C: Demographic Information

Demographic Information

Admission Date _____ Date of Completion _____ ID# _____

?

Item	Identifier
Mother	
DOB(Age)	Month/Day/Year
Type of Admission	Self Referral/Court Mandated/CPS Referred
Prior Rehab	Dates/Where?/How long?/For which drugs?
Drug of Choice	Cocaine+/No Cocaine+Alcohol/Amphetamines/Crack/other
Parity	G=/P=/Ab=/MC=
Number of Children	List other living children with mother or not
Ages/Gender	
Education Level	No HS/High School Diploma/GED/Some College/College Graduate
CPS Involvement	Never/When?
Marital Status	Now Married/Cohabiting/Never Married/Divorced/ Widowed/Separated/ Other Arrangement
Ethnicity	Non-Hispanic White/Non-Hispanic Black/Non-Hispanic Asian/Hispanic/Other
Current Meds	Name/dosage/schedule/reason for using
Comorbidity	Specific type of depression/hypertension/seizures/bipolar/ADHD, etc
Hx of Domestic Abuse	Yes/No
Hx of Childhood Abuse	Type (physical/emotional)
Hx of Family Substance Use	Who? Type?
Prior Arrests/Jail/Prison	When and for what legal infraction
Focus Infant/Toddler	
DOB(Age)	Month/Day/Year
Gender	Male/Female
Ethnicity	Non-Hispanic White/Non-Hispanic Black/Non-Hispanic Asian/Hispanic/Other
Term/Preterm	Gave week gestation at birth
Hospitalized After Birth	Time in hospital
Problems	Complications with delivery?/Growth?/Surgeries?/Chronic conditions?
Illnesses	Chronic OM?/Allergies/Asthma/GERD?/Behavior?/Vision?/Hearing?
Father of child	Involved? Amount of time? Type of support?

?

Appendix D: Instruments

Parenting Stress Index-Short Form (PSI-SF)-1995

Abidin, R.A. (1995). Parenting Stress Index: Professional Manual 3rd Ed. Lutz, FL:
Psychological Assessment Resources, Inc.

Psychological Assessment Resources, Inc (1995)

16204 N. Florida Ave.

Lutz, FL 33549

<http://www.parinc.com>

Concepts of Development Questionnaire (CODQ)—1985

Sameroff, A. J., & Feil, L. A. (1985). Parental belief systems: The psychological consequences for children. In I. E. Sigel (Ed.), *Parental concepts of development* (pp. 83-105). Hillsdale, NJ: Erlbaum.

Parent Development Interview (PDI)—2003

Slade, A., Aber, J. L., Berger, B., Bresgi, I., Kaplan, M. (2003). The parent development interview (Revised). New York, NY: The City University of New York.

Aber, J. L., Slade, A., Berger, B., Bresgi, B., & Kaplan, M. (1985). *The Parent Development Interview*. Unpublished manuscript.

Appendix E: Recruitment Flyer



Parenting Study

You are invited to participate in a research study about the parent-child relationship. It is being conducted by Kathleen Pitts as part of a research project at the University of Texas-Medical Branch in Galveston, TX.

WHO: If you are between the ages of 18 and 47 and have an Infant (birth to 1 year) or toddler (up to age 4 years of age)

WHERE: Santa Maria Hostel-Bonita House or VOA

TIME:

Meeting	What do you do?	Time
#1	Interview; two questionnaires	3-4 hours

Participation is strictly voluntary and confidential

Contact Donna White or your counselor

Remuneration will be provided

Appendix F: IRB Approval and Consent



OFFICE OF RESEARCH SUBJECT PROTECTIONS
Institutional Review Board

August 24, 2010

MEMORANDUM

TO: Alice Hill, PhD/Kathleen Pitts, CPNP, NNP, MPH
GSBS Nursing 1132

FROM: *for Sylvia Hernandez*
Richard Rupp, MD
IRB Director
Institutional Review Board 0158

SUBJECT: IRB #10-176 - **Final Approval** of Expedited Protocol
Maternal Reflective Functioning, Parental Beliefs & Parenting Stress of Mothers in a Residential Treatment Program

Having met the requirements set forth by the Institutional Review Board by an expedited review process on July 28, 2010, your research project is now approved, effective August 24, 2010.

This project will require annual review and will expire on June 30, 2011. Research that has not received approval for continuation by this date may not continue past midnight of the expiration date.

In reviewing the protocol, the IRB determined that the study objectives are clear, the study design, to the extent possible, minimizes risks to subjects and is appropriate to accomplish the objectives. The research contribution to the generalizable knowledge justifies the potential risks, discomforts or inconvenience to the subjects. The investigators and their staff appear to have the appropriate scientific training and qualifications to conduct the proposed research. From review of the protocol and supporting documents, the IRB considered the likelihood that some or all of the subjects may be vulnerable to coercion or undue influence and determined that appropriate safeguards are in place to protect the rights and welfare of these subjects. The IRB reviewed the risks and anticipated benefits to subjects and the importance of the knowledge that may be expected to result from the research and found that the physical, psychological, social, economic and legal risks to the subjects are minimized and are reasonable in relation to the anticipated benefits. The plan for selection of subjects is equitable, the informed consent document contains all required elements, and informed consent will be appropriately obtained and documented from each subject or the subject's legally authorized representative. Adequate provisions are made to protect the privacy of the subjects and to maintain the confidentiality of data. In addition, taking into account the degree of risk associated with the protocol, the IRB determined that continuing review of this protocol does not have to be accomplished more often than annually.

RR/sh

Attachment: Research Consent Form

4.500 REBECCA SEALY HOSPITAL • 301 UNIVERSITY BOULEVARD • GALVESTON, TEXAS 77555-0158
(409) 266-9475 • FAX (409) 266-9499 • Research.utmb.edu/IRB

IRB APPROVED

AUG 24 2010

FORM VALID THROUGH

JUN 30 2011

1

RESEARCH CONSENT FORM

You are being asked to participate as a subject in the research project entitled *Maternal Reflective Functioning, Parental Beliefs and Parenting Stress in Mothers in a Residential Treatment Program* under the direction of Kathleen Pitts, CPNP.

PURPOSE OF STUDY

The purpose of this study is to describe the parenting stress (PS), parental beliefs (PB) and maternal reflective functioning (MRF) of mothers in a residential treatment facility. You are being asked to participate because you have an infant or toddler who will stay with you while in the Santa Maria Hostel-Bonita House residential treatment facility.

