Gender Differences in Parental Reactions to the Birth of a Premature Low Birth Weight Infant

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Abstract: None available.

Full Text: Headnote ABSTRACT: The present study assessed differences in stress responses of mothers and fathers of premature low birth weight infants. The sample consisted of 45 parents, 32 mothers and 13 fathers whose infants ranged in age from six to forty-eight months. At birth, these children's length of gestation ranged from 23-37 weeks, and they weighed between 351-2817 grams. Results indicated that mothers experience more stress symptoms six months after the birth of their premature children than do fathers. Furthermore, mothers' intrusive stress experiences outnumber fathers' when their premature infants reach six months of age. These findings highlight the differential experience of mothers and fathers when their child is born prematurely. The impact of sample size on our findings is also discussed, as are implications for future research. KEY WORDS: Premature, low birth weight, stress, and parental reactions. INTRODUCTION Premature infant outcomes have been studied since the early twentieth century (Brander, 1936; Brander, 1937; Rudder 1937). However, studies whose chief concern were parental reactions to such births have only appeared in the literature since the 1960's (Caplan, 1960; Kaplan &Mason, 1960; Kaplan, 1965). Although advances in neonatal technology have increased infant survival rates, the experience of having a premature birth nevertheless has a significant impact on the parents of these infants (Affleck, Tennen, &Rowe, 1990; DeMier, Hynan, Harris, &Manniello, 1996). The sources of stress accompanying the birth of a high-risk infant include the appearance of the infant, separation from infant, infant outcome uncertainty, and the sights, sounds, and rules of the neonatal intensive care unit (NICU) environment (Gennaro, 1995; Hughes &McCollum, 1994; Hughes, McCollum, Sheftel, &Sanchez, 1994; Miles, 1989; Miles, Funk, &Kasper, 1992). Studies looking at the emotional responses of parents to these and other stressors often focus on the mother; however, studies including fathers' reaction have begun to appear. Maternal Emotional Responses to a High-risk Childbirth Kaplan and Mason (1965) were among the first researchers to acknowledge the maternal stress response to the birth of a premature infant, and who concluded that, in contrast to an emphasis on "stress-prone personalities", the stress of a premature birth may result in an acute emotional disorder resulting, in part, from the premature birth itself and one's attempt to cope with and master the situation (Kaplan, 1965; Kaplan &Mason, 1960). For example, a term mother's delivery experience is one that fosters the belief that she will deliver a normal baby. In contrast, a premature mother's labor experience can be likened to an emergency (Kaplan &Mason, 1960) where the reactions of the hospital staff confirm that this pre-term delivery is dangerous for her infant. Post delivery, the preterm mother worries about her infant's chances of survival and the possibility of abnormal developments. Where the term mother is encouraged to hold and feed her baby after birth, the preterm mother's infant is rapidly taken away and she is left with a feeling of helplessness. Feelings of guilt and disappointment are reinforced when the preterm mother leaves her infant at the NICU and goes home empty-handed. In contrast, the term mother is able to care for her infant at home and continue to develop a relationship with the baby despite the possible presence of post-labor anxiety. Numerous studies since have documented the increased stress experienced by mothers of preterm low birth weight infants (Affleck, Tennen, &Rowe, 1991; Blumberg, 1980; Brooten, et al., 1988; Choi, 1973; Gennaro, 1988; Gennaro, Brooten, Roncoli, &Kumar, 1993; Gennaro, &Stringer, 1991; Gennaro, York, &Brooten, 1990; Kaplan &Mason, 1960; Miles, 1989; Patteson &Barnard, 1990; Pederson, Bento, Chance, Evans, &Fox, 1987; Younger, Kendall, &Pickler, 1997). Depression in these mothers has also been documented (Brooten, et al., 1988; Choi, 1973; Gennaro, 1988; Gennaro, et al., 1993; Gennaro, et al., 1990; Kaplan &Mason, 1960; Younger, et al., 1997). However, conclusions regarding the amount of time the

maternal figure remains depressed, anxious, and under high levels of stress are difficult to reach, as many of these studies cease to observe the mothers just weeks after their infant has been discharged from the NICU. Some studies indicate that depression and anxiety in high-risk and term mothers are not significantly different a few months after the mothers have taken their infants home from the hospital (Crnic, Greenberg, Ragozin, Robinson, &Basham, 1983; Gennaro, 1988). Such inconsistencies are not uncommon, and are, in part, due to participant inclusion criteria and the length of time chosen to study mothers' responses to having a premature child. Many studies include infants who are at less risk, i.e. they do not have any complications other than being born low birth weight and preterm, and are born at a lower risk gestational period (27-32 weeks). Nevertheless, these mothers of preterm, low birth weight infants do have increased levels of depression and anxiety at birth and at discharge, and in some instances, levels remain high months after (Jeffocate, Humphrey, &Lloyd, 1979). From this