6-2003

Fetal Attachment Among Pregnant Substance Users

Trisha Paulette Barcley

LOMA LINDA UNIVERSITY
Graduate School

Fetal Attachment among Pregnant Substance Users

by

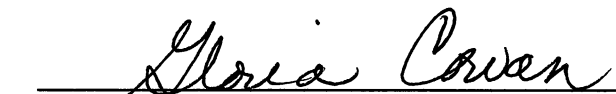
Trisha Paulette Barcley

A Thesis submitted in partial satisfaction of
the requirements for the degree of
Master of Arts in Psychology

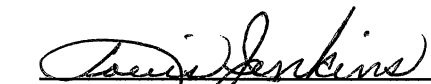
June 2003

Each person whose signature appears below certifies that this thesis in their opinion is adequate, in scope and quality, as a thesis for the degree of Master of Arts.

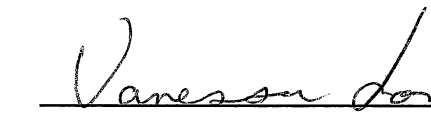
, Chairperson
Kiti Freier, Associate Professor of Psychology & Pediatrics



Gloria Cowan, Professor of Psychology
California State University, San Bernardino



Louis Jenkins, Professor of Psychology



Vanessa Long, Program Manager
Maternal Health Section, San Bernardino Department of Public Health

TABLE OF CONTENTS

List of Figures

List of Tables

ABSTRACT OF THE THESIS

Fetal Attachment among Pregnant Substance Users

By

Trisha Paulette Barcley

Master of Arts, Graduate Program in Psychology
Loma Linda University, June 2003
Dr. Kiti Freier, Chairperson

Identification of factors that may lead to child maltreatment is important for intervention at the earliest point in time. Substance use can adversely impact the developing bond between mother and child. The formation of an insecure attachment relationship may place the child at a greater risk for child abuse or neglect. If the mother-child bond can be assessed during pregnancy then intervention relating to attachment and prevention of child abuse may be possible. The relationships between childhood history of and the potential for child abuse, substance use, and fetal attachment were investigated utilizing a sample of 56 pregnant women from a local clinic and jail. Participants ranged in age from 18 to 40 years and were between 10-40 weeks pregnant. Women completed 3 measures that assessed their childhood history of abuse, potential to commit child abuse, fetal attachment, feelings about pregnancy, and current substance use. Feelings about pregnancy appeared to have important ramifications for fetal bonding and the potential for child abuse.

Fetal Attachment among Pregnant Substance Users

Introduction

In the United States it has been estimated that 11 to 24 percent of pregnant women abuse substances (Jansson, et al., 1996; Corse & Smith, 1998). According to the U.S. Department of Health and Human Services (1993), mothers who use drugs and alcohol during gestation are responsible for an estimated 375,000 babies born each year. Even these figures are considered underestimated due to this population of women being reticent to disclose their drug problem in an attempt to avoid the potential legal and moral consequences forced upon them by society. The devastating physical effects that substance abuse has had on the resulting babies have been well documented. Sudden Infant Death Syndrome and Fetal Alcohol Syndrome, as well as cardiovascular and central nervous system defects, are just a few of many problems linked to prenatal drug use (e.g., Chasnoff, 1988; Chavkin & Breitbart, 1997; Rosett, & Weiner, 1985; Jansson, et al., 1996). However, the damage to the child goes beyond the physical effects of the drugs. In addition to studies supporting the dangers of major medical problems in these children society must be careful not to ignore the psychosocial concerns and often reported negative effects on psychosocial development (Rodning, Beckwith, & Howard, 1989; California Department of Justice, 2000). Further, emotional and psychological factors affecting these mothers can have devastating effects on both their fetuses' and infants' development as well.

Some evidence suggests that parents who abuse drugs or alcohol are responsible for the annual maltreatment of approximately 675,000 children (National Committee for Prevention of Child Abuse, 1989, as cited in Kelley, 1992). The high prevalence of

abuse has generated concern among professionals, yet research suggests that the number of these cases still continues to grow (Dorman, Moore, & Schaerfl, 1999). Many of these parents have histories of attachment problems with their own caregiver, which impedes the attachment relationship that later develops with their own children. The factors that contribute to a high incidence of child abuse and neglect among substance abusing parents may not be limited to the endangerment of the children already born into these families but may also affect growing fetuses as well. Instability and exposure to high levels of stress may impede a substance-abusing mother's ability to bond and form a secure attachment with her fetus and infant. Therefore both fetuses and infants may be at risk for current and future child abuse and neglect from substance abusing mothers. The key of prevention is intervention at the earliest point in time. Therefore, identifying factors during pregnancy that may increase the likelihood of child abuse occurring is an important step for prevention and intervention.

Importantly, child abuse not only has devastating physical and psychological effects on the children but it also has a negative impact on society as a whole. The research literature suggests that a high percentage of child abusers were themselves abused as children (e.g., Oates, Tebbutt, Swanston, Lynch, & O'Toole, 1998; Friedrich, & Wheeler, 1982). Childhood abuse has also been linked to subsequent substance abuse. A significant number of women in treatment for drug and alcohol problems report being abused as a child (e.g., Cosden & Cortez-Ison, 1998; Brabant, Forsyth, & LeBlanc, 1997). Therefore it becomes necessary to identify and possibly prevent an intergenerational cycle of substance abuse, insecure attachment, and fetal and infant endangerment.

Substance Abuse

Substance abuse is a broad term, which covers the ingestion of most illicit drugs, such as cocaine and heroin, but can also be extended to include licit substances, such as alcohol and prescription drugs (Howell, et al., 1999). The abuse of these substances has the potential to create a number of adverse consequences; not only for the user, but also for those lives affected by this person.

The term substance abuse generally refers to a condition where an individual uses a drug (or drugs) over a period of time which results in detrimental effects to personal, social, or legal aspects of their life (American Psychiatric Association, 1994). Prevalence rates of drug use can be difficult to obtain due to several investigations having different criteria as to what constitutes substances of abuse. When considering both illicit drugs and alcohol, it has been estimated that approximately 13.5 % of the population in the United States are abusers (Regier et al., 1990). Women alone represent approximately 34% of the abusers (Finnegan & Kandell, 1992), and of those women pregnant, approximately 5 to 24% of them abuse substances (Howell et al., 1999; & Jansson et al., 1996).

Methamphetamines

One drug, which is unfortunately becoming more popular, is a highly addictive stimulant called Methamphetamine (National Institute on Drug Abuse, 2000). California, along with a few other Western states, produces the majority of Methamphetamine in the United States (Koch Crime Institute, 2000). Locally, one of California's largest counties, San Bernardino, has an estimated population of over 1.5 million people and has experienced a substantial increase in Methamphetamine production and usage (Office of

National Drug Control Policy, 2000). In this county the substances that are most commonly found in drug-exposed infants are methamphetamines, alcohol, marijuana, and cocaine. In 1990, San Bernardino County had approximately 33,000 resident births, of which almost 5000 had been exposed to some form(s) of illegal substance during gestation (Office of Alcohol and Drug Programs, 1993). Its use during pregnancy has been associated with babies who are asocial and demonstrate behavioral problems that interfere with the bonding process that normally takes place with caregivers (California Department of Justice, 2000).

Substance Abuse and Parenting

Chaffin and colleagues (1996) investigated the relationship between substance abuse and child abuse/neglect by recording information from over 7000 parents. Their findings suggested a significant relationship between parental substance abuse and a parent's abuse or neglect of their own child. Wolock and Magura (1996) followed 239 families who had previously been reported for child abuse to Child Protective Services (CPS). Parents were divided into substance and non-substance abusing groups. The researchers found that the substance abusing group was not only more likely to report greater parenting problems but also more apt to be reported again to CPS for child maltreatment. When child abuse and neglect occur, they can have long-term effects that carry over into the child's adult life including an increased likelihood of becoming an abuser her/himself. Research indicates that women who have survived abuse as children are at an increased risk for committing abuse against their own children (e.g., Banyard, 1997; Marcenko & Spence, 1995).

Another area that has been investigated involves the possible effects that the mother's

drug use has on her relationship with the subsequent child that is born. Researchers have demonstrated that substance abuse negatively impacts the development of the attachment relationship between the substance abusing mother and her children (Mundal, VanDer Weele, Berger, & Fitsimmons, 1991). There are various theories as to why this happens. Some researchers suggest that substance using women have poor social support systems, poor attachment relationships in their family of origin, limited intervention programs available (and fear of the system), and a lifestyle that impedes adequate care-giving (Lane, 1996). The evidence suggests that substance abuse negatively affects the mother/child bond. Researchers have found that this bond is highly correlated with the mother/fetus bond (Fonagy, Steele, & Steele, 1991). Based on the continuity of the mother/fetal and mother/child bond, one could predict that prenatal drug use would also negatively affect the mother/fetus bond. However, no research exists that demonstrates the specific link between substance abuse and fetal attachment. In addition, researchers have found a relatively high incidence of child abuse in the substance-abusing women's family of origin, suggesting problems in the abuser's own childhood experience of forming early attachments. Therefore, a potential obstacle to substance abusing mothers bonding with their own children may involve having experienced a history of childhood abuse, along with their current substance use problem (Murphy, Jellinek, Quinn, Smith, Poitrast, & Goshko, 1991). According to an intergenerational theory of abuse this scenario also puts these women at risk for abusing their own children, or being unable to provide nurturing.

Substance Abuse and Attachment

Besides the physical effects that can occur to the fetus, prenatal drug exposure may

also affect the bonding process between the mother and her fetus. The health of the mother/fetus bond may also be jeopardized by a mother's abuse of substances during pregnancy. Many drug abusers were never exposed to positive parental examples during their own childhood which they can now model, and their current addiction suggests poor coping strategies. Furthermore, drug-exposed newborns are more likely to demonstrate irregular sleeping and eating patterns, and may be more troublesome babies (e.g., irritable, emotionally detached, unresponsive) than those babies who were not drug-exposed. This combination of factors may result in a mother's inability to demonstrate proper parenting skills, along with an inability to interact and develop close bonds with a difficult child (Freier, Griffith, & Chasnoff, 1991). Drug abusers' lives are often associated with inconsistencies, along with physical and financial limitations, that may interfere with the quality of the relationship developing between the mother and her fetus (Haller, et al., 1993). Mundal and colleagues (1991) suggested that a mother's substance abuse is intertwined with shame, low levels of confidence, and a negative self-image which may impede her ability to develop healthy parenting attitudes towards her fetus.

As most pregnant women are aware of the potential harm that can occur when using drugs during pregnancy some professional have taken steps to understand the mechanisms contributing to the mother's continued use. Hanna, Faden, & Dufour (1994) analyzed responses from over 18,000 women in an attempt to understand the variables involved in women's continued use of drugs during gestation. Their results suggest that the attitudes of the mothers towards their babies were linked to the continuation of drug use in that those women who held negative attitudes toward their pregnancies were more likely to continue their drug abuse throughout gestation than those women who felt more

positively about their unborn child. It is expected that the abuser's drug use may in fact be negatively affecting the attachment process during pregnancy. Thus, in order to understand and promote the development of positive attitudes toward the fetus, the process of attachment must be explored. An important part of this exploration is understanding how a woman's early interactions with her parents may affect the relationship she now displays with her own child(ren).