PROCEDURES RELATED ONLY TO THE RESEARCH

Upon admission to Santa Maria Hostel-Bonita House residential treatment facility you will be provided with an invitation flyer and copy of informed consent to participate in this research project. This flyer will be provided by the Santa Maria Hostel-Bonita House admissions staff.

After reviewing the invitation flyer and consent form, if you are interested in participating, you have been asked to contact Ms. Donna White, Director of Women & Children. Ms. White will contact the principal investigator, Kathleen Pitts, and a time and date will be set up to meet with you for the first data collection. This time (2-3 hours) and date will be arranged by Ms. White based on your schedule at Santa Maria Hostel-Bonita House. Your infant or toddler will not be present during the data collection period but he/she will be cared for by the staff of Santa Maria Hostel-Bonita House. You will be officially excused from all formal classes, group treatment or counseling during this time. If you are unable to attend the first meeting, another meeting time will be arranged. The initial appointment must be made within 10 days of your admission to the intensive residential treatment program. The second meeting time will be arranged by the investigator and Ms. Donna White within 10 days prior to your completion of the 90-day treatment program. It will involve the same amount of time (2-3 hours), without your infant/toddler present and you will again be officially excused from classes, group or counseling during this time.

The two meetings will involve the collection of the following :

Time 1-a) review of the consent and signing consent; b) information about you (age, ethnicity, education level, marital status, drug of choice and other demographic information); c) information about your infant or toddler (date of birth, birth weight, sex, ethnicity, gender, birth complications, time in hospital, and other demographic information); d) a 20-item pencil and paper self-administered questionnaire about your parental beliefs; e) a 36-item pencil and paper self-administered questionnaire about parenting stress; and f) a semi-structured, audio-taped interview about you and your infant/toddler.

Time 2- will involve the same two questionnaires followed by the semi-structured audio-taped interview.

If for any reason you are unable to continue your participation in any of the two meetings, they will be stopped without penalty to you.

PROCEDURES NOT RELATED TO THIS RESEARCH (i.e., standard of care)

During your 90-day residential treatment program you will receive the standard treatment provided all residents at Santa Maria Hostel-Bonita House. The only procedure in this research is the completion of the two questionnaires and the interview at the two designated meetings times. There are no other procedures.

RISKS OF PARTICIPATION

There are minimal potential risks from participation. One potential risk is the possibility for becoming upset or uncomfortable when answering some of the questions. Should this occur the participant will be asked if they would like to take a break or if there is a need to re-schedule the interview. The principal investigator is under legal obligation by the Texas Statute Family Code 261.102, et seq., to report to the Texas Department of Protective and Regulatory Services "any cause to believe that a child's physical or mental health or welfare has been or may be adversely affected by abuse or neglect."

NUMBER OF SUBJECTS PARTICIPATING AND THE DURATION OF YOUR PARTICIPATION

The anticipated number of subjects involved in this study will be 41 mothers with infants or toddlers. The total length of time for your participation is approximately 4-6 hours (Time One will take approximately 1-2 hours; Time Two will take approximately 1-2 hours).

BENEFITS TO THE SUBJECT

You will not benefit from your participation in the research project.

OTHER CHOICES (ALTERATIVE TREATMENT)

There are no treatments in this study. You will meet with the investigator to only complete the questionnaires and answer the interview questions as you wish. The alternative to participating in this study is to choose not to participate.

SAFE WITHDRAWAL FROM THE STUDY

If you decide to withdraw from the study you will need to inform Kathleen Pitts or Donna White and no further requests will be made. There are no other procedures or steps that need to be taken.

REIMBURSEMENT FOR EXPENSES

For your participation in this study you will be provided four pictures (of you and child together; two after the first meeting (T1) and two after the second meeting (T2)) and a \$10.00 gift card following completion of the second meeting (T2). Both meetings must be completed to receive the gift card as outlined above. The pictures will be given to you within one week after being taken (to allow for printing time) and the gift card will be given to you immediately following the second meeting.

COMPENSATION FOR RESEARCH RELATED INJURY

If you are physically injured because of any substance given to you or procedure performed on you under the plan for this study, UTMB will provide you with the appropriate medical treatment. Your insurance company will be billed and any charges not covered by your own insurance or health care program will be provided at no cost to you. You will be responsible for paying any costs related to illnesses and medical events not associated with being in this study. There are no plans to provide other forms of compensation. However, you are not waiving any of your legal rights by participating in this study. Questions about compensation may be directed to the study doctor.

COSTS OF PARTICIPATION

There will be no cost to you for your participation in this study.

REASONS FOR THE STUDY INVESTIGATOR TO STOP YOUR PARTICIPATION

You will be withdrawn (dropped) from the study for any of the following reasons: 1) you have a positive urine drug screen (+UDS) at any time during your 90-day treatment program stay; 2) you are hospitalized or walk out of the program for longer than 48 hours; 3) you are asked to officially leave the program for other reasons and/or are no longer living at Santa Maria Hostel-Bonita House; 4) your infant or toddler is hospitalized for greater than 48 hours (consecutively); 5) your infant or toddler is off campus and cared for another individual for longer than 48 hours (consecutively); and/or 6) you do not complete the full interview and questionnaires within 10 days of being admitted to Santa Maria Hostel-Bonita House or within 10 days before completing the 90-day program.

PROCEDURE FOR WITHDRAWAL

If at any time you wish to stop your participation in this study, contact Kathleen Pitts or Donna White.

USE AND DISCLOSURE OF YOUR HEALTH INFORMATION

Study records that identify you will be kept confidential as required by law. Federal privacy regulations provided under the Health Insurance Portability and Accountability Act (HIPAA) provide safeguards for privacy, security, and authorized access of your records. These regulations require University of Texas Medical Branch (UTMB) to obtain an authorization from you for the use and disclosure of you and your infant's/toddler's health information related to the research study. Except when required by law, you will not be identified by name, social security number, address, telephone number, or any other direct personal identifier in study records disclosed outside of the University of Texas Medical Branch (UTMB). For records disclosed outside of UTMB, you will be assigned a unique code number. The key to the code will be kept in a locked file in Kathleen Pitts' office.

If you sign this form, you are giving Kathleen Pitts permission to collect, use and share your health information. You do not need to sign this form. If you decide not to sign this form, you cannot be in the research study. We cannot do the research if we cannot collect, use and share your health information. Whether or not you agree to the research project or give us permission to collect, use or share your health information will not affect the care you will be given at Santa Maria Hostel-Bonita House.

Your records may be reviewed in order to meet federal or state regulations. Reviewers may include, Dr. Alice Hill (the official chairperson of Kathleen Pitts' research) and the UTMB IRB (Institutional Review Board). This authorization for the use and disclosure of your health information as described above expires upon the conclusion of the research study.