it is reasonable to assume that mothers of higher risk infants experience levels just as high or higher than mothers of heavier, older infants due to increased care giving needs and increased uncertainly of outcome (Odom &Chandler, 1990). Furthermore, studies indicate that these mothers may experience symptoms of posttraumatic stress disorder (PTSD) resulting from the birth of their premature low birth weight infant (Affleck, Tennen, Rowe, &Higgins, 1989; Affleck, et al., 1991; DeMier, et al., 1996). That these mothers experience PTSD is consistent with the inclusion criteria of the disorder in that their premature children are at risk of not surviving or developing serious lifelong medical complications. Consistent with the appearance of PSTD symptoms, many mothers also experience intrusive painful memories of their NICU experiences, wherein Affleck, et al. (1989) reported that all mothers in their study experienced involuntary recollections at six months post discharge. Mothers who had higher risk infants had more painful memories of their NICU experience, and many indicated that experiencing the memories was worse than the distress they remembered during the NICU stay itself. These memories greatly inhibited their ability to care for their child post-discharge. These mothers also reportedly felt less attached to their babies and had more difficulties with the staff. At an eighteen month follow-up, Affleck, et al. (1991) reported that although the percentage of mothers having only painful memories dropped from 20% to 13%, the percentage of mothers having only pleasurable memories dropped from 18% to 12%. This may indicate that those mothers who were having negative recollections were beginning to also experience positive ones, whereas those mothers who allowed themselves only pleasurable memories, were now experiencing involuntary negative ones. Interestingly, the content of the memories at eighteen months had become more graphic; the NICU appearance and the equipment used to assist the baby were remembered significantly more often. Measures of the emotional significance of these memories indicate that as time goes on, the negative impact of the memories increased slightly. The Affleck et al. studies (1989, 1991) also indicate that intrusive reexperiencing is significantly correlated with attempts to avoid stressful events that may evoke more reexperiencing. Moreover, Kaplan and Mason (1960) report that many mothers interviewed avoided visiting their infant in the premature nursery, a stay that often reached one and a half months or more. Additionally, mothers of premature low birth weight infants report a heightened state of arousal after the birth of their high-risk infant (Brooten, et al., 1988, Harrison, 1983; Hynan, 1987). This increased arousal state, specifically an increase in irritability and displays of anger, have been hypothesized to contribute to the increased risk of child abuse and neglect of these infants (Jeffocoate, et al., 1979; Siefert, Thompson, Ten Bensel, &Hunt, 1983). Others report that mothers of high-risk infants often had difficulty sleeping (Choi, 1973; Kaplan, 1965). DeMier et al. (1996) are the only researchers to date whom have directly studied the relationship between high-risk birth and the development of maternal PTSD symptoms. Mothers of premature infants hospitalized in the NICU, and healthy term infants were asked to retrospectively answer questions regarding the birth of their child. Results indicated that mothers of preterm and hospitalized term infants did not differ significantly in the number of PTSD symptoms reported. However, both groups endorsed significantly more PTSD symptoms than mothers of healthy term infants. Severity of infant complications, age of gestation, and length of stay in the NICU were each correlated with symptoms of posttraumatic stress. This study supports the

literature indicating that the negative emotional responses mothers have after the birth of a high-risk infant do not dissipate within the first few weeks or months post-discharge (Jeffocate, et al., 1979). Emotional Responses of Fathers to Their High-risk Infant The literature assessing fathers' emotional reactions to the birth of a preterm, low-birth weight infant is limited. Some studies that do assess such reactions fail to separate differing responses, such as depression, anxiety, etc., but put such reactions into a category of negative emotions. Affleck, et al.'s study (1991) found that fathers react less negatively to the premature birth and hospitalization of their low birth weight infant when compared to mothers. This is consistent with the findings of other studies (Hughes &McCollum, 1994; Jeffcoate, et al., 1979; Miles et al., 1992). Fathers also saw their infant as being less irritable and reported being less concerned about health outcomes of the infant than mothers. Affleck and colleagues report that emotional disturbance differences between mother and father continued until their final interview at 18 months post-birth. However, the fathers' and mothers' somatization scores, while not significantly different, suggested that fathers might express their distress through physical complaints versus overt negative emotional expression. Affleck et al. infer that fathers may be more reserved in reporting negative responses, or make more attempts to minimize the overt responses to the situation than their partners, thus they appear to perceive the crisis