Attachment

Bowlby (1969) stated that infants develop different attachment behaviors, reflecting healthy or secure bonding versus dysfunctional or insecure bonding, depending upon the mother's ability to attend to and interact with her child. In order to assess this relationship, a procedure called the Strange Situation was developed for use with mothers and their year-old infants (Ainsworth, Blehar, Waters, & Wall, 1978). In this procedure mothers are asked to leave their infants alone in a room with a stranger and then the infants' reactions are recorded in terms of how they respond to and greet their mothers upon their return. The children's responses to the stranger are also observed. Using this technique, children are classified according to their exhibited pattern of behavior (upon the mother's return) as being either securely or insecurely attached (Ainsworth, 1982). Secure attachment results when the mother's interaction with her child is one in which she is in synchrony, available, and sensitive to the child's needs (Bowlby, 1969). A child who has developed a secure attachment confidently seeks out novel stimuli and experiences due to his/her association with a consistent and reliable caregiver who can be trusted to be there if required (Ainsworth, Blehar, Waters, & Wall, 1978). On the other hand, an insecure relationship between child and caregiver may result in a child

demonstrating an inadequate level of exploration due to the unreliability, lack of dependability, and inconsistency in the parent's behavior or presence (Ainsworth, Blehar, Waters, & Wall, 1978). Insecurely attached infants can also be more specifically categorized as being avoidant or anxiously attached. Avoidant attached children are the product of emotionally unavailable or rejecting parents and tend to be aggressive and lack empathy toward others. Anxiously attached children are the product of unpredictable or chaotic parents and are thought to be highly anxious and overly dependent.

There exist a small percentage of children who do not seem to fit into the categories of secure, avoidant or anxiously attached. Research supports the existence of an additional category referred to as disorganized attachment (van Ijzendoorn et al., 1999). While some researchers suggest securely attached infants can also be disorganized, most classify disorganized attachment as another form of insecure attachment. This type of attachment results in such behaviors as apprehension, fear, freezing (unable to choose), misdirected behavior (seeking proximity to a stranger after separation from a parent), and contradictory behavior (indifference to a parent's return after experiencing excessive stress during separation). These children often have parents who are neglectful, abusive, and unpredictable. The child is placed in a paradoxical or no-win situation because he/she feels pulled in contradictory ways needing both to move towards and away from the parent at the same time. This results in a frightened child who is unable to develop organized coping strategies and experiences problems seeking solutions. These children are not only more vulnerable to stress but also appear to exhibit more aggressive behaviors. These children also lack consistent strategies for regulating negative

emotions. They are at risk for the development of child psychopathology and appear to have an elevated reaction to stress (van Ijzendoorn et al., 1999).

Researchers have found evidence that a high percentage of infants classified as disorganized have mothers with drug and alcohol problems as well as mothers who mistreat them. They suggest that the link between child maltreatment and the development of a disorganized attachment style appears to be particularly strong. Thus not only does the infant-parent relationship have an impact on the child's present state of development but it also has long-term consequences for the child. Research suggests that childhood attachment styles are internalized and become schemas, which affect future relationships, sought as adults (e.g., Ainsworth, 1989; Benoit & Parker, 1994). Thus the cycle becomes life long and even intergenerational as it is passed on from parent to child (Fonagy, Steele, & Steele, 1991).

More recent research now suggests that the mother/child attachment relationship may actually begin before the child is born. Prenatal attachment refers to the affectional bonds that a woman develops toward her infant during pregnancy (Kemp, Sibley, & Pond, 1990). The quality of the fetal attachment appears to be predictive of the quality of the mother's future relationship with her infant. Therefore, the assessment of this relationship may hold important clues for what to expect from the mother's behavior, both positive and negative, when she begins the process of raising her child.

Most attachment research investigating mother/child bonding has not focused upon the relationship developing before the child is born. Bowlby (1969) suggested that the mother's relationship with her child could actually be predicted before birth (in utero). Current research is now being conducted to explore this specific relationship and in fact,

using the few existing available measures (constructed specifically to measure fetal attachment), some success has been generated in linking the mother/child (postnatal) attachment style to the mother/fetus (prenatal) attachment style (Cranley, 1981; Call, 1984).

Cranley developed the Maternal-Fetal Attachment Scale (MFAS), which measures attachment between a mother and her unborn baby. While using the MFAS with a sample of pregnant women, Cranley found evidence that supported not only the idea that women form prenatal attachments, but also indicated that the MFAS does indeed measure these behaviors. She also suggested that stress has a negative impact on the quality of the mother/fetus relationship. This link between stress and poor mother/fetal attachment may have important implications for those mothers involved in high risk behaviors, such as the abusing of substances during pregnancy, where use may not only be a result of stress, but can also add to a mother's already existing level of stress (Freier, 1994; Freier, Griffith, and Chasnoff, 1991). Thus, substance abuse would be an added risk factor that may work against a woman's ability to develop a healthy relationship with her growing fetus. In addition to this, it has been suggested that the MFAS may hold promise as an intervention for perinatal substance abusers. The MFAS appears to act as a teaching device that informs women about certain behaviors they can perform in order to develop a closer bond with their fetuses. Therefore, multiple presentations of this instrument may lead to an increase in the mother's practicing and knowledge of attachment promoting behaviors (Muller, 1992). This is important due to a compilation of evidence that suggests that substance abuse interferes with the abilities of many women to demonstrate healthy parenting behaviors (Lief, 1985).

Hofler and Kooyman (1996) reviewed several studies in order to outline a theory suggesting that substance abuse and attachment issues are intertwined. Insecure attachment relationships formed in early childhood (often due to violence and abuse in the home) increase the likelihood that these children will become adults who turn to drugs for their secure base. Thus, both poor role models and the addiction itself increase the tendency toward developing parent styles that are rigid, and low in tolerance and affection. In one of the few studies that address prenatal drug abuse and attachment, Rodning and colleagues (1989) investigated the relationships formed between mothers and their 18-month-old infants. These authors found that toddlers exposed to drugs in utero tend to develop insecure attachments with their primary caregiver when exposure to drugs continued to be present in their postnatal environment. Thus parental drug use appears to continue to impede healthy attachment formation through poor parental functioning. These dysfunctional parenting styles jeopardize the attachment relationship forming between mother and child and in extreme cases can result in the actual abuse of the child.

Child Maltreatment and Substance Abuse

In 1996, it was estimated that child maltreatment resulted in the harm of approximately 1 million children (U.S. Department of Health and Human Services, 1998). Whereas child maltreatment can be a broad ambiguous term, its definition can be refined to incorporate four specific areas: physical abuse, sexual abuse, emotional abuse, and child neglect (Dorman, Moore, & Schaerfl, 1999). Physical abuse occurs when an adult inflicts an injury upon a child (Wiehe, 1992). Sexual abuse is a more commonly reported form of child maltreatment and has a higher occurrence in female children

(Biller & Solomon, 1986). This type of abuse can be defined as an adult obtaining sexual gratification from a child (Wiehe, 1992). Both contact and non-contact sexual abuse may be involved in the incidence of this type of abuse. Contact sexual abuse involves the perpetrator actually touching the child in a sexual manner or having the child touch him/her (Wiehe, 1992), while the non-contact form involves the exposure of the perpetrator to the child or the child to the perpetrator (i.e., taking inappropriate photos). Emotional abuse is commonly found when any of the other forms of child maltreatment are apparent (Dorman, Moore, & Schaerfl, 1999). This type of abuse is psychological in nature and results in the child being rejected, terrorized, degraded, corrupted, isolated, exploited, or denied emotional nurturance from the adult(s). This type of abuse results in an attack on the child's sense of self-esteem and ability to relate competently with other people (Wiehe, 1992).

Finally, child neglect refers to conditions when an adult exhibits inadequate behaviors regarding the proper care and supervision of the child. These omissions include, but are not limited to, failure to feed or clothe a child sufficiently, as well as the abandonment or inadequate supervision of a child (Dubowitz, 1999). Wiehe (1992) breaks down child neglect into five major areas: growth failure, physical neglect, abandonment or inadequate supervision, medical neglect, and educational neglect.

Growth failure is commonly found in children suffering from child neglect. This condition is applied to a child who has nutritional and nurturance needs that are not being adequately met. This type of neglect can stem from the family's socio-economic status, accidental behavior due to erroneous knowledge, or due to an adult's psychosocial problems. Physical neglect applies to those children suffering under conditions where

inadequate shelter, clothing, and food is provided by the adult(s) responsible for their care, while abandonment/inadequate supervision occurs when a caregiver leaves the child alone for inappropriate amounts of time or is unavailable to tend to the child's needs. Finally, medical and educational neglect covers an adult's negligence in providing the child with sufficient medical care and a proper environment in which to learn and grow.

In order to understand child abuse, it has been suggested that the current parent/child attachment relationship must be considered, along with the likelihood that many child abusers developed dysfunctional or insecure attachments in their family of origin. Research on attachment theory has provided evidence that attachment relationships are often repeated from one generation to the next (Fonagy, Steele, & Steele, 1991). Therefore, the inability of a mother to form a secure attachment in her family of origin may be a pattern repeated in the future between her offspring and herself. In sum, a mother's history of child abuse would be expected to have a negative impact on the attachment relationship she forms with her child, and possibly even earlier with her fetus (Caliso & Milner, 1992).

Compounding the trauma of having survived abuse as a child is the existence of research that suggests that these women are at an increased risk for developing problems related to substance abuse (Brabant, et al., 1997). Sheridan (1995) conducted a study in which he used a sample of both male and female prison inmates in order to determine whether a relationship exists between substance abuse and child abuse, and its tendency towards intergenerational repetition. Some of the links his research supported include (1) exposure to abuse as a child is related to later abuse of one's own child and that (2)

parental substance abuse is related to parental incompetence and the likelihood of abusing one's own child.

The relationship between substance abuse, child abuse, and history of abuse was also investigated by Chasnoff and colleagues (1986). This study involved the examination of three cases with female substance abusers sexually abusing their infants and led the investigators to factors common to the occurrence of both drug and sexual abuse: social alienation and isolation. These factors may underlie the proposed connection between attachments formed, having a history of childhood abuse, being a drug abuser, and abusing a child.

If risk factors could be identified before a child is born, professionals could be in a stronger position to determine whether or not a person is at risk for committing abuse against a child and to intervene before abuse occurs. Once an at-risk mother is identified professional health caregivers would be able to provide the mothers with the help they need during their pregnancies so that a healthier bond might be established between the mothers and their fetuses.

Problem Statement

The possibility exists that substance using mothers who experienced their own history of child abuse and/or impairments in the attachment relationship formed with their primary caregivers may be at a higher risk for abusing their own children. Child abuse results in psychological and medical costs to the child, the families, and society as a whole. Therefore, identifying the risk factors and patterns that surround child victimization and substance abuse, and their potential effects on the developing

relationship between mother and child could provide an opportunity for intervention and prevention.

Thus based on the literature discussed above, six hypotheses will be investigated in this study.

Hypothesis #1: Fetal attachment will be negatively related to women's potential for abusing their children.

Hypothesis #2: Fetal attachment scores will be higher in women that do not use drugs as compared to those that do.

Hypothesis #3: A higher number of substance users will have a history of childhood abuse than nonusers.

Hypothesis #4: Women who experienced a childhood of abuse will attain lower fetal attachment scores than those women with no history of abuse.

Hypothesis #5: Substance using women will be at a higher risk for potential child abuse than those women who do not use drugs.

Hypothesis #6: This hypothesis is exploratory in nature. Will a mother's perception of her pregnancy as a positive or negative event have consequences for whether or not she will be able to bond with her fetus or whether she may demonstrate a high potential to abuse her child?