If you change your mind later and do not want Kathleen Pitts to collect or share your health information, you need to contact Kathleen Pitts or Donna White in person, by telephone or by letter. You need to say that you have changed your mind and do not want the researcher to collect and share your health information.

You may also need to leave the research study if we cannot collect any more health information. The results of this study may be published in scientific journals without identifying you or your infant or toddler by name.

ADDITIONAL INFORMATION

1. If you have any questions, concerns or complaints before, during or after the research study, or if you need to report a research related injury or adverse reaction (bad side effect), you should immediately contact Kathleen Pitts at 409-772-8251 or, if after normal business hours, ask the Santa Maria Hostel-Bonita House Tech Station to contact Kathleen Pitts. An additional contact is Dr. Alice Hill at 409-772-8251.
2. Your participation in this study is completely voluntary and you have been told that you may refuse to participate or stop your participation in this project at time without penalty or loss of benefits and without jeopardizing you or your child's care at Santa Maria Hostel-Bonita House. If you decide to stop your participation in this project and revoke (cancel) your authorization for the use and disclosure of your health information, UTMB may continue to use and disclose your health information in some instances. This would include any health information that was used or disclosed prior to your decision to stop

participation and needed in order to maintain the integrity (completeness/honesty) of the research study.

3. If you have any complaints, concerns, input or questions regarding your rights as a subject participating in this research study or you would like more information, you may contact the Institutional Review Board at 409-266-9475.

The purpose of this research study, procedures to be followed, risk and benefits have been explained to you. You have been allowed to ask questions and your questions have been answered to your satisfaction. You have been told who to contact if you have additional questions. You have read this consent form and voluntarily agree to participate as a subject in this study. You are free to withdraw your consent, including your authorization for the use and disclosure of you and your infant/toddler's health information, at any time. You may withdraw your consent by notifying Kathleen Pitts at 409-772-8251 or asking the Santa Maria Hostel-Bonita House Tech Station to call Kathleen Pitts. You will be given a copy of the consent form you have signed.

Informed consent is required of all persons in this project. Whether or not you provide a signed informed consent for this research study will have no effect on you or your infant/toddler's current or future relationship with UTMB or Santa Maria Hostel-Bonita House.

Signature of Subject

Date

Using language that is understandable and appropriate, I have discussed this project and the items listed above with the subject.

Date

Signature of Person Obtaining Consent

Bibliography

- Abidin, R. A. (1992). The determinants of parenting behavior. *Journal of Clinical Child Psychology, 21*, 407-412.
- Abidin, R. A. (1995). *Parenting Stress Index: Professional manual* (3rd ed.). Lutz, FL: Psychological Assessment Resources.
- American Academy of Pediatrics (AAP). (2007). Recommendations for preventative pediatric health care. *Committee on practice and ambulatory medicine*. Retrieved from <http://pediatrics.aappublications.org/content/120/6/1376>
- Arria, A. M., Mericle, A. A., Rallo, D., Moe, J., White, W. L., Winters, K. C., & O'Connor, G. (2013). Integration of parenting skills education and interventions in addiction treatment. *Journal of Addiction Medicine, 7*, 1-7. doi: 10.1097/ADM.0b013e318270f7b0
- Ashley, O. S., Marsden, M. E., & Brady, T. M. (2003). Effectiveness of substance abuse treatment programming for women: a review. *The American Journal of Drug and Alcohol Abuse, 29*, 19-53.
- Bagner, D. M., Sheinkopf, S. J., Miller-Loncar, C., LaGasse, L. L., Lester, B. M., Liu, J., Bauer, C. R., Shankaran, S., Bada, H., & Das, A. (2009). The effect of parenting stress on child behavior problems in high-risk children with prenatal drug exposure. *Child Psychiatry & Human Development, 40*, 73-84. doi: 10.1007/s10578-008-0109-6

- Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., & Juffee, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, 129, 195-215.
- Bass, L., & Jackson, M. S. (1997). A study of drug abusing African-American pregnant women. *Journal of Drug Issues*, 27, 659-671.
- Behnke, M., Eyler, F. D., Warner, T. D., Garvan, C. W., Hou, W. & Wobie, K. (2006). Outcome from a prospective, longitudinal study of prenatal cocaine use: preschool development at 3 years of age. *Journal of Pediatric Psychology*, 31, 41-49. doi: 10.1093/jpepsy/jsj027
- Black, M. M., Nair, P., Kight, C. Wachtel, R., Roby, P., & Schuler, M. (1994). Parenting and early development among children of drug-abusing women: effects of home intervention. *Pediatrics*, 94, 440-448.
- Bornstein, M. H., Cote, L. R., & Venuti, P. (2001). Parenting beliefs and behaviors in northern and southern groups of Italian mothers of young infants. *Journal of Family Psychology*, 15, 663-675. doi:10.1037/0893-3200.15.4.663
- Boyd, B. A. (1993). The antecedents of women's crack cocaine abuse: Family substance abuse, sexual abuse, depression and illicit drug use. *Journal of Substance Abuse Treatment*, 10, 433-438. doi: 10.1016/0740-5472(93)90002-J
- Brannan, A. M., & Heflinger, C. A. (2001). Distinguishing caregiver strain from psychological distress: modeling the relationships among child, family, and caregiver variables. *Journal of Child & Family Studies*, 10, 405-418. doi: 10.1023/A:1016705306848

- Broz, D., Wejnert, C., Pharn, H. T., DiNenno, E., Heffelfinger, J. D., Cribbin, M., Krishna, N., Teshale, E. H., Paz-Bailey, G., National HIV Behavioral Surveillance System Study Group. (2014). HIV infection and risk, prevention, and testing behaviors among injecting drug users — National HIV Behavioral Surveillance System, 20 U.S. Cities, 2009. *Mortality and Morbidity Weekly Report (MMWR)*, 4, 1-51.
- Butz, A. M., Pulsifer, M., Marano, N., Belcher, H., Lears, M. K., & Royall, R. (2001). Effectiveness of a home intervention for perceived child behavioral problems and parenting stress in children with in utero drug exposure. *Archives of Pediatric & Adolescent Medicine*, 155, 1029–1037.
- Cain, D. S., & Combs-Orme, T. (2005). Family structure effects on parenting stress and practices in the African American family. *Journal of Sociology and Social Work*, 32, 19-40. Retrieved from <http://scholarworks.wmich.edu/jssw/vol32/iss2/3>
- Carta, J. J., Atwater, J. B., Greenwood, C. R., McConnell, S. R., McEvoy, M. A., & Williams, R. (2001). Effects of cumulative prenatal substance exposure and environmental risks on children's developmental trajectories. *Journal of Clinical Child & Adolescent Psychology*, 30, 327-337.
- Center for Behavioral Health Statistics and Quality. (2015). Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health (*HHS Publication No. SMA 15-4927, NSDUH Series H-50*). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <http://www.samhsa.gov/data/>