more favorably. Jeffcoate et al. (1979) found that preterm fathers reported significantly more negative emotions in response to the birth than term fathers did (e.g., sadness, depression, disgust, disbelief, horror, shame, guilt, anger, fear, anxiety, helplessness, and inadequacy). Preterm fathers specifically also reported being more anxious during labor and delivery than term fathers. Additionally, more preterm fathers remembered feeling depressed and sad after the birth of their infant than did term fathers. Many fathers of high-risk infants indicated that increased anxiety and decreased ability to concentrate rendered work difficult. Preterm fathers also reported participating in much more of the infant care-taking responsibility than they anticipated; some indicated that at times they took complete care of the infant, household responsibilities, and worked full-time when the mother was unable to do so. The finding that fathers found themselves attempting to maintain some sense of stability within the family is consistent with that of other studies (Benfeild, et al., 1976). Marital Satisfaction Little research has looked at how the preterm birth of a low birth weight infant affects the relationship of married parents, and in turn how the level of marital satisfaction affects the amount of stress and anxiety experienced by each parent. Although Leifer et al. (1972) concluded that married parents of high-risk infants are at an increased risk for divorce, Affleck, Tennen, and Rowe (1991) report that the majority of the couples in their studies concluded that their marriage had been at least moderately improved as a result of the crisis surrounding the birth of their premature infant. However, it is important to keep in mind that parents in Affleck et al's study were interviewed 18-months after the birth of their child. As noted previously, the risk of developing disabilities to be detected later in the child's life is increased over the risk of healthy term infants. Trause and Kramer (1983) found the preterm parents in their study to report that they became increasingly sensitive to each other's needs as time went on in comparison to term couples. Additionally, at 26 months post birth, all of the parents remained living together; however, no measures of marital satisfaction were taken at this time, and this study may contain a bias as only low-risk preterm infants were included. Overall these studies indicate that married parents of preterm, low birth weight infants come together in this time of crisis, support each other, and strengthen their marriage as a result (Affleck, Tennen, &Rowe, 1991; Trause &Kramer, 1993). Social Support Many parents seek support from others in this time of crisis. Support is sought from many sources including spouses, medical staff, clergy, friends, and family. Zarling, Hirsh, and Landry (1988) report that this crisis may render parents usually sources of support unavailable. Generally, studies assessing the correlations of social support and outcome among mothers and preterm infants have shown that the greater social support mothers receive, the more positive the maternal and infant outcomes are (Affleck, Tennen, &Rowe, 1991; Crinc, Greenbery, &Slough, 1986; Crnic et al, 1983; Younger, Kendall, &Pickler, 1997). Social support can provide its seekers with many benefits including intimacy, advice, information, and behaviorally overt acts of kindness (Affleck, Tennen, &Rowe, 1991). Such elements can restore parents' faith in the world by

letting them know that good things can happen and that people do care for them in their time of need. Affleck, Tennen, and Rowe (1991) report that it is mothers' satisfaction with the social support they received, not the amount of support, that predicted outcome. Mothers generally reported receiving the most beneficial social support from their husbands and the NICU nursing staff. Additionally, the most helpful support included communications of care and concern, reassurances that they are handling the crisis, and tangible aid, such as caring for older siblings when the parents were at the hospital. Overall, the mothers who were more satisfied with their social support were adjusting better at six and eighteen months postbirth. Likewise, those mothers who were less satisfied with the support they received, were adjusting less well and were also less responsive to their infant at six months. Interestingly, mothers who reported being in the greatest need for support in relation to other mothers, and who were satisfied with their support, were no more ill adjusted than mothers who indicated they needed less support from others. Affleck et al., (1991) is the only study reviewed that considered fathers' perceptions of social support. They concluded that fathers generally received less overall support than the mother, but that this difference did not bother them. Additionally, fathers were generally more satisfied than mothers with the support given while their infant was hospitalized, and fathers' mood upon discharge did not correlate with social support satisfaction. Conclusions: Parental Responses to Premature Birth The studies reviewed here indicate that mothers and fathers of premature low birth weight infants may experience greater degrees of stress than term parents and that such stress may result in PTSD symptomology. They also suggest that such stress can be reduced via the prevision of social support. Studies