Method

Participants

Fifty-six women ranging between their 10th to 40th week of pregnancy were recruited from one of two County of San Bernardino Department of Public Health Maternal Health Programs. One of these programs identified high-risk pregnant women in the high desert regions of the county and the other program included inmates from a local jail. The inmates were "pre-sentenced" inmates awaiting the resolution of their criminal cases. Most of them were being charged with crimes such as traffic violations, forgery, fraud, and drug possession. None of the women involved in this study were maximum-security inmates. Participants ranged in age from 18 to 40 (mean age of 25.82; SD=5.09). Fifty percent of the participants were Caucasian, 25% were Latino/Hispanic, 17.9% were African American, and 5.4% were Asian American. Women who were actively psychotic and not cognitively able to answer survey questions were not included in the sample. All participants were treated in accordance to the APA Ethical Guidelines (APA, 1992).

Materials

Background information survey. The women completed a general self-report survey designed to obtain information about current pregnancy, child abuse history, and drug use history (See Appendix 'A'). This survey took approximately 10 minutes for the participant to complete. One of the purposes of this survey is for the collection of demographic information. This instrument was also used to classify substance users. Any women reporting current substance use, use during pregnancy, and/or trouble with drugs or alcohol in the past 30 days were classified as substance users. Based on the

design of these questions any and all of these answers can be interpreted that substance use is occurring during pregnancy. This scale was also used to determine whether or not participants were victims of childhood abuse. Participants reported whether or not they had ever been exposed to emotional, sexual, or physical abuse and the time period in which it occurred (e.g., childhood, past 30 days). Only women reporting physical, emotional, and/or sexual abuse during their childhood were classified as having a history of child abuse.

Although the background information survey was developed specifically for this study the items were based on a 1991 Perinatal Epidemiology Study and the fifth edition (1991) of the Addiction Severity Index (ASI). Originally developed in 1979 by McLellan and colleagues the current version of the ASI consists of 180 items. This measure was designed to guide clinicians through a structured interview in order to assess an individual's degree of substance use in order to develop a treatment plan. This questionnaire assesses several domains associated with substance abuse. The domains include: medical (physical) status, employment, drug/alcohol use, legal status, family/social relationships, and psychiatric status. While the ASI and Prenatal Epidemiology Study guided the construction of this study's general survey, they were not utilized in their entirety because they were too long, not specific enough for the information needed, and not in a self-report format.

Maternal-Fetal Attachment Scale (MFAS). Developed in 1981 by Cranley, this measure records those behaviors that represent attachment and affiliation between mother and fetus (See Appendix 'B'). The 24 items are scored on a 5-point Likert-type scale (1=definitely no to 5=definitely yes) and cover five sub-scales believed to comprise fetal

attachment (continuous measure). The five domains are: interaction with fetus (5 items), attributing characteristics and intentions to the fetus (6 items), role taking (4 items), differentiation of self from fetus (4 items), and giving of self (5 items). An example of some items on this measure were "I talk to my unborn baby," "I wonder if the baby thinks and feels inside of me", and "I stroke my tummy to quiet the baby when there is too much kicking". High scores on this scale are representative of stronger affiliation between mother and fetus (i.e., attachment). The Cronbach alpha for internal consistency is .85 for the total scale. Statistical evidence lends support for the existence of five sub-scales. The intercorrelations (ranging between .29 to .60) among the sub-scales were found to be large enough to suggest related concepts, yet at the same time, small enough to suggest that each scale contributes something new. Content validity was constructed into the MFAS by consulting the literature, expert judges, and those with clinical experience. Researchers have suggested that this scale has the potential to teach mothers different ways in which to relate to their fetus, and therefore, it may hold promise as an intervention (Muller, 1992). Thus, upon repeated administrations, a tendency exists for fetal attachment scores to increase, due to the women's learning and practicing behaviors directed toward her fetus as suggested by the MFAS items. In addition to being presented with the original 24 items of the MFAS eight more questions were included on a second page and called the MFAS ADDENDUM (See Appendix 'B'). A research team of nurses, psychologists, and other grant personnel conducting a National Institute for Drug Abuse grant in Miami (1991) were responsible for the development of these additional items, which were presented in the same format as the original MFAS. These eight items were utilized in a separate analysis in order to explore whether the mothers

ability to bond with her fetus were directly affected by her feelings about being pregnant.

Child Abuse Potential Inventory (CAPI). This instrument was developed by Milner (1980) as a way to detect those parents who are more likely than others to abuse children (See Appendix C for sample items). This inventory contains 160 items covering 10 scales, which include a physical abuse scale, as well as three validity scales: lie, random response, and an inconsistency scale. These validity scales can be used to detect faking good, faking bad, and random responding. The items were developed at a third grade reading level and are presented in an agree/disagree format. The physical abuse scale's (77 items) internal consistency estimates range from .92 to .96 across various groups, while the test-retest estimates were as follows: .91 (one day), .90 (one week), .83 (one month), .75 (three months), and .86 (six months). Factor analysis of this measure reveals six factors that are representative of those individuals who have been found to be abusive. These domains are: distress, rigidity, problems with family, problems from others, unhappiness, and problems with child and/or self. Examples of items from each domain include: "I often feel alone" (Distress), "Children should stay clean"(Rigidity), "I am an unlucky person" (Unhappiness), "I have a child who is slow"(Problems with Child and Self), "My family fights a lot"(Problems with Family), and "You cannot depend on others"(Problems from Others). High CAPI scores appear to be correlated with respondents' reports of childhood histories of abuse, low social support, high levels of stress, depression, anger, and increased strain in interactions with children. Milner also has suggested cut-off scores for this instrument. A total score of 215 is the recommended conservative cutoff score for classifying participants for being as risk for abusing their children. Individuals with scores of 215 and higher are reporting similarities to people

known to physically abuse their children. Research supports the validity of this instrument for predicting abuse but not neglect. For this study, the "Problems with Child and Self" factor of this scale is not appropriate for participants who are not already a parent; however, the manual suggests that only total scores be used (not individual factor scores). The scale in question entails four out of the physical abuse's seventy-seven items. In order to take into account how missing data may affect the results, the results of analyses using CAPI total scores will be compared to the results of analyses using prorated scores. If the prorated scores produce comparable results, prorated scores will be utilized. If the missing data do not exceed 10% but are found to affect the results, a separate procedure will be conducted in order to create a total score for women in the study who do not have children. Surveys completed by women in the study who already have children will be identified. The data from these surveys will be used to create a regression equation, which will then be used to predict missing scores for women without children.

Procedure

Potential participants were recruited from two home visit programs developed and managed by the Director of the Maternal Health Section at the Department of Public Health in San Bernardino County. One program was available for high-risk pregnant women who may or may not use substances and the other program was available for pregnant women who were currently or recently incarcerated at a local prison. Before the start of data collection, the caseworkers of these two programs attended an in-service training session where the researcher discussed the procedure and the materials to be distributed (See Appendices D & E). Women involved in these programs were

approached by their program caseworkers and asked if they would be interested in taking part in this study (See Appendix I for collaborative agreement from Department of Public Health) which involved filling out three surveys on their own and returning them to their caseworker. Those women who agreed to participate were presented with an informed consent form (See Appendix F) to be read, understood, and signed before any additional information was collected. This signed consent form was collected by the caseworkers and placed in sealed envelope separate from the completed surveys. The sealed envelope was returned to the study's primary investigator for safekeeping. All participants were given the MFAS, MFAS Addendum, CAPI, and the general survey. Debriefing (See Appendix H) occurred via a disclosure form, which provided information about the study and phone numbers to call if any problems or concerns arose. This form was attached to the back of the packet of surveys given to participants by their caseworkers. Recipients of the surveys were also given an envelope to put their surveys in and asked to return it to their caseworker after completion. As an incentive to increase the return rate, the researcher offered a drawing for three $50 Toys R Us gift certificates. No surveys were associated with identifiable information. After handing the completed surveys back to caseworkers in sealed envelopes, participants were assigned a number which each caseworker was responsible for tracking (See Appendix G). Sealed envelopes were then forwarded to the researcher and were free of any identifying information. Numbers were drawn for the 3 participants' gift certificates and the caseworkers were notified of the winning numbers. The caseworkers that had clients with winning numbers were given the gift certificates to distribute. This was accomplished without the researcher's knowledge as to the identity of the winners in order to ensure participant anonymity.

Results

Frequencies were run in order to determine demographic percentages and data were screened to determine whether assumptions were met for the chosen analyses (See Table 1). Due to the small sample size the intended multiple regression was not utilized and instead each hypothesis was tested separately using two-group t-tests, bivariate correlations, or chi-squares. All analyses that included the CAPI were run using both the total score and prorated scores. No significant differences were found between the use of total and prorated CAPI scores, therefore, only the analyses using the prorated CAPI scores were reported. In addition, a pre-analysis was performed in order to explore a potential relationship between the MFAS/MFAS Addendum and the amount of weeks pregnant. No significant relationship was found suggesting that the number of weeks pregnant had no bearing on the women's level of attachment toward their fetuses or feelings about their present pregnancies.

Table 1. Means, standard deviations, and range of scores

		MFAS	MFAS Addendum	Total CAPI Score
N	Valid	56	56	55
	Missing	0	0	1
Mean		96.89	33.66	135.76
Std. Dev.		11.66	3.94	104.22
Range		46	17	354
Minimum		74	23	16
Maximum		120	40	370

Hypothesis 1: Fetal Attachment and Potential for Child Abuse

A bivariate correlation was conducted to address whether or not a relationship exists between fetal attachment (MFAS) and the potential for child abuse (CAPI). The data were screened and found to have met the assumptions for this test (independent random sampling, normal distribution, and bivariate normal distribution). None of the

participants reported fetal attachment scores representative of insecure attachment (all would have been classified as either uncertain or at various levels of secure) and the majority of the women reported potential for child abuse scores that were below the at risk cutoff.

The test results failed to reach significance, r (56) = -.128, p>.35. Thus there appeared to be no statistically significant relationship between fetal attachment scores and the potential for child abuse. A two-group t-test was also conducted to compare MFAS mean differences between women who obtained a CAPI cutoff score of 215 or higher (M=95.14, SD=11.37) and those who did not (M=97.71, SD=11.88). These results also failed to reach significance, t (53)= .705, p=.484, two-tailed.

An additional bivariate correlation was conducted using the MFAS addendum, which was developed to measure the mother's bond to her fetus specifically through her feelings about being pregnant. Assumptions for this test were met (independent random sampling, normal distribution, and bivariate normal distribution). This study's results suggested a statistically significant relationship, r (56) = -.304, p=.02 between feelings about pregnancy and the potential to commit child abuse (See Figure 1). Thus women who appeared to have a more favorable view about their pregnancy (high MFAS Addendum Scores) reported lower potential for abuse scores (CAPI). A two-group t-test was then conducted to compare MFAS Addendum mean differences between women who obtained a CAPI cutoff score of 215 or higher (M=31.71, SD=3.77) and those who did not (M=34.37, SD=3.85). These results also reached significance, t (53)= 2.238, p=.029, two-tailed.