- Choi, S., Adams, S. M., MacMaster, S. A. & Seiters, J. (2013). Predictors of residential treatment retention among individuals with co-occurring substance abuse and mental health disorders. *Journal of Psychoactive Drugs*, 45, 122-131.
- Cohen, L. R., Hien, D. A., & Batchelder, S. (2008). The impact of cumulative maternal trauma and diagnosis on parenting behavior *Child Maltreatment*, 13, 27-38. doi: 10.1177/1077559507310045
- Conners, N. A., Bradley, R. H., Mansell, L. W., Liu, J. Y., Roberts, T. J., Burgdorf, K., & Herrell, J. M. (2003). Children of mothers with serious substance abuse problems: An accumulation of risks. *American Journal of Drug and Alcohol Abuse*, 29, 743-758. doi: 10.1081/ADA-120026258
- Conners, N. A., Bradley, R. H., Whiteside-Mansell, L. & Crone, C. C. (2001). A comprehensive substance abuse treatment program for women and their children: an initial evaluation. *Journal of Substance Abuse Treatment*, 21, 67-75.
- Conners, N. A., Grant, A., Crone, C. C., & Whiteside-Mansell, L. (2006). Substance abuse treatment for mothers: Treatment outcomes and the impact of length of stay. *Journal of Substance Abuse Treatment*, 31, 447-456.
- Conners-Burrow, N. A., Johnson, B., & Whiteside-Mansell, L. (2009). Maternal substance abuse and children's exposure to violence. *Journal of Pediatric Nursing*, 24, 360-368. doi: 10.1016/j.pedn.2008.03.006
- Cosden, M., & Cortez-Ison, E. (1999). Sexual abuse, parental bonding, social support, and program retention for women in substance abuse treatment. *Journal of Substance Abuse Treatment*, 16, 149-155.

- Coyer, S. M. (2001). Mothers recovering from cocaine addiction: Factors affecting parenting skills. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 30, 71-79.
- Curet, L. B., & His, A. C. (2002). Drug abuse during pregnancy. *Clinical Obstetrics & Gynecology*, 45, 73-88.
- Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice*, 5, 314-332. doi: 10.1111/j.1468-2850.1998.tb00152.x
- Deater-Deckard, K. (2004). *Parenting stress*. New Haven, CT: Yale University Press.
- Deater-Deckard, K., & Scarr, S. (1996). Parenting stress among dual-earner mothers and fathers: Are there gender differences? *Journal of Family Psychology*, 10, 45-59. doi: 10.1037/0893-3200.10.1.45
- DeVellis, R. F. (2012). *Scale development: Theory and application* (2nd ed.). Los Angeles, CA: Sage Publications.
- DiLillo, D., & Damashek, A. (2003). Parenting characteristics of women reporting a history of childhood sexual abuse. *Child Maltreatment*, 8, 319-333
- Douglas, A. N., Jimenez, S., Lin, H. J., & Frisman, L. K. (2008). Ethnic differences in the effects of spiritual well-being on long-term psychological and behavioral outcomes within a sample of homeless women. *Cultural Diversity and Ethnic Minority Psychology*, 14, 344-352. doi: 10.1037/1099-9809.14.4.344
- Ertel, K. A., Rich-Edwards, J. W., & Koenen, K. C. (2011). Maternal depression in the United States: Nationally representative rates and risks. *Journal of Women's Health*, 20, 1609-1617. doi: 10.1089/jwh.2010.2657

- Espinet, S. D., Jeong, J. J., Motz, M., Racine, N., Major, D., & Pepler, D. (2013). Multimodal assessment of the mother-child relationship in a substance-exposed sample: Divergent associations with the emotional availability scales. *Infant Mental Health Journal*, 34, 496-507. doi: 10.1002/imhj.21409
- Evans, E., Li, L., Pierce, J., & Hser, Y. I. (2013). Explaining long-term outcomes among drug dependent mothers treated in women-only versus mixed-gender programs. *Journal of Substance Abuse Treatment*, 45, 293-301. doi: 10.1016/j.jsat.2013.04.003
- Fineman, N. R., Beckwith, L., Howard, J., & Espinosa, M. (1997). Maternal ego development and mother-infant interaction in drug-abusing women. *Journal of Substance Abuse Treatment*, 14, 307-317.
- Fonagy, P. (1995). Playing with reality: The development of psychic reality and its malfunction in borderline personalities. *International Journal of Psychoanalysis*, 76, 39-44.
- Fonagy, P., Gergely, G., Jurist, E., & Target, M. (2002). *Affect regulation, mentalization, and the development of the self*. New York, NY: Other Press.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development*, 62, 891-905.
- Fonagy, P., Steele, M., Steele, H., Higgitt, A., & Target, M. (1994). The Emmanuel Miller lecture, 1992: The theory and practice of resilience. *Journal of Child Psychology & Psychiatry*, 35, 231-257.

- Fonagy, P., & Target, M. (1997). Attachment and reflective functioning: Their role in self organization. *Development and Psychopathology*, 9, 679-700.
- Fraser, J. G., Harris-Britt, A., Thakkallapalli, E. L., Kurtz-Cross, B. & Martin, S. (2010). Emotional availability and psychosocial correlates among mothers in substance-abuse treatment and their young infants. *Infant Mental Health Journal*, 31, 1-15. doi: 10.1002/imhj.20239
- Friedman, E., & Billick, S. B. (2015). Unintentional child, neglect: Literature review and observational study. *Psychiatric Quarterly*, 86, 253-259.
- George, C., Kaplan, N., Main, M. (1985). Adult Attachment Interview. University of California at Berkeley, Berkeley, CA: Unpublished manuscript.
- Greenfield, L., Burgdorf, K., Chen, X., Porowski, A., Roberts, T. & Herrell, J. (2004). Effectiveness of long-term residential substance abuse treatment for women: Findings from three national studies. *American Journal of Drug & Alcohol Abuse*, 30, 537-550.
- Greenfield, S. F., Brooks. A. J., Gordon, S. M., Greene, C. A., Kropp, F., McHugh, R. A., Lincoln, M., Hien, D., & Miele, G.M. (2007). Substance abuse treatment entry, retention, and outcome in women: A review of the literature. *Drug & Alcohol Dependence*, 86, 1–21. doi: 10.1016/j.drugalcdep.2006.05.012
- Grella, C. E., & Greenwell, L. (2004). Substance abuse treatment for women: Changes in the settings where women received treatment and types of services provided, 1987–1998. *Journal of Behavioral Health Services & Research*, 31, 367-383.