Feelings about Pregnancy and the Potential for Child Abuse

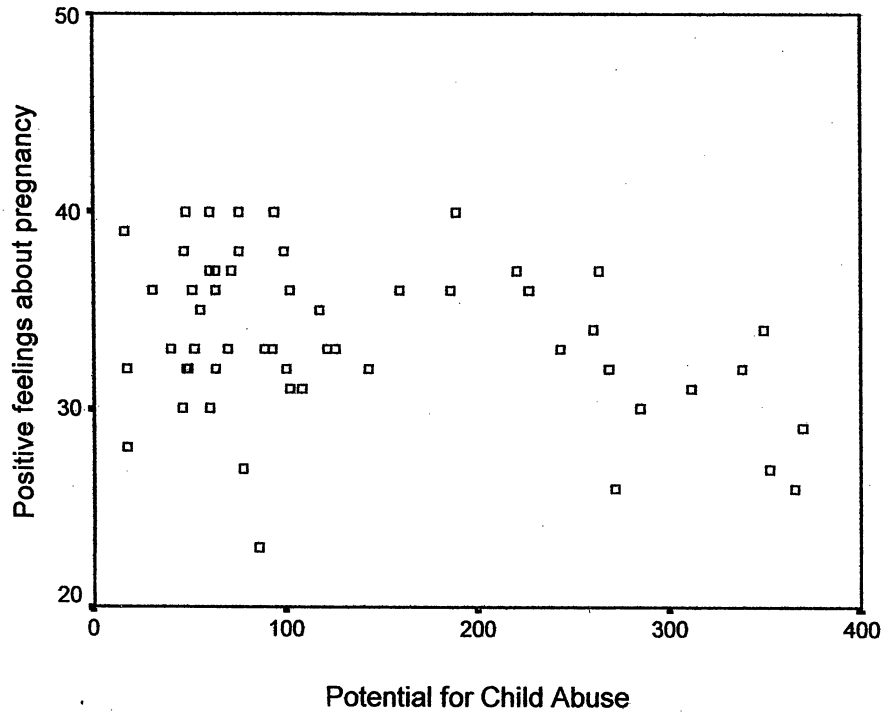


Figure 1. More positive feelings toward pregnancy tend to result in the reporting of a lower potential for child abuse

Hypothesis 2: Fetal Attachment and Substance Use

Using the data obtained from the Background Survey, 27 of the 56 participants were classified as substance users (48%). A two-group t-test was used to address whether there is a significant difference between the substance users' and non-users' fetal attachment scores (MFAS). The assumptions were met for this analysis (independent random sampling, normal distribution, homogeneity of variance). Contrary to the hypothesis, substance users averaged similar fetal attachment scores ($\underline{M}$=94.37, SD=12.55) as compared to those women who were not using substances during their pregnancy ($\underline{M}$=99.24, SD=10.43), $\underline{t}$ (54)=-1.583, $\underline{p}$=.12, two-tailed.

An additional two-group t-test was conducted to find out whether differences were apparent between substance users and non-users in relationship to the MFAS Addendum. The results of the t-test indicated that substance users (M=32.48, SD=3.07) scored significantly lower on the MFAS Addendum than non-users (M=34.74, SD=4.37), t (54)=-2.240, p=.03, two-tailed (See Figure 2).

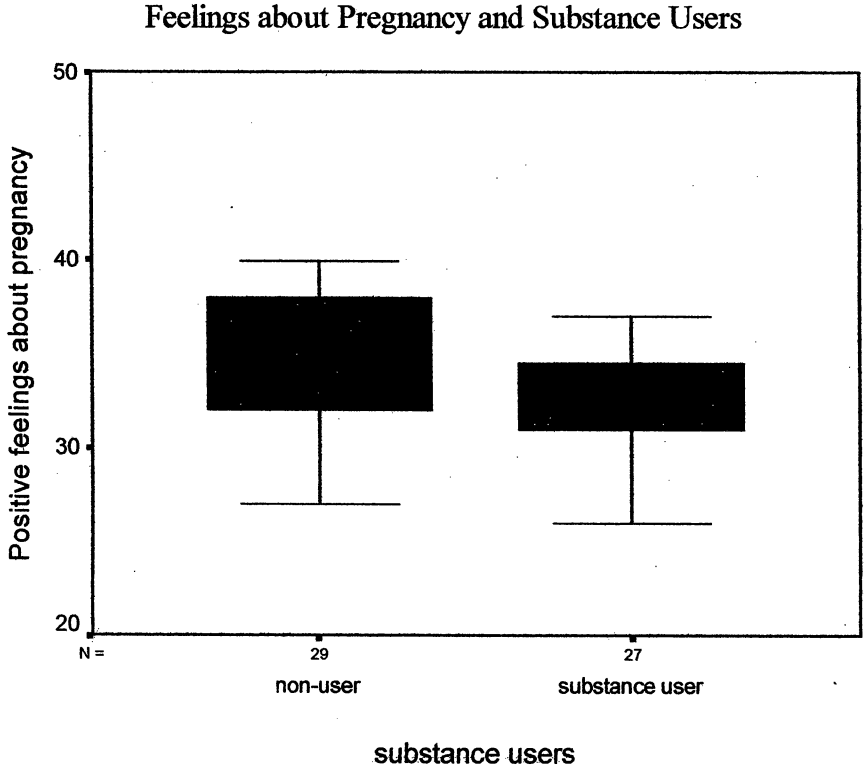


Figure 2. Non-substance users tend to report more positive feelings about their pregnancy than substance users.

Hypothesis 3: Substance Use and History of Child Abuse

Using the data obtained by the Background Survey, 17 of the 56 participants were classified as having a history of child abuse (30.4%). The data were screened and found to have met the assumptions for this test (mutually exclusive and exhaustive categories, independence of observation, and size of expected frequencies). A chi-square test was conducted in order to address whether there are significantly more substance users with a

history of childhood abuse as compared to women who do not use substances. No significant differences were found between the number of women who report a history of childhood abuse along with current substance use (8 or 29.6%) as compared to the number of women who report a history of childhood abuse without current substance use (9 or 31%), $\chi 2$ (1, N=17) = .059, p= .81.

Hypothesis 4: Fetal Attachment and History of Child Abuse

A two-group t-test was used to address whether there is a significant difference between the fetal attachment scores (MFAS) reported by those women with a history of child abuse as compared to those who were never abused. The assumptions were met for this analysis (independent random sampling, normal distribution, homogeneity of variance). Contrary to the hypothesis, no significant differences were found between the fetal attachment scores for women who were exposed to childhood abuse (M=98.29, SD=13.93) as compared to those who were never abused (M=96.28, SD=10.67), t (54)=.590, p=.56, two-tailed.

An additional two-group t-test was conducted to find out whether differences would be apparent between the mean MFAS Addendum Scores reported by women with a history of child abuse as compared to those who were never abused. The results of this analysis also failed to reach significance. No significant mean differences were reported on the MFAS Addendum between those exposed to childhood abuse (M=33.06, SD=3.99) as compared to those never exposed to child abuse (M=33.92, SD=3.94), t (54)=-.752, p=.46, two-tailed.

Hypothesis 5: Substance Use and Potential for Child Abuse

A two-group t-test was used to address whether there is a significant difference

between substance users and non-users CAPI mean scores (potential to abuse their children). The assumptions were met for this analysis (independent random sampling, normal distribution, homogeneity of variance). Contrary to the hypothesis, group mean differences failed to reach significance. Thus there were no significant mean score differences between substance user's CAPI scores (M=159.54, SD=117.01) and non-user's CAPI scores (M=114.45, SD=87.90), t (53)=1.626, p=.11, two-tailed. An additional analysis was also conducted to compare the number of substance users who obtained a CAPI cutoff score of 215 or higher (9/26 or 35%) to nonusers who also obtained an elevated CAPI score (5/29 or 17%).

Hypothesis 6: Fetal Attachment and Perception of Pregnancy

A bivariate correlation was conducted to address whether or not a relationship exists between a mother's perception of her pregnancy as a positive event (MFAS Addendum) and her ability to bond with her fetus (MFAS). The data was screened and found to have met the assumptions for this test (independent random sampling, normal distribution, and bivariate normal distribution). As expected, a significant relationship was found between the women's feelings about their pregnancy and their ability to bond with their fetus, r (56) = .438, p=.001 (See Figure 3).

Prison Populations vs. Women Outside of the System

Due to the unexpectedly high number of incarcerated participants (26/56) in this study, additional analyses were conducted in order to explore whether potential differences on the variables of interest exist between participants who reside both inside and outside of prison (See Table 2).

Feelings about Pregnancy and Level of Attachment to Fetus

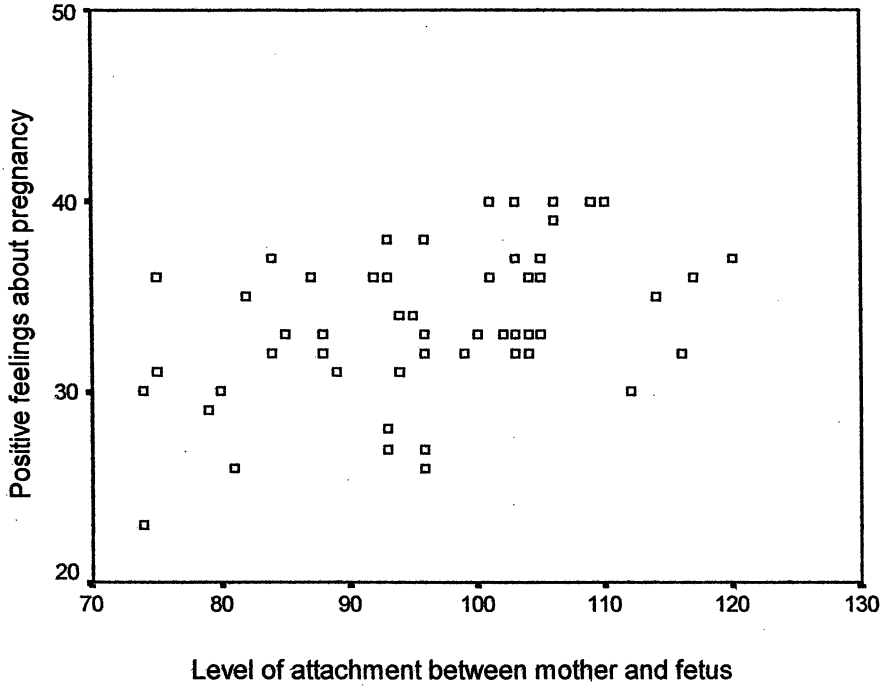


Figure 3. Positive feelings about pregnancy tend to coincide with higher levels of attachment to fetus.

Women inside of prison

	Hx of Childhood Abuse	No Hx of Childhood Abuse
Substance users	4	7
Nonsubstance user	3	12

Women outside of prison

	Hx of Childhood Abuse	No Hx of Childhood Abuse
Substance users	4	12
Nonsubstance user	6	8

Table 2. Demographics of women inside and outside of prison

Several relationships were explored that addressed the following questions. Do women in prison report a significantly higher likelihood of being abused in childhood, potentially abusing their children, and using substances as compared to women who are not in prison? Will pregnant women in prison report significantly lower fetal attachment scores than women not in prison?

Childhood Abuse among Incarcerated Females

A chi-square test was conducted in order to address whether or not women in prison would report a higher incidence of childhood abuse than women out of prison. The data were screened and found to have met the assumptions for this test (mutually exclusive and exhaustive categories, independence of observation, & size of expected frequencies). No significant differences were found between the occurrences of childhood abuse among the prison inmates (26.9%) as compared to those women outside of prison (33.3%), $\chi 2$ (1, $\underline{N}$=17) = .529, $\underline{p}$=.47.

Potential for Child Abuse and Incarcerated Females

A two-group t-test was used to address whether there is a significant difference between the potential for child abuse and whether or not the pregnant woman currently resides in prison. The assumptions were met for this analysis (independent random sampling, normal distribution, homogeneity of variance). Contrary to the expected outcome, group's mean differences failed to reach significance. Thus, there was no significant difference in CAPI mean scores between incarcerated ($\underline{M}$=147.27, SD=108.30) and non-incarcerated females ($\underline{M}$=125.45, SD=101.20), $\underline{t}$ (53)=.772, $\underline{p}$=.44, two-tailed.

Substance Use and Incarcerated Females

A chi-square test was conducted in order to address whether or not women in prison would likely report a higher incidence of substance use than women outside of prison. The data were screened and found to have met the assumptions for this test (mutually exclusive and exhaustive categories, independence of observation, & size of expected frequencies). No significant differences were found between the number of substance users among the prison inmates (11 or 42.3%) as compared to those women outside of prison (16 or 53.3%), $\chi 2$ (1, $\underline{N}$=27) = .926, $\underline{p}$=.34.

Fetal Attachment and Incarceration

A two-group t-test was used to address whether there is a significant difference between incarcerated and non-incarcerated females' fetal attachment scores (MFAS). The assumptions were met for this analysis (independent random sampling, normal distribution, homogeneity of variance). This exploratory hypothesis revealed that incarcerated women averaged similar fetal attachment scores ($\underline{M}$=95.92, SD=12.56) as compared to non-incarcerated women ($\underline{M}$=97.73, SD=10.97), $\underline{t}$ (54)=-.576, $\underline{p}$=.57, two-tailed.

An additional two-group t-test was conducted to find out whether differences were apparent between incarcerated females and non-incarcerated females' scores on the MFAS Addendum. The results of the t-test suggest that incarcerated females ($\underline{M}$=34.77, SD=3.04) scored significantly higher on the MFAS Addendum than non-incarcerated females ($\underline{M}$=32.70, SD=4.40), $\underline{t}$ (54)=-2.015, $\underline{p}$=.05, two-tailed. This finding was unexpected.

Incarcerated Females and Comparisons between Substance users and nonusers

Several post hoc analyses were also performed to test for differences between incarcerated substance users and nonusers' reported histories of child abuse and scores on the MFAS, MFAS Addendum, and CAPI. There were 26 inmates, of which 15 were classified as non-users and 11 were classified as substance users. Thirty-six percent of the substance using inmates reported a history of childhood abuse (4/11) as compared to 20% of the non-using inmates (3/15). No significant mean differences were found between these two groups of inmates on the MFAS, MFAS Addendum, or CAPI.

Discussion

This study's purpose was to explore possible relationships between substance use, fetal attachment, history of childhood abuse, and the potential to abuse children utilizing a population of at risk pregnant women. Understanding relationships among these variables is not only important for development but also for the prevention and intervention of child abuse. Attachments with primary caregivers have traditionally been thought to form during the infant's first year of life. This study investigated the possibility that the attachment relationship actually begins during pregnancy and thus would be affected by the mother's lifestyle (i.e., drug use) while pregnant and feelings about being pregnant (i.e., does not desire to be pregnant). Due to the paucity of research on fetal attachment, several hypotheses were explored.

Fetal Attachment and Potential for Child Abuse

This area of inquiry was addressed utilizing the scores obtained from the MFAS, MFAS Addendum, and CAPI. No statistically significant relationship was found between fetal attachment (as reported on the MFAS) and the potential for child abuse (CAPI). Although participants reporting lower levels of fetal attachment tended to report higher potential for child abuse scores, the effect was not significant. This may be explained by the fact that the range of scores collected from the MFAS was limited (as stated before, none of the participants reported having an insecure attachment with their fetus). Thus, in order to adequately test this hypothesis it would be necessary to incorporate participants who report both secure and insecure attachments with their fetuses. In this study, however, more variability was obtained in scores from participants on both the MFAS Addendum and CAPI (30% of participants yielded scores that

suggested a potential for child abuse). The narrow range of scores on the MFAS could explain why the results were different when the MFAS Addendum was substituted for the MFAS in an analysis with the CAPI. The MFAS Addendum was also developed to explore the developing relationship between the mother and fetus; however, it focuses more specifically on the mother's feelings about her pregnancy. The MFAS Addendum was significantly negatively correlated with the CAPI. Participants who held a more favorable view about their pregnancy reported lower potential to abuse scores and those who held more negative views about their pregnancy reported a higher potential to abuse their children. This finding suggests that how a woman feels about her pregnancy may affect the way she feels about or will treat her baby after delivery. While causation and the direction of causation cannot be made utilizing correlational analyses, this research suggests that a link exists between feelings about pregnancy and the potential to abuse children that should be pursued further to fully understand the relationship. Unfortunately, there was not enough variability in the scores obtained in this study to tease apart some of the factors involved. While the MFAS Addendum scores showed a broader range than those reported on the MFAS, the scores were still relatively too high to classify any of the women as not wanting their babies (i.e. the women either reported wanting their babies or were uncertain). While it was not possible to fully explore this hypothesis with this data, it is clear that the relationship between desire for pregnancy and the potential for child abuse should be researched further.

An additional exploratory analysis was conducted utilizing one of the CAPI domains referred to as Distress. This factor was chosen because it includes items that relate to anger and frustration. Both the MFAS and MFAS Addendum scores were compared to

the participants' scores on this factor. The results mimicked the results obtained when the entire CAPI was utilized. Thus significance results were obtained only when the MFAS Addendum (versus the MFAS) was compared to the Distress factor on the CAPI.

Fetal Attachment and Substance Use

Another area of interest was the potential relationship between fetal attachment and maternal substance use. It was expected that current substance users would report lower fetal attachment scores than non-users. When the MFAS was included in the analysis, the effect was not significant. One reason for this result may be due to relying on fantasy versus reality. One drawback of measuring maternal/child attachment during pregnancy is that the substance user is free to imagine the "perfect" stress-free baby who will love and fulfill his or her mother's needs and wishes. This is in contrast to the potential reality that a substance user or someone with poor coping skills may actually experience after the baby is born. The literature suggests that substance using mothers "often lack knowledge of infant care and development and appear to have unrealistic expectations about their infants' competencies" (Freier, Griffith, and Chasnoff; 1991). Thus the finding that substance users in this study, for the most part, reported secure attachments to their fetus may not be representative of the actual relationship that will develop after birth. On the other hand, substance use may appear to be unrelated to fetal attachment due to the previously stated problem that the reported scores for the MFAS were somewhat restricted in range and therefore lacked variability. When the MFAS Addendum was substituted for the MFAS in the analysis the effect was significant. Women who were currently using or at sometime during their pregnancy used substances tended to score significantly lower on the MFAS Addendum, meaning that they tended to

report more negative than positive feelings about their pregnancy. There are several interpretations that could be made. For instance, substance users may feel hampered by their pregnancies (i.e., socially and/or personally feel pressure to stop using drugs that may be harmful to their growing fetuses). Another potential reason that substance users may not feel positively about their pregnancies could be that their drug use had something to do with why they became pregnant in the first place. For example, they may have failed to use protection during sexual intercourse (i.e., engaged in risky sex) because of their drug use and thus never chose to or desired to be pregnant (i.e., unexpected pregnancy). Another consideration has to do with why many people might initially turn towards drugs. If drugs are being used to escape from reality, then the reality of becoming pregnant could result in very strong negative feelings. For this study, one question in particular on the MFAS Addendum appeared to be noteworthy. More substance users than nonusers reported their pregnancy as unplanned. One suggestion for this was previously stated, however, further research would be needed to better understand the relationship.

Substance Use and History of Child Abuse

Substance use was explored further to determine the possibility that it is linked to having had experienced an abusive childhood. Therefore, it was hypothesized that a significantly higher number of substance users would report a childhood of abuse as compared to non-users. This was not the case for participants in this study. Actually, a higher number of non-using women reported a childhood of abuse as compared to substance users. This is unexpected but could be due to substance users under-reporting childhood abuse or non-users not willing to report substance use. A potential limitation of

this study was not only the use of self-report measures but also recruitment of a significant number of the participants coming from a prison population. While these women were told about anonymity it may be somewhat unreasonable to expect them to completely trust the researchers and caseworkers about how the data would be used (i.e., information collected by their caseworker may have impacted their willingness to divulge information related to substance use). When attempting to assess populations where honesty may be an issue and/or when collecting information about sensitive and delicate topics it may be necessary to not only consider collecting data from additional sources but also to provide a data collection procedure that instills trust. For instance, utilizing an interviewer who is known and trusted by the participant rather than using self-report measures may not only help in the obtainment of more accurate information but may also provide the respondent with a feeling of safety and security (although there is a risk that some respondents would feel even more threatened because of the loss of anonymity). Another suggestion for why fewer substance users than non-users reported a history of childhood abuse may have to do with denial. Some substance users prefer to stay in denial about their substance use, along with any significant negative events that took place in their history. For instance, it would not be unusual for someone turning to drugs or alcohol abuse as a way of avoidance and denial of a disturbing event, such as childhood abuse. Unfortunately, in this study there was no opportunity to collect additional information from other sources (i.e., family members, medical personnel, etc.) about the participants' drug use and/or abuse history.

An additional post-hoc analysis was conducted on the relationship between substance use and reported physical, emotional, and/or sexual abuse over the lifetime (i.e., during

childhood and/or as an adult). Utilizing information obtained from the background information survey, 27 women were categorized at having been abused at some point during their lifetime and 29 were categorized as not abused. These two group's scores were compared on the CAPI, MFAS, and MFAS Addendum, along with a comparison of how many women classified as having been or not been abused also used substances. No significant differences were found between abuse victims and non-victims' scores on the CAPI, MFAS, or MFAS Addendum (See Table 3). Fifty-nine percent of the women classified as abuse victims were also classified as substance users (16/27), while 38% of the women classified as not abused were classified as substance users (11/29). The purpose of conducting this additional analysis was to ensure that no relationships were missed between having been abused at anytime during the lifecycle and the other factors (i.e., potential to abuse children, fetal attachment, feelings about pregnancy, and substance use) previously explored selectively with abuse that specifically occurred in childhood. The results of this additional analysis failed to uncover any new relationships (i.e., analyses with lifetime abuse mimicked the results of analyses already conducted with childhood abuse).

Table 3. Comparison of abuse victims and non-victims' scores on the CAPI, MFAS, and MFAS Addendum

SCALE	Mean	Std Dev.	T Score	df	p=	2-tailed
CAPI						
Abused=26	162.31	114.99	-1.827	53	.073	Yes
No Abuse=29	111.97	88.88	---	---	---	---
MFAS						
Abused=27	97.11	13.40	-.134	54	.894	Yes
No Abuse=29	96.69	10.01	---	---	---	---
MFAS Addendum						
Abused=27	33.22	4.16	.802	54	.426	Yes
No Abuse=29	34.07	3.74	---	---	---	---

Fetal Attachment and History of Child Abuse

In order to further explore history of child abuse, an analysis was conducted to investigate a hypothesized relationship between history of child abuse and fetal attachment. It was expected that women who had suffered childhood abuse would have problems bonding with their fetus and therefore would report lower fetal attachment scores. This expectation is based on the attachment literature that has found a link between the attachment styles formed in childhood and subsequent significant relationships later formed as an adult. Thus, the assumption would be that someone who suffered childhood abuse at the hands of a caregiver would develop an insecure attachment style with that caregiver and be predisposed toward also developing an insecure attachment with their own child (Benoit & Parker, 1994). No significance was found when the analysis included either the MFAS or the MFAS Addendum. One possibility for this finding is that only 4 out of the 17 women in the study who reported a history of childhood abuse named one or both of the parents as the abuser. Therefore, the childhood abuse experienced by the majority of participants in this study may not have affected their early attachment relationships. Thus, these women may be reporting high levels of attachment with their fetuses because they also experienced secure attachment with their own primary caregivers, which is consistent with attachment theory. Another possibility is that many women abused in childhood report similar fetal attachment relationships as women not abused because they are better able to understand the importance of having a secure and healthy bond with their children. Finally, it is also possible that during pregnancy attachment is higher because the fetus represents the unknown and, when actual caregiving takes place (after birth), feelings of maternal

attachment may change. Thus another important study would be to examine the relationship between fetal and infant attachment in this population.