- Grella, C. E., & Stein, J. A. (2006). Impact of program services on treatment outcomes of patients with comorbid mental and substance use disorder. *Psychiatric Services*, 57, 1007-1015. doi: 10.1176/appi.ps.57.7.1007
- Grusec, J. E., Rudy, D., & Martini, T. (1997). Parenting cognitions and child outcomes: An overview and implications for children's internalization of values. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting and children's internalization of values: A handbook of contemporary theory* (pp. 259-282). Hoboken, NJ: John Wiley.
- Hans, S. L. (1999). Demographic and psychosocial characteristics of substance-abusing pregnant women. *Clinics in Perinatology*, 26, 55-74.
- Hardesty, M., & Black, T. (1999). Mothering through addiction: A survival strategy among Puerto Rican addicts. *Qualitative Health Research*, 9, 602-619.
- Harkness, S., & Super, C. M. (Eds.). (1996). *Parents' cultural belief systems: Their origins, expressions, and consequences*. New York, NY: Guilford Press.
- Harmer, A. L., Sanderson, J., & Mertin, P. (1999). Influence of negative childhood experiences on psychological functioning, social, support, and parenting for mothers recovering from addiction. *Child Abuse & Neglect*, 23, 421-433.
- Havens, J. R., Simmons, L. A., Shannon, L. M., & Hansen, W. F. (2009). Factors associated with substance use during pregnancy: results from a national study. *Drug & Alcohol Dependence*, 99, 89-95. doi: 10.1016/j.drugalcdep.2008.07.010
- Hien, D. A., & Miele, G. M. (2003). Emotion-focused coping as a mediator of maternal cocaine abuse and antisocial behavior. *Psychology of Addictive Behaviors*, 17, 49-55. doi: 10.1037/0893-164X.17.1.49

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D., Hearst, N., & Newman, T.

B. (2001). *Designing clinical research: An epidemiologic approach* (2nd ed.)

Philadelphia, PA: Lippincott, Williams & Wilkins.

Hummel, A. C., Kiel, E. J., & Zvirblyte, S. (2016). Bidirectional effects, of positive affect, warmth, and interactions between mothers with and without symptoms of depression and their toddlers. *Journal of Child & Family Studies*, 25, 781-789. doi: 10.1007/s10826-015-0272-x

Jenkins, C., & Williams, A. (2008). The mother-baby prenatal group nurturing reflective functioning in a methadone-maintenance clinic. *Journal of Prenatal and Perinatal Psychology and Health*. 22, 163-180.

Kalland, M., Fagerlund, A., von Koskull, M., & Pajulo, M. (2016). Families first: The development of a new mentalization-based group intervention for first-time parents to promote child development and family health. *Primary Health Care Research & Development*, 17, 3–17. doi: 10.1017/S146342361500016X

Kelley, S. J. (1998). Stress and coping behaviors of substance-abusing mothers. *Journal for Specialist in Pediatric Nursing*, 3, 103-110.

Kern, J. K., West, E. Y, Grannemann, B. D., Greer, T. L., Snell, L. M., Cline, L. L., VanBeveren, T. T., Heartwell, S. F., Kleiber, B. A., & Trivedi, M. H. (2004). Reductions in stress and depressive symptoms in mothers of substance-exposed infants participating in a psychosocial program. *Maternal & Child Health Journal*, 8, 127-136.

- Kettinger, L. A., Nair, P., & Schuler, M. E. (2000). Exposure to environmental risk factors and parenting attitudes among substance-abusing women. *American Journal of Drug & Alcohol Abuse*, 26, 1-11.
- Killeen, T., & Brady, K. T. (2000). Parental stress and child behavioral outcomes following substance abuse residential treatment follow-up at 6 and 12 months. *Journal of Substance Abuse Treatment*, 19, 23-29.
- Kim, H. K., Pears, K. C., Fisher, P.A., Connelly, C. D., & Landsverk, J. A. (2013). Trajectories of maternal harsh parenting in the first 3 years of life. *Child Abuse & Neglect*, 34, 897-906.
- Knight, D. K., Logan, S. M., & Simpson, D. D. (2001). Predictors of program completion for women in residential substance abuse treatment. *American Journal of Drug & Alcohol Abuse*, 27, 1-8.
- Kotchick, B. A., & Forehand, R. (2002). Putting parenting in perspective: A discussion of the contextual factors that shape. *Journal of Child and Family Studies*, 11, 255-269.
- LaGasse, L. L., Seifer, R., & Lester, B. M. (1999). Interpreting research on prenatal substance exposure in the context of multiple confounding factors. *Clinics in Perinatology*, 26, 39-54.
- Lamis, D. A., West, L. M., Mehta, N., Lisco, C., Tarantino, N., Wilson, C., & Kaslow, N. J. (2014). Existential well-being, drug abuse, and parenting stress in African American women. *International Journal of Mental Health & Addictions*, 12, 686-699. doi: 10.1007/s11469-014-9503-4

- Lamis, D. A., Wilson, C. K., Tarantino, N., Lansford, J. E., & Kaslow, N. J. (2014). Neighborhood disorder, spiritual well-being, and parenting stress in African American women. *Journal of Family Psychology, 28*, 769-778.
- Landry, S. H., Garner, P., Swank, P., & Baldwin, C. (1996). Effects of maternal scaffolding during joint toy play with preterm and full-term infants. *Merrill-Palmer Quarterly, 42*, 1-23.
- Lejuez, C. W., Bornovalova, M. A., Reynolds, E. K., & Daughters, S. B. (2007). Risk factors in the relationship gender and crack/cocaine. *Experimental and Clinical Psychopharmacology, 15*, 165-175. doi: 10.1037/1064-1297.15.2.165.
- Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*, 309-337. doi: 10.1037/0033-2909.126.2.309
- Levy, K. N., Blatt, S. S., & Shaver, P. R. (1998). Attachment styles and parental representations. *Journal of Personality & Social Psychology, 74*, 407-419.
- Lieb, R., Isensee, B., Hofler, M., Pfister, H., & Wittchen, H. U. (2002). Parental major depression and the risk of depression and other mental disorders in offspring. *Archives of General Psychiatry, 59*, 365-374.
- Liles, B. D., Newman, E., LaGasse, L. L., Derauf, C., Shah, R., Smith, L. M., Arria, A. M., Huestis, M. A., Haning, W., Strauss, A., Dellagrotta, S., Neal, C., & Lester, B. M. (2012). Perceived child behavior problems, parenting stress, and maternal depressive symptoms among prenatal methamphetamine users. *Child Psychiatry & Human Development, 43*, 943-957. doi: 10.1007/s10578-012-0305-2