Substance Use and Potential for Child Abuse

Substance use has been linked to child maltreatment in the existing literature. Thus, it was expected that substance users would score higher than non-users on the potential to abuse their children. This was not the case. Although, small sample size may have affected the outcome, the results failed to reach significance. As suggested above this finding may be a result of the limitation of assessing the potential for child abuse in pregnant women. It is possible that a more accurate test of how well the substance users in this study would accommodate and adapt to the potential stress of child rearing would be achieved after the participants had given birth (although this is also true of the nonusers in the study). At the point in time that participants were asked to fill out this study's instruments, they were free to imagine what their baby would be like and how their baby could potentially fulfill and meet their expectations (i.e., baby will fulfill their emotional needs). There are numerous advantages to assessing child abuse potential after the child's birth because not only has the mother had to face the many realities of the birth (i.e., what it means to have a baby, take care of the baby, and who is available to assist with the caregiving) but what also becomes part of the assessment is how the mother handles this added pressure and stress. Thus, it may be that until this type of information can be obtained, substance users and nonusers' mother-infant attachment styles cannot be fully differentiated. This may prove to be a hindrance to the development of a prevention model that could predict child abuse potential from the mother-fetal relationship. However further research should still be conducted in this area

because while assessing the potential for child abuse among pregnant substance users may seem to be relatively ineffective, what meaning does it hold for the few pregnant substance using women who did receive a score that suggested they were at risk for committing child abuse? Are these women at an even higher risk?

An additional exploratory analysis was again conducted utilizing the CAPI Distress domain but this time in relationship to substance users versus nonusers. The results again mimicked the results obtained when the entire CAPI was utilized. Thus the groups' mean differences failed to reach significance.

Prison Populations vs. Women Outside the System

An unexpectedly high number of participants were inmates. Therefore analyses were conducted to investigate potential differences among the variables of interest that may be specific to the two different populations.

One analysis was used to determine if women in prison report a higher incidence of childhood abuse than women outside of prison. Although the results were not significant, more women outside of prison actually reported a higher incidence of childhood abuse than those in prison. This could be due to the characteristics unique to the women recruited outside the prison for this study. These women belonged to a very high-risk community (i.e., low SES, high substance use) and were not asked whether or not they themselves had ever been incarcerated. A second analysis was conducted to determine if significantly more women in prison would report a higher potential to abuse scores than women outside of prison. The results suggested that women in prison are no more likely than women outside of prison to report an elevated potential to abuse their children. The data were also analyzed to investigate whether more women in prison would report using

substances than women out of prison. Surprisingly, more women (although not a significant number) outside of prison used more substances than those in prison. It is important to note that the women included in this study that were not incarcerated live in an area that is known to lead the United States in methamphetamine use and women with a high risk for methamphetamine use are targeted for services by the program who identified women for this study. Thus, they may not only have easy access to drugs, but they may also feel more comfortable reporting their use with their caseworker as compared to the women in the study who are presently in prison. As mentioned above there was no way to ensure that women filling out surveys while incarcerated could feel safe in being totally honest about drug use. Finally, one last hypothesis was tested that addressed potential differences in fetal attachment scores. It was expected that women in prison would report lower levels of attachment to their fetus when compared to those women outside of prison. For the women in prison, placement of their babies is often less of a sure thing (i.e., their time in prison may result in them not being able to keep their child). This analysis was conducted first with the MFAS and then the MFAS Addendum. No differences were found between prisoners and non-prisoners' level of fetal attachment when the MFAS was used, however, the MFAS Addendum yielded significant and surprising results. The inmates reported higher attachment scores than those women outside of prison. One item on the MFAS Addendum that may have contributed to this finding was that more women inmates as compared to women outside of prison reported a higher likelihood that they would receive help from family members in the caregiving of their baby. This could once again be unique to the population of women obtained outside of prison for this study. These women lived in an area that is

somewhat rural and, due to distance, is probably inaccessible from family members. The characteristics specific to this study's population of inmates are also important. As mentioned before, these inmates were "pre-sentenced" inmates awaiting the resolution of cases involving minimum-security crimes. Thus these inmates may have experienced fewer traumas and a more positive upbringing than criminals who committed more violent crimes. In addition, the inmates included in this study may also have benefited from being part of the Department of Public Health's program, which is designed to provide support and assist these women with their pregnancy.

Incarcerated Females and Comparisons between Substance Users/Nonusers

There were a slightly higher number of substance using inmates who reported a history of childhood abuse (36%) as compared to non-using inmates (20%). Although caution must be taken when interpreting these results due to the small sample of inmates (n=26), substance use has been linked to child maltreatment in the literature (Arellano, 1996). Child victimization is one of many risk factors for the development of addictive behaviors, such as substance abuse. While no significant mean differences were found between substance using inmates and nonusers on the potential for child abuse, level of attachment to fetus, and feelings about pregnancy, this may be again due to the factors previously mentioned (i.e., unique prison population, use of CAPI with women who are pregnant versus women who have given birth and are facing the reality and stress of raising a baby, etc).

Limitations

Although many of the analyses failed to yield significant results, there are possible reasons why the data did not seem to support some of the hypotheses. Several problems

were encountered recruiting participants, which required that the analyses be conducted with a sample size of 56, a less than optimal number of participants. Considering the expectation of a medium effect size, 100 participants would have been more appropriate and may have led to more significant results. Also, the two populations utilized may have been too unique to obtain information from them that could be generalized to the larger population. The inmates' uniqueness has already been discussed while the remaining population was drawn from a rural area that is known to be high in methamphetamine use.

Another potential reason for surprising results is that, although the MFAS and the MFAS Addendum are moderately correlated, the MFAS Addendum appears to focus on more pertinent and direct questions concerning how the woman feels about her pregnancy which may have more bearing on a fetal attachment study that is specifically exploring affectively charged variables such as child abuse. This may explain why significant results were obtained when including the MFAS Addendum in an analysis versus the non-significant results obtained when using the MFAS. Also due to specific unique characteristics of the women who participated, both in (e.g., minimum security inmates) and outside the prison system (e.g., isolated area, low SES, high drug incidence), some of this study's findings may be specific to these particular populations. In addition, utilizing any population of inmates for this study may have had its drawbacks. For instance, many women in prison will be unable to obtain and use drugs and alcohol. Thus, when assessed in prison, they may report being non-users when in fact substance use could have occurred during the pregnancy before they were placed in confinement.

Conclusions

Several hypotheses were explored in this study and while the sample size was not optimal, several important findings should be highlighted. How women feel about their pregnancies was related to how well they bond with their fetus. Women who are not pleased to find themselves pregnant may experience more difficultly bonding with their growing baby (i.e., substance users who report pregnancy as unplanned). This may not bode well for the mother-child relationship that develops after the child is born. Thus it will be important to conduct research in the future that compares women's feelings about pregnancy (MFAS Addendum) to the attachment style they later develop with their child after birth. How women feel about their pregnancy was also found to be an important factor in determining potential for child abuse. Negative feelings about pregnancy could be a signal for mothers at risk for abuse or at least for developing poor relationships with their babies (i.e., MFAS Addendum and CAPI significantly correlated). More information must be gathered in order to determine if negative feelings about pregnancy (low MFAS Addendum scores) could actually be used to predict poor mother-child interactions. If this could be established, the MFAS Addendum could be used as a tool for detection, intervention, and ultimately, prevention.

Future research should focus on a longitudinal study utilizing similar variables to those used in this study. Fetal attachment assessed during pregnancy could then be compared to parent-infant attachment scores after the baby is born. A longitudinal study would also provide the opportunity to compare high potential to abuse scores obtained during pregnancy to the relationship that develops between mother and infant after the mother gives birth. These types of studies would hopefully move us closer to improving

mother-infant relationships and decreasing the incidence of child abuse through prediction and prevention.

References

Ainsworth, M. D. (1982). Attachment: Retrospect and prospect. In C.M. Parkes & J. Stevenson-Hinde (Eds.), *The place of attachment in human behavior* (pp. 3-30). New York:Basic Books, Inc.

Ainsworth, M.D. (1989). Attachments beyond infancy. *American Psychologist, 44*(4), 709-716.

Ainsworth, M. D., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of Attachment.* Hillsdale, New Jersey: Lawrence Erlbaum Associates.

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders.* Washington D.C.: Author

American Psychological Association. (1992). *Ethical principles of psychologists and code of conduct.* Washington, D.C.: Author.

Arellano, C.M. (1996). Child maltreatment and substance use: A review of the literature. *Substance Use and Misuse, 31*(7), 927-935.

Banyard, V.L. (1997). The impact of childhood sexual abuse and family functioning on four dimensions of women's later parenting. *Child Abuse and Neglect, 21*(11), 1095-1107.

Benoit, D., & Parker, K.C.H. (1994). Stability and transmission of attachment across three generations. *Child Development, 65,* 1444-1456.

Bernardi, E., Jones, M., & Tennand C. (1989). Quality of parenting in alcoholics and narcotic addicts. *British Journal of Psychiatry, 154,* 677-682.

Biller, H.B., & Solomon, R.S. (1986). *Child maltreatment and paternal deprivation: A manifesto for research, prevention, and treatment.* Canada: Lexington Books.

Bowlby, J. (1969). *Attachment and loss: Vol. I. Attachment.* New York: Basic Books, Inc.

Brabant, S., Forsyth, C.J., & LeBlanc, J.B. (1997). Childhood sexual trauma and substance misuse: A pilot study. *Substance Use and Misuse, 32*(10), 1417-1431.

California Department of Justice. (2000). The meth crisis:Pregnancy and methamphetamine. [On-line]. Available:*http://www.stopdrugs.org/pregnancy.html*

Caliso, J.A., & Milner, J.S. (1992). Childhood history of abuse and child abuse screening. *Child Abuse and Neglect, 16,* 647-659.

Call, J. D. (1984). Child abuse and neglect in infancy: Sources of hostility within the parent-infant dyad and disorders of attachment in infancy. *Child Abuse and Neglect,8,* 185-202.

Chaffin, M., Kelleher, K., & Hollenberg, J. (1996). Onset of physical abuse and neglect:Psychiatric, substance abuse, and social risk factors from perspective community data. *Child Abuse and Neglect, 20*(3), 191-203.

Chasnoff, I.J. (1988). Newborn infants with drug withdrawal symptoms. *Pediatrics in Review, 9*(9), 273-277.

Chasnoff, I.J., Burns, W.J., Schnoll, S.H., Burns, K., Chisum, G., & Kyle-Spore, L. (1986). Maternal-Neonatal Incest. *American Journal of Orthopsychiatry, 56*(4), 577-580.

Chavkin, W., & Breitbart, V. (1997). Substance abuse and maternity: The United States as a case study. *Addiction, 92*(9), 1201-1205.

Corse, S.J., & Smith, M. (1998). Reducing substance abuse during pregnancy: Discriminating among levels of response in a prenatal setting. *Journal of Substance Abuse Treatment, 15*(5), 457-467.

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*(2), 149-155.

Cranley, M. S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research, 30*(5), 281-284.

Dorman, R.L., Moore, D.J., & Schaerfl, C.A. (1999). *Planning, funding, and implementing a child abuse prevention project.* Washington, DC: CWLA Press.

Dubowitz, H. (Ed.). (1999). *Neglected children: Research, practice, and policy.* California: Sage Publications, Inc.

Finnegan, L., & Kandell, S.R. (1992). Maternal and neonatal effects of alcohol and drugs. In J.H. Lopwinson, P. Ruiz, R.B. Millman, & J.G. Langrad (Eds.), *Substance abuse: A comprehensive textbook* (2nd ed., pp. 628-656). Baltimore: Williams and Wilkins.

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.

Freier, K. (1994). In utero drug exposure and maternal-infant interaction: The complexities of the dyad and their environment. *Infant Mental Health Journal,*

15(2), 176-188.

Freier, M.C., Griffith, D.R., & Chasnoff, I.J. (1991). In utero drug exposure: Developmental follow-up and maternal-infant interaction. *Seminars in Perinatology, 15*(4), 310-316.

Friedrich, W.N., & Wheeler, K.K. (1982). The abusing parent revisited. *The Journal of Nervous and Mental Disease, 170*(10), 577-587.

Haller, D.L., Knisely, J.S., Dawson, K.S., & Schnoll, S.H. (1993). Perinatal substance abusers. *The Journal of Nervous and Mental Disease, 181*(8), 509-513.

Hanna, E. Z., Faden, V. B., & Dufour, M. C. (1994). The motivational correlates of drinking, smoking, and illicit drug use during pregnancy. *Journal of Substance Abuse, 6,* 155-167.

Hofler, D.Z., & Kooyman, M. (1996). Attachment transition, addiction, and therapeutic bonding: An integrative approach. *Journal of Substance Abuse Treatment, 13*(6), 511-519.

Howell, E.M., Heiser, N., & Harrington, M. (1999). A review of recent findings on substance abuse treatment for pregnant women. *Journal of Substance Abuse Treatment, 16*(3), 195-219.

Jansson, L.M., Svikis, D., Lee, J., Paluzzi, P., Rutigliano, P., & Hackerman, F. (1996). Pregnancy and addiction: A comprehensive care model. *Journal of Substance Abuse Treatment, 13*(4), 321-329.

Kelley, S.J. (1992). Parenting stress and child maltreatment in drug-exposed children. *Child Abuse & Neglect, 16,* 317-328.

Kemp, V. H., Sibley, D. E., & Pond, E. F. (1990). A comparison of adolescent and adult mothers on factors affecting maternal role attainment. *Maternal-Child Nursing Journal, 19*(1), 63-75.

Koch Crime Institute. (2000). National trends of Methamphetamine. [On-line]. Available: http://www.kci.org/meth_info/national_trend.htm

Lane, S.J. (1996). Cocaine: An overview of use, actions, and effects. In L.S. Chandler & S.J. Lane (Eds), *Children with prenatal drug exposure* (pp.15-33). New York: The Haworth Press, Inc.

Lief, N.R. (1985). The drug user as a parent. *The International Journal of the Addictions, 20*(1), 63-97.

Marcenko, M.O., & Spence, M. (1995). Psychosocial correlates of child out-of-home living arrangements among at-risk pregnant women. *Families in Society, 76*(6), 369-375.

Milner, J.S. (1980). *The Child Abuse Potential Inventory: Manual.* Webster, NC: Psytec Corporation.

Mundal, L. D., VanDerWeele, T., Berger, C., & Fitsimmons, J. (1991). Maternal-infant separation at birth among substance using pregnant women: Implications for attachment. *Social Work in Health Care, 16*(1), 133-143.

Murphy, J.M., Jellinek, M., Quinn, D., Smith, G., Poitrast, F. G., & Goshko, M. (1991). Substance abuse and serious child mistreatment: Prevalence, risk, and outcome in a court sample. *Child Abuse and Neglect, 15,* 197-211.
National Institute on Drug Abuse. (2000). Methamphetamine: Abuse and addiction. Research Report Series. [On-line]. Available: *http://www.nida.nih.gov/ResearchReports/methamph/methamph2.html*

Oates, R.K., Tebbutt, J., Swanston, H., Lynch, D.L., & O'Toole, B.I. (1998). Prior childhood sexual abuse in mothers of sexually abused children. *Child Abuse & Neglect, 22*(11), 1113-1118.

Office of Alcohol and Drug Programs. (1993). *San Bernardino County Perinatal Substance Abuse Plan.* San Bernardino County: Department of Mental Health.

Office of National Drug Control Policy. (2000). State drug profiles: California. [On-line]. Available: *http://www.whitehousedrugpolicy.gov/stateandlocal/states/ca/ca.pdf*

Regier, D.A., Farmer, M.E., Rae, D.S., Locke, B.Z., Keith, S.J., Judd, L.L., & Goodwin, F.K. (1990). Comorbidity of mental disorders with alcohol and other drug use: Results from the Epidemiological Catchment Area (ECA) study. *Journal of the American Medical Association, 264,* 2511-2518.

Rodning, C., Beckwith, L., & Howard, J. (1989). Prenatal exposure to drugs and its influence on attachment. *Annals of the New York Academy of Sciences, 562,* 352-354.

Rosett, H.L., & Weiner, L. (1985). Alcohol and pregnancy: A clinical perspective. *Annual Review of Medicine, 36,* 73-80.

Sheridan, M.J. (1995). A proposed intergenerational model of substance abuse, family functioning, and abuse/neglect. *Child Abuse and Neglect, 19*(5), 519-530.

U.S. Department of Health and Human Services. (1993). *Pregnancy and exposure to alcohol and other drug use* (DHHS Publication No. SMA 93-2040). Rockville,

MD: Division of Communication Programs.

U.S. Department of Health and Human Services. (1998). *Child maltreatment 1996: Reports from the states to the national child abuse and neglect data system.* Washington, D.C.: U.S. Government Printing Office.

Van Ijzendoorn, M.H., Schuengel, C., & Bakermans-Kranenburg, M.J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology, 11*(2), 225-249.

Wiehe, V.R. (1992). *Working with child abuse and neglect.* Illinois: F.E. Peacock Publishers, Inc.

Wolock, I., & Magura, S. (1996). Parental substance abuse as a predictor of child maltreatment re-reports. *Child Abuse and Neglect, 20*(12), 1183-1193.

Appendix A-General Survey of Background Information

General Survey

1) Today's Date_____ Age:_____

2) Ethnicity? (Please check one)

____African American
____Asian
____White
____Native American
____Hispanic
____Other (please specify)

3) Highest Education completed: (Please check one)

____11th grade or less
____High School Diploma or GED
____Some College
____Associate's Degree
____Bachelor's Degree
____4 years of college or more
____Master's Degree

4) Are you employed? (Circle) Yes No

5) If yes, what is your profession?_____

6) Do you have financial problems? (Circle)
0-Not at all 1-Slightly 2-Moderately 3-Considerably 4-Extremely

7) How many people depend on you for the majority of their food, shelter, etc?_____

Pregnancy

8) Number of live births:_____

9) How many of these children reside with you:_____

10) When did you first find out you were pregnant _____

11) Approximately how many weeks or months are you pregnant?_____

Drug/Alcohol Use

(Circle all that apply)	Ever Used	Used > Once or Twice	Used During Pregnancy	Currently Use
12) Alcohol-Any use (Alcohol includes any wine, beer, wine coolers, etc.)	YES	YES	YES	YES
13) Alcohol-To Intoxication	YES	YES	YES	YES
14) Cigarettes	YES	YES	YES	YES
15) Heroin	YES	YES	YES	YES
16) Methadone	YES	YES	YES	YES
17) Other opiates/Analgesics	YES	YES	YES	YES
18) Barbiturates	YES	YES	YES	YES
19) Xanax, Valium, Ativan	YES	YES	YES	YES
20) Other tranquilizers	YES	YES	YES	YES
21) Cocaine	YES	YES	YES	YES
22) Amphetamines	YES	YES	YES	YES
23) Methamphetamine/Ice	YES	YES	YES	YES
24) Marijuana	YES	YES	YES	YES
25) Hallucinogens	YES	YES	YES	YES
26) Inhalants	YES	YES	YES	YES
27) Xstasy	YES	YES	YES	YES
28) Other:_____	YES	YES	YES	YES

29) When you use any substance (including alcohol) how often do you use more than one (Please Circle):

Always Frequently Occasionally Rarely Never

How troubled or bothered have you been in the past 30 days by:

30) Alcohol problems? (Please Circle)

0-Not at all; 1-Slightly; 2-Moderately; 3-Considerably; 4-Extremely

31) Drug problems? (Please Circle)

0-Not at all; 1-Slightly; 2-Moderately; 3-Considerably; 4-Extremely.

Family History/Social Relationships

32) Have any of your family had a drug or alcohol problem?_____

33) If yes, state relationship?_____

34) Marital Status?_____

35) How long have you been in this marital situation?_____

36) Are you satisfied with this situation?_____

37) What are your usual living arrangements (past 3 years):_____

1-With sexual partner and children 2-With sexual partner alone

3-With children alone 4-With parents 5-With Family 6-With Friends

7-Alone 8-Controlled Environment 9-No stable arrangements

38) How long have you lived in these arrangements?_____

39) Are you satisfied with these living arrangements?_____

40) Have you ever been emotionally abused? (Circle) Yes No

41) If Yes, What was the relationship of the abuser?_____

42) When did the abuse occur? (Circle all that apply)

During childhood As an Adult In the past 30 days

43) Have you ever been physically abused? (Circle) Yes No

44) If Yes, What was the relationship of the abuser?_____

45) When did the abuse occur? (Circle all that apply)

During childhood As an Adult In the past 30 days

46) Have you ever been sexually abused? (Circle) Yes No

47) If Yes, What was the relationship of the abuser?_____

48) When did the abuse occur? (Circle all that apply)

During childhood As an Adult In the past 30 days

49) Would you say you have had close, long lasting, personal relationships with any of the following people in your life (Circle yes or no):

Mother:	YES	NO	Children:	YES	NO
Father:	YES	NO	Sexual Partner/Spouse:	YES	NO
Brothers/Sisters:	YES	NO	Friends:	YES	NO
Neighbors:	YES	NO	Co-Workers:	YES	NO

Thank you for your participation.

Appendix B-Maternal Fetal Attachment Scale and MFAS Addendum

Maternal-Fetal Attachment Scale

Please respond to the following items about yourself and the baby you are expecting. There are no right or wrong answers. Your first impression is usually the best reflection of your feelings.

Make sure you mark only one answer per sentence.

I think or do the following:

	Definitely Yes	Yes	Uncertain	No	Definitely No
1. I talk to my unborn baby.					
2. I feel all the trouble of being pregnant is worth it.					
3. I enjoy watching my tummy jiggle as the baby kicks inside.					
4. I picture myself feeding the baby.					
5. I'm really looking forward to seeing what the baby looks like.					
6. I wonder if the baby feels cramped in there.					
7. I refer to my baby by a nickname.					
8. I imagine myself taking care of the baby.					
9. I can almost guess what my baby's personality will be from the way she/he moves around.					
10. I have decided on a name for a girl baby.					
11. I do things to try to stay healthy that I would not do if I were not pregnant.					
12. I wonder if the baby can hear inside of me.					
13. I have decided on a name for a boy baby.					
14. I wonder if the baby thinks and feels "things" inside of me.					
15. I eat meat & vegetables to be sure my baby gets a good diet.					
16. It seems my baby kicks and moves to tell me it's eating time.					
17. I poke my baby to get him/her to poke back.					
18. I can hardly wait to hold the baby.					
19. I try to picture what the baby will look like.					
20. I stroke my tummy to quiet the baby when there is too much kicking.					
21. I can tell that the baby has hiccoughs.					
22. I feel my body is ugly.					
23. I give up doing certain things because I want to help my baby.					
24. I grasp my baby's foot through my tummy to move it around.					

MFAS ADDENDUM

Please respond to the following items about yourself and the baby you are expecting. There are no right or wrong answers. Your first impression is usually the best reflection of your feelings.

Make sure you mark only one answer per sentence.