- LoBiondo-Wood, G., & Haber, J. (1998). *Nursing research: Methods, critical appraisal, and utilization* (4th ed.). St. Louis, MO: Mosby.
- Lovejoy, M. C., Graczyk, P. A., O'Hare, E., & Neuman, G. (2000). Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review, 20*, 561-592.
- Luthar, S. S., Cushing, G., Merikangas, K. R., & Rounsaville, B. J. (1995). Multiple jeopardy: Risk protective factors among addicted mothers' offspring. *Development and Psychopathology, 10*, 117-136.
- Lynch, M. E., Johnson, K. C., Kable, J. A., Carroll, J., & Coles, C. D. (2011). Smoking in pregnancy and parenting stress: Maternal psychological symptoms and socioeconomic status as potential mediating variables. *Nicotine & Tobacco Research, 13*, 532-539. doi: 10.1093/ntr/ntr037
- Mansoor, E., Morrow, C. E., Accornero, V. E., Xue, L., Johnson, A. L., Anthony, J. C., & Bandstra, E. S. (2012). Longitudinal effects of prenatal cocaine use on mother-child interactions at ages 3 and 5. *Journal of Behavioral Pediatrics, 33*, 32-41. doi: 10.1097/DBP.0b013e31823968ab.NIH
- Marsh, J. C., Smith, B. O., & Bruni, M. (2011). Integrated substance abuse and child welfare services for women: A progress review. *Children & Youth Service Review, 33*, 466-472. doi: 10.1016/j.childyouth.2010.06.017
- Maxwell, J. C. (2006). *Substance abuse trends in Texas, June 2006*. Gulf Coast Addiction Technology Transfer Center, University of Texas at Austin, Center for Social and Behavior Research. Austin, TX.

- Maxwell, J. C. (2010). *Substance abuse trends in Texas, June 2010*. Gulf Coast Addiction Technology Transfer Center, University of Texas at Austin, Center for Social and Behavior Research. Austin, TX.
- Mayes, L. C., Feldman, R., Granger, R. H., Haynes, O. M., Bornstein, M. H., & Schottenfeld, R. (1997). The effects of polydrug use with and without cocaine on mother-infant interaction at 3 and 6 months. *Infant Behavior & Development, 20*, 489-502.
- McComish, J. F., Greenberg, R., Ager, J., Essenmacher, L., Orgain, L. S., & Bacik, W. J. Jr. (2003). Family focused substance abuse treatment: A program evaluation. *Journal of Psychoactive Drugs, 35*, 321-331. doi: 10.1080/02791072.2003.10400015
- Miller, B. A., Smyth, N. J., & Mudar, P. J. (1999). Mothers' alcohol and other drug problems and their punitiveness toward their children. *Journal of Studies on Alcohol & Drugs, 60*, 632-642. doi: 10.15288/jsa.1999.60.632
- Miller, S. A. (1988). Parents' beliefs about children's cognitive development. *Child Development, 59*, 250-285.
- Nair, P., Schuler, M. E., Black, M. M., Kettinger, L., & Harrington, D. (2003). Cumulative environmental risk in substance abusing women: Early intervention, parenting stress, child abuse potential and child development. *Child Abuse & Neglect, 27*, 997-1017. doi: 10.1016/S0145-2134(03)00169-8
- Niccols, A., Milligan, K., Sword, W., Thabane, L., Henderson, J., & Smith, A. (2012). Integrated programs for mothers with substance abuse issues: A systematic review

- of studies reporting on parenting outcomes. *Harm Reduction Journal*, 9, 14. doi: 10.1186/1477-7517-9-14
- Nunnally, J. C., & Bernstein, I. H. (1994) *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.
- Ordway, M. R., Sadler, L. S., Dixon, J., Close, N., Mayes, L., & Slade, A. (2014). Lasting effects of an interdisciplinary home visiting program on child behavior: Preliminary follow-up results of a randomized trial. *Journal of Pediatric Nursing*, 29, 3-13. doi: 10.1016/j.pedn.2013.04.006
- Osofsky, J. D., Kronenberg, M., Hammer, J. H., Lederman, C., Katz, L., Adams, S., Graham, M., & Hogan, A. (2007). The development and evaluation of the intervention model for the Florida infant mental health pilot program. *Infant Mental Health Journal*, 28, 259-280. doi:10.1002/imhj.20135
- Osterling, K. L., & Austin, M. J. (2008). Substance abuse interventions for parents involved in the child welfare system: Evidence and implications. *Journal of Evidence-Based Social Work*, 5, 157-189. doi: 10.1300/J394v05n01_07
- Pajulo, M., Pyykkonen, N., Kalland, M., Sinkkonen, J., Helenius, H., & Punamaki, R. (2001). Substance abusing mothers in residential treatment with their babies: Postnatal psychiatric symptomatology and its association with mother-child relationship and later need for child protection actions. *Nordic Journal of Psychiatry*, 65, 65-73.
- Pajulo, M., Pyykkonen, N., Kalland, M., Sinkkonen, J., Helenius, H., Punamaki, R., & Suchman, N. (2012). Substance-abusing mothers in residential treatment with

- their babies: Importance of pre-and postnatal maternal reflective functioning. *Infant Mental Health Journal*, 33, 70–81. doi: 10.1002/imhj.20342.
- Pajulo, M., Savonlahti, E., Sourander, A., Ahlqvist, S., Helenius, H., & Piha, J. (2001). An early report on the mother-baby interactive capacity of substance-abusing mothers. *Journal of Substance Abuse Treatment*, 20, 143-151.
- Pajulo, M., Suchman, N., Kalland, M., & Mayes, L. (2006). Enhancing the effectiveness of residential treatment for substance abusing pregnant and parenting women: Focus on maternal reflective functioning and mother-child relationship. *Infant Mental Health Journal*, 27, 448-465.
- Pajulo, M., Suchman, N., Kalland, M., Sinkkonen, J., Helenius, H., & Mayes, L. (2008). Role of maternal reflective ability for substance abusing mothers. *Journal of Prenatal & Perinatal Psychology and Health*, 23, 13-31.
- Paris, R., Herriott, A., Holt, M., & Gould, K. (2015). Differential responsiveness to a parenting intervention for mothers in substance abuse treatment. *Child Abuse & Neglect*, 50, 206-217. doi: 10.1016/j.chiabu.2015.09.007
- Pitzen, J., Riggs, J., Morgan, E., & Huth-Bocks, A. (2011). *Examining moderators of parental reflective functioning & maternal parenting behaviors towards toddlers*. Poster session presented at the meeting of Eastern Michigan University, Ypsilanti, MI.
- Polit, D. F., & Hungler, B. P. (1999). *Nursing research: Principles and methods* (6th ed.). Philadelphia, PA: Lippincott.
- Portney, L. G., & Watkins, M. P. (2009). *Foundations of clinical research: Applications to practice* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

- Puff, J., & Renk, K. (2014). Relationships among parents' economic stress, parenting, and young children's behavior problems. *Child Psychiatry & Human Development, 45*, 712-727. doi: 10.1007/s10578-014-0440-z
- Ragozin, A. S., Basham, R. B., Crnic, K. A., Greenberg, M. T., & Robinson, N. B. (1982). Effects of maternal age on parenting role. *Developmental Psychology, 18*, 627-634.
- Reid-Cunningham, A. R. (2009). Parent-child relationship and mother's sexual assault history. *Violence Against Women, 15*, 920-932.
- Rodgers, A. Y. (1998). Multiple sources of stress and parenting behavior. *Children & Youth Services Review, 20*, 525-546.
- Roggman, L. A., Moe, S. T., Hart, A. D., & Forthun, L. F. (1994). Family leisure and social support: Relations with parenting stress and psychological well-being in Head Start Parents. *Early Childhood Research Quarterly, 9*, 463-480.
- Rutherford, H. J. V., Goldberg, B., Luyten, P., Bridgett, J., & Mayes, L. C. (2013). Parental reflective functioning is associated with tolerance of infant distress but not general distress: evidence for a specific relationship using a simulated baby paradigm. *Infant Behavior & Development, 36*, 635-641. doi: 10.1016/j.infbeh.2013.06.008
- Sadler, L. S., Novick, G., & Meadows-Oliver, M. (2016). "Having a baby changes everything": Reflective functioning in pregnant adolescents. *Journal of Pediatric Nursing, 31*, 219-231. doi: 10.1016/j.pedn.2015.11.011

- Sameroff, A. J., & Feil, L. A. (1985). Parental belief systems: The psychological consequences for children. In I. E. Sigel (Ed.), *Parental concepts of development* (pp. 83-105). Hillsdale, NJ: Erlbaum.
- Sanders, M. R., & Wooley, M. L. (2005) The relationship between maternal self-efficacy & parenting practices: Implications for parent training. *Child: Care, Health, Development*, 31, 65-73. doi: 10.1111/j.1365-2214.2005.00487.x
- Sarfi, M., Sundet, J. M., & Waal, H. (2013). Maternal stress and behavioral adaptation in methadone or buprenorphine-exposed toddlers. *Infant Behavior & Development*, 36, 707-716. doi: 10.1016/j.infbeh.2013.08.006
- Scott-Lennox, J., Rose, R., Bohling, A., & Lennox, R. (2000). The impact of women's family status on completion of substance abuse treatment. *Journal of Behavioral Health Services & Research*, 27, 366-379.
- Sigel I. E., & McGillicuddy-De Lisi A. V. (2002). Parent beliefs are cognitions: The dynamic belief systems model. In M. H. Bornstein (Ed.), *Handbook of parenting* (2nd ed.) (pp. 485–508). Mahwah, NJ: Lawrence Erlbaum Associates.
- Silva, S. A., Pires, A. P., Guerreiro, C., & Cardoso, A. (2012). Balancing motherhood and drug addiction: The transition to parenthood of addicted mothers. *Journal of Health Psychology*, 18, 359-367. doi: 10.1177/1359105312443399
- Simons, R. L., Whitbeck, L. B., Conger, R. D., & Wu, C. I. (1991). Intergenerational transmission of harsh parenting. *Developmental Psychology*, 27, 159-171. doi: 10.1037/0012-1649.27.1.159

- Siqueland, T., Smith, L., & Moe, V. (2012). The impact of optimality, on maternal sensitivity in mothers with substance abuse and psychiatric problems and their infants at 3 months. *Infant Behavior & Development, 35*, 60-70.
- Slade, A. (2005). Parental reflective functioning: An introduction. *Attachment & Human Development, 7*, 269-281.
- Slade, A., Aber, J. L., Berger, B., Bresgi, B., & Kaplan, M. (1985). *The parent development interview*. Unpublished manuscript.
- Slade, A., Aber, J. L., Berger, B., Bresgi, I., Kaplan, M. (2003). *The parent development interview (Revised)*. The City University of New York: New York, NY.
- Smaling, H. J. A., Huijbregts, S. C. J., Suurland, J., Van Der Heijden, K. B., Van Goozen, S. H. M., & Swaab, H. (2015). Prenatal reflective functioning in primiparous women with a high-risk profile. *Infant Mental Health Journal, 36*, 251-261.
- Smith, R. L., Stagnitti, K., Lewis, A. J., & Pepin, G. (2015). The views of parents who experience intergenerational poverty on parenting and play: A qualitative analysis. *Child Care Health Development Journal, 41*, 873-881. doi: 10.1111/cch.12268
- Smith, V. C., Wilson, C. R., & Committee on Substance Use and Prevention (American Academy of Pediatrics). (2016). Families affected by parental substance use. *Pediatrics, 138*, e1575.
- Sohr-Preston, S., & Scaramella, L. (2006). Implications of timing of maternal depressive symptoms for early cognitive and language development. *Clinical Child & Family Psychology Review, 9*, 65-83.