I think or do the following:	Definitely Yes	Yes	Uncertain	No	Definitely No
25. I want this baby.	____	____	____	____	____
26. I am sorry I became pregnant.	____	____	____	____	____
27. This pregnancy interferes with my relationship with my mate.	____	____	____	____	____
28. This pregnancy is unplanned.	____	____	____	____	____
29. My family supports this pregnancy.	____	____	____	____	____
30. My mate does not want this pregnancy.	____	____	____	____	____
31. My family will help in the caregiving of this baby.	____	____	____	____	____
32. I feel the baby is my own.	____	____	____	____	____

Appendix C-Child Abuse Potential Inventory (Sample)

CAP INVENTORY FORM VI

Joel S. Milner, Ph.D

Name: Date: ID#:
Age: Gender: Marital Status:
Race: Number of Children in Home:
Highest Grade Completed:

INSTRUCTIONS: The following questionnaire includes a series of statements which may be applied to yourself. Read each of the statements and determine if you AGREE or DISAGREE with the statement. If you agree with a statement, circle A for agree. If you disagree with a statement, circle DA for disagree. Be honest when giving your answers. Remember to read each statement; it is important not to skip any statement.

*SAMPLE:

I often feel rejected. . . . . .A DA

I never feel sorry for others . . . . . .A DA

I am often lonely inside . . . . . .A DA

People expect too much from me. . . . . .A DA

*These sample items were printed with permission from the author obtained through personal communication with Dr. Milner on 3/13/03.

Appendix D-Nurse/Caseworker Study Procedures

NURSE/CASEWORKER STUDY PROCEDURES

STEP #1: Read "nurse/caseworker" script to client (See attached).

STEP #2: Give or read client "informed consent" (Included in client packet envelope). Make sure "informed consent" is signed.

STEP #3: Place the client's signed "informed consent" in the manila envelopelabeled "informed consent." This envelope will hold up to 10 signed "informed consents." When you have collected 8-10 signed "informed consents", seal envelope and place in interdepartmental mail to ensure that envelope is returned to Joan Stainthorpe at the Department of Public Health/Maternal Health Section in San Bernardino.

STEP #4: Give or read client the 3 surveys included in the client packet envelope (General Survey, Maternal Fetal Attachment Scale, and Child Abuse Potential Inventory). Please write "read" at the top of each survey if you have to read it to client.

STEP #5: After the surveys are completed, please give client the debriefing form for her to keep (Included in client packet envelope).

STEP #6: Place the 3 completed surveys in the client packet envelope. Please make sure there is only one client packet of three surveys placed in each envelope.

STEP #7: **Write the client name next to a number on the Nurse/Caseworker Record Sheet (See attached).

STEP #8: On the client envelope in the return address section, please write your first initial and complete last name along with the number given to your client on the Nurse/Caseworker Record Sheet (See attached).

STEP #9: For nurses involved in the Early Steps program, please give client packet/envelope to your HSA to copy the MFAS (Maternal Fetal Attachment Scale) and the CAPI (Child Abuse Potential Inventory). The originals belong to Early Steps and the copies are to be placed back into the client packet envelope.

STEP #10: Seal client packet envelope (with 3 completed surveys inside).

STEP #11: Please place envelope in interdepartmental mail to ensure that envelope is returned to Joan Stainthorpe at the Department of Public Health/Maternal Health Section in San Bernardino.

**Confidentiality will be maintained by nurse/caseworker. Researcher will not be aware of the client's name associated with the number. When the researcher draws the three winning client numbers, the corresponding nurse/caseworker will be notified. The certificates will then be given to the nurse/caseworker who will present the certificate(s) to their client(s).

At the end of this study, an in-service will be scheduled in order to present the results of the study and provide an appreciation meal to thank those of you who assisted.

If you run out of materials or have any questions about the procedure or study please call Trisha Barcley (909) 944-9740 or Kiti Freier, Ph. D. (909) 558-8725.

Thank you for all of your help with this very important study.

Appendix E-Nurse/Caseworker Script

NURSE/CASEWORKER SCRIPT

"This is a study being conducted in collaboration between the Department of Public Health's Maternal Health Program and Loma Linda University. The purpose is to learn about the bond that develops between a mother and her unborn baby in the hopes that the information that you provide will help pregnant women in the future. Participation involves completing three surveys, placing them in a sealed envelope, and handing them back to your nurse who will then forward it to the researcher. Your nurse will record your name next to a number on a list that she will keep while the investigation is ongoing however your name will be separate from your completed surveys. You will not be asked to write your name at any place on the surveys. No one will know your answers. Participation is entirely voluntary. Please know that you can change your mind and stop at any time. You will be asked to read and sign a consent form before beginning. Your signature on these documents will not be connected to or associated with your completed surveys. These forms will be collected and stored in a separate place from your completed surveys. There is no reimbursement for your involvement however participants will be eligible to win one of three $50 gift certificates at Toys R Us. At the end of the study the researcher will draw three numbers and notify the nurses of the results. The researcher will send the gift certificates to the nurses who have names corresponding to the three winning numbers. This will enable the researcher to remain in the dark as to the identities of the study's participants."

Appendix F-Informed Consent

LOMA LINDA UNIVERSITY

Graduate School
Department of Psychology

11130 Anderson Street
Loma Linda, California 92350
(909) 558-8577
FAX: (909) 558-0171

AND

ARROWHEAD REGIONAL MEDICAL CENTER

Attachment to Unborn Baby among Pregnant Substance Users

Participant's Informed Consent

Dear Participant:

This form is called an "informed consent form." Its purpose is to inform you about this research project involving pregnant women. Before deciding to give your consent to participate please read through the following information carefully and ask any questions you may have.

Purpose of this Study

The purpose of this study is to collect information concerning the relationship between pregnancy and some of the present/past experiences in your life. You were selected to participate due to your current pregnancy along with your involvement in the Maternal Health Program at the Department of Public Health in San Bernardino County.

Procedure

Participation will take about one hour of your time. We are asking you to fill out three surveys. You will be questioned about your feelings and attitudes concerning your unborn baby, your past and present drug/alcohol use, as well as some past experiences in your life.

Risks

Participation in this study places you at minimal risks of emotional or psychological stress. These risks potentially stem from the disclosing of relatively personal information. There may be times while filling out some of the surveys that you feel uncomfortable while remembering unpleasant events that have occurred recently, such as questions about your personal use of drugs, alcohol, or illegal substances, or in your childhood, such as recalling whether or not you have ever been sexually or physically abused. If you begin to feel uncomfortable you have the right to stop at any time during the process if you choose.

Please Initial: _____ **& Date:** _____

Benefits
Although there is no direct benefit to you for participating in this study, you will be providing us with valuable information that may be beneficial to the understanding of the relationship between life events and the bonds that develop between mothers and their babies.

Participant's Rights
This study is voluntary and you are free to withdraw at any time. Your decision to refrain from taking part in this project will in no way jeopardize any current or future medical care you are receiving.

Confidentiality
Confidentiality will be maintained at all times. Your name will not be linked to the surveys in any way. All of the surveys will be number coded. The answers you provide will be combined with other participant's answers in order to conduct a group analysis.

Costs/Reimbursement
There are no costs for taking part in this study nor will you be compensated or reimbursed for participation. However, a drawing will be conducted after the study for gift certificates from Toys R Us (in the amount of $50) to be distributed to each of the three winning participants.

Impartial Third Party Contact
If you wish to contact an impartial third party not associated with this study regarding any concerns you may have about this study, you may contact Dr. Andrew Lowe at Arrowhead Regional Medical Center; 400 North Pepper Ave; Colton, CA 92324 at (909) 580-6318, or the Office of Patient Relations; Loma Linda University Medical Center; Loma Linda, CA 92354 at (909) 558-4647 for information and assistance.

Informed Consent
Please sign below if you agree to participate in this study. By completing these questionnaires you are not waiving your rights nor have you released the investigators or the institution from their responsibilities. If you have any questions or concerns directly related to this study you may contact Kiti Freier, Ph.D. during routine office hours at the Department of Psychology at Loma Linda University, (909) 558-8577.

Thank you for your time and consideration,

Kiti Freier, Ph. D.
Pediatric Psychologist
Loma Linda University, Psychology Department

Trisha P. Barcley, Graduate Psychology Student
Loma Linda University, Psychology Department

By signing below, I voluntarily consent to participate in this study. I am also aware that even after signing below, I may still withdraw my consent and discontinue participating at any time without prejudice.

Signature: _____ **Date:** _____

Appendix G-Nurse/Caseworker Record Sheet

NURSE/CASEWORKER RECORD SHEET

LOMA LINDA UNIVERSITY
&
DEPARTMENT OF PUBLIC HEALTH
MATERNAL HEALTH SECTION

Attachment to Unborn Baby among Pregnant Substance Users

Please record the names of all clients who returned completed survey packets. Place their corresponding number, along with your name on the outside of the envelope that contains the client's completed packet of surveys. At the end of the study, three winning client numbers will be drawn.

Thank you for your time and consideration,

Kiti Freier, Ph. D.
Pediatric Psychologist
LLU Early Steps Clinical Director
Loma Linda University, Psychology Department

Trisha P. Barcley, Graduate Psychology Student
Loma Linda University, Psychology Department

1._____ 11._____

2._____ 12._____

3._____ 13._____

4._____ 14._____

5._____ 15._____

6._____ 16._____

7._____ 17._____

8._____ 18._____

9._____ 19._____

10._____ 20._____

Appendix H-Debriefing Form

Debriefing Statement

Thank you for completing the questionnaires on pregnancy, attachment, and substance use. The purpose of this study was to investigate whether or not there exists a relationship between a mother's history and her ability to form an attachment with her baby.

We anticipate that the results of this study will be available after December 30th, 2002. Please call us after this date if you would like a copy of the results. We also have provided you with a list of health care agencies (see attached) for you to contact if some of the survey questions brought about unpleasant or uncomfortable thoughts and feelings and you wish to speak to someone. In addition, if you have any questions or concerns about your participation in this study, please contact my supervisor, Kiti Freier, Ph.D. at (909) 558-8725 or call (909) 558-4647 for an impartial third party not associated with this study (Office of Patient Relations; Loma Linda University Medical Center; Loma Linda, CA 92354).

Thank you again for your participation.

Sincerely,

_____

Trisha Barcley: Project Investigator

_____

Dr. Freier: Project Supervisor

MENTAL HEALTH CARE PROVIDERS:

Center for Healing Childhood Trauma in San Bernardino
(909) 384-9272

Department of Behavior Health in San Bernardino County
(909) 381-2404 (San Bernardino); (909) 854-3420 (Fontana)

Loma Linda University Behavior Medicine Center
(800) 752-5999

Psychiatric Medical Group in Loma Linda
(909) 799-6080 or 799-6082 (X 66080)

Psychological Services Clinic in Loma Linda
(909) 558-8576

Appendix I- Letter of Permission from Research Site

DEPARTMENT OF PUBLIC HEALTH

MATERNAL HEALTH PROGRAM
505 North Arrowhead Avenue, Third Floor • San Bernardino, CA 92415-0028

COUNTY OF SAN BERNARDINO
HUMAN SERVICES SYSTEM

THOMAS J. PRENDERGAST, JR., MD, MPH
Director of Public Health

June 29, 2001

Dr. Kiti Freier, Chair
Department of Psychology
Graduate School
Loma Linda University
Loma Linda, CA 92350

RE: Thesis on Fetal Attachment : Dr. K. Freier
Letter of Agreement with student Trisha Barcley

Dear Dr. Freier:

This letter serves to verify that the Department of Public Health, Maternal Health Section, will be providing referrals of research subjects to Trisha Barcley for her thesis upon approval of San Bernardino County's IRB. The project will provide valuable information for the provision of services to consumers involved in our program.

As a member of Ms. Barcley's thesis committee, I am looking forward to the opportunity to participate in the process. I am confident that she will do an exemplary job in completing her research.

Sincerely,

Vanessa Long

Vanessa Long, R.N., M.S.N.
Program Manager
Maternal Health Section

VL:jms