- Strathearn, L., & Mayes, L. C. (2010). Cocaine addiction in mothers: Potential effects on maternal care and infant development. *Annals of the New York Academy of Sciences*, 1187, 172-183.
- Substance Abuse and Mental Health Services Administration. (2008). Results from the 2007 National Survey on Drug Use and Health: National findings. *Office of Applied Studies, NSDUH Series H-34*, DHHS Publication No. SMA 08-4343). Rockville, MD: SAMHSA.
- Suchman, N. E., Decoste, C., Castiglioni, N., Legow, N., & Mayes, L. (2008). The mothers and toddlers program: preliminary findings from an attachment-based parenting intervention for substance-abusing mothers. *Psychoanalytic Psychology*, 25, 499–517.
- Suchman, N. E., DeCoste, C., Leigh, D., & Borelli, J. (2010). Reflective functioning in mothers with drug use disorders: Implications for dyadic interactions with infants and toddlers. *Attachment & Human Development*, 12, 567-585. doi: 10.1080/14616734.2010.501988.
- Suchman, N. E., DeCoste, C., McMahon, T. J., Rounsaville, B., & Mayes, L. (2011). The mothers and toddlers program, an attachment-based parenting intervention for substance-using women: Results at 6-week follow-up in a randomized clinical pilot. *Infant Mental Health Journal*, 32, 427–449. doi: 10.1002/imhj.20303
- Suchman, N. E., Mayes, L., Conti, J., Slade, A., & Rounsaville, B. (2004). Rethinking parenting interventions for drug-dependent mothers: From behavior management to fostering emotional bonds. *Journal of Substance Abuse Treatment*, 27, 179-185. doi: 10.1016/j.jsat.2004.06.008

- Suchman, N. E., Pajulo, M., DeCoste, C., & Mayes, N. (2005). Parenting interventions for drug dependent mothers and their young children: Toward enhancing maternal engagement in the mother-child relationship. *Family Relations*, 55, 211–226.
- Suchman, N. E., Pajulo, M., Kalland, M., DeCoste, C., & Mayes, L. (2012). At-risk mothers of infants and toddlers. In A.W. Bateman & P. Fonagy (Eds.), *Handbook of mentalizing in mental health practice* (pp. 309-345). Arlington, VA: American Psychiatric Publishing.
- Szuster, R. R., Rich, L. L., Chung, A., & Bisconer, S. W. (1996). Treatment retention in women's residential chemical dependency treatment: The effect of admission with children. *Substances Use & Misuse*, 31, 1001-1013.
- Tronick, E. Z., Weinberg, M. K., Seifer, R., Shankaran, S., Wright, L. L., Messinger, D., S., Lester, B. M., LaGasse, L., Bauer, C. R., Bada, H., Poole, K., & Liu, J. (2005). Cocaine exposure is associated with subtle compromises of infants' and mothers' social emotional behavior and dyadic features of their interaction in the face-to-face still-face paradigm. *Developmental Psychology*, 41, 711-722. doi: 10.1037/0012-1649.41.5.711
- Truman, S. D., Levy, D., & Mayes, L. (2004). *Reflective functioning as mediator between drug use, parenting stress and child behavior*. Unpublished manuscript.
- U.S. Department of Health and Human Services, CDC, National Center for Health Statistics. (2013). *Healthy people 2010 final review*. Hyattsville, MD: Department of Health and Human Services. Retrieved from http://www.cdc.gov/nchs/healthy_people/hp2010/hp2010_final_review.htm

- Uziel-Miller, N. D., & Lyons, J. S. (2000). Specialized substances treatment for women and their children: An analysis of program design. *Journal of Substance Abuse Treatment, 19*, 355-367.
- Van Vugt, E., Loeber, R., & Pardini, D. (2015). Why is young maternal age a first childbirth a risk factor for persistent delinquency in their male offspring? Examining the role of family and parenting factors. *Criminal Behavior and Mental Health, 26*, 322-335. doi:10.1002/cbm.1959
- Wellisch, D. K., & Steinberg, M. R. (2009). Parenting attitudes of addict mothers. *International Journal of the Addictions, 15*, 809-819. doi: 10.3109/10826088009040058
- Willinger, U., Diendorfer-Radner, G., Willnauer, R., Jorgl, G., & Hager, V. (2005). Parenting stress and parental bonding. *Behavioral Medicine, 31*, 63-72.

Vita

Kathleen Pitts was born in Detroit, Michigan. Kathleen attended Lake Erie College and was awarded a Bachelor's of Arts degree in year 1975. Kathleen attended University of Maine – Southern Maine and was awarded a Bachelor's of Science in Nursing in 1988. Kathleen attended University of Texas – Houston and was awarded a Master's of Science in Nursing – Nurse Practitioner in 2000. Kathleen attended the University of Texas – Houston and was awarded a Master's in Public Health degree in 2007. Kathleen was in the U.S. Army – Active Duty from 1990 – 1996 as a Neonatal Staff Nurse – Level III. Kathleen worked in the University of Texas – Houston Schools of Public Health and Nursing from 1996 – 2007 on a variety of projects. Kathleen worked at the Santa Maria Hostel-Bonita House Care Clinic as a Pediatric Nurse Practitioner from 2009 – 2016. Kathleen has been employed as a Pediatric Nurse Practitioner in the Department of Pediatrics – Allergy & Immunology at Baylor College of Medicine, Houston, Texas since 2004. Kathleen has worked as a Project Director and Co-Investigator on grants from the U.S. Army and NICHD. Kathleen has several publications:

Full Papers-Peer Reviewed

Czerwinski, B. S., Wardell, D. W., Yoder, L. H., Connelly, L. M., Ternus, M., Pitts, K. & Kouzakanni, K. (2001). Variations in feminine hygiene practices of military women in deployed and non-combat environments. *Military Medicine*, 166(2), 152-158.

Marcus, M. T., Fine, M., Moeller, G. F., Khan, M. M., Pitts, K., Swank, P. R., & Liehr, P. (2003). Changes in stress levels following mindfulness-based stress reduction in a therapeutic community. *Addictive Disorders & Their Treatment*, 2(3), 63-68.

Vasquez, E. & Pitts, K. (2006). Red flags during home visitations: Infants and toddlers. *Journal of Community Health Nursing*, 23(2), 123-131.

Vasquez, E., Pitts, K. & Mejia, N. E. (2008). A model program: Neonatal nurse practitioners providing community health care for high-risk infants. *Neonatal Network*, 27(3), 163-169.

Lederman, R. P., Boyd, E., Pitts, K., Roberts-Gray, C., Hutchinson, M., & Blackwell, S. (2013) Maternal development experiences of women hospitalized to prevent preterm birth. *Sexual & Reproductive Healthcare*, 4, 133-138.

Book Chapters

Pitts, K. (2004). Perinatal substance abuse. In M. T. Verklan & M. Walden (Eds.) *Core curriculum for neonatal intensive care nursing* (3rd ed.) (pp. 46-79). St. Louis, MO: Elsevier Saunders.

Permanent address: 2429 Bissonnet, #251, Houston, TX 77005

This dissertation was typed by Kathleen Pitts.