assessing stress and anxiety in these parents have led to various interventions such as education about the benefits of journal writing and the implementation of support groups. Further study of the stress experienced by this population can nevertheless benefit both parent and child, important in that some work suggests that this distress correlated with the high divorce rate of these parents (Leifer, Leiderman, Barnett, &Williams, 1972). Perhaps further study will indicate the need for interventions to reduce clinically significant levels of stress in such persons. Information elicited from such studies may also shed light on the successful mental health treatment for such parents. This study's aim was to assess stress-related symptoms in both mothers and fathers of children being born prematurely and with low birth weight using a current assessment of PTSD symptomology. As this is not a longitudinal study, it proposes to assess parents of differently aged children to provide information regarding the duration of PTSD symptoms. Originally, a four-group design, comparing symptoms of post-traumatic stress disorder in parents of low birth weight, premature infants was proposed. This original design defined four groups of parents according to child age: (a) parents of children age 1 month-3 years, (b) parents of children age 3 years, 1 day-6 years, (c) parents of children age 6 years, 1 day-9 years, (d) parents of children age 9 years, 1 day-12 years. It was believed that this would be the first study to compare current parental PTSD symptoms of premature children through age twelve. However, as explained in the following sections, such groups were unable to be formed due to the limitations in participant recruitment via the NICU's we worked with. A second aim here was to identify variables that may influence the development of stress symptoms among parents of premature birth children. In this light, it was hypothesized that (a) severity of infant complications, gestational age, length of infant NICU stay, and birth weight would account for a significant percentage of the variance in the number of parental PTSD symptoms, (b) level of satisfaction with social support, and social economic status would also account for a significant percentage of variance in such symptoms, but to a lesser degree than infant characteristics, and (c) mothers and fathers will report significantly different numbers of symptoms. METHOD Sample and Procedure In this study, we examined the differences between mothers and fathers of premature infants on measures of stress related to the experiences of premature birth. Due to limitations associated with the data gathered from the NICU's at the two hospitals we worked with, only parents with children whose ages ranged from six to forty-eight months were able to be solicited to volunteer for the study. Subsequently, mothers and fathers of premature, low birth-weight children born between 1987 and 1999 whose names were be obtained from a data base provided by the neonatal NICU's of two major hospitals in the Dallas-Ft. Worth metroplex were contacted

by mail to determine their interest in participating in this study. Interested parents were asked to return a postage paid postcard and were subsequently mailed questionnaires. Mothers were at least 16 years of age when they gave birth, and mothers and fathers both spoke English. Children born with congenital abnormalities unrelated to their premature low birth weight status were excluded from the study. To promote self-disclosure and ensure anonymity, mothers and fathers residing together were provided separate envelopes in which to seal and return their responses. Invitations to participate in the study were sent to approximately 716 families. Of these, 93 were returned due to insufficient addresses or because the families had moved. Fifty-four mothers and 32 fathers returned the postcard indicating they were interested in participating. However, only 32 mothers and 13 fathers returned questionnaires despite two reminder phone calls made by the lead researcher. The resulting sample consists of 45 parents, 32 mothers and 13 fathers who birthed their premature children at two hospitals in northcentral Texas. Mothers ranged in age from 23 to 45 years (M = 32.62, SD = 5.25), fathers 26-49 years (M = 35.54, SD = 7.38). The education of mothers ranged from 7 to 21 years (M= 15.32, SD = 2.91), fathers 11 to 19 years (M= 14.92, SD = 2.6). Eighty-four percent of the mothers were married to the father of the premature child, 9% were divorced, separated or widowed, and 6% were never married. All of the fathers were currently married to the mother of the child. Ethnicity was reported as 9% and 1% African-American, 3% and O Hispanic, and 88% and 99% white for mothers and fathers, respectively. Half of the families had children other than the premature child in question; 18% of these were also born prematurely of which 15% had experienced significant medical health problems after their births. Infant data was only available for 25 infants because medical files were unable to be located for the remaining seven. While five of the families had premature twins, only data from the first-born child was used in the analyses. At the time of data collection, the children included in our study ranged in age from six to 43 months (M = 20.33, SD = 7.97). The infants' birth characteristics were: Length of gestation ranged from 23-37 weeks (M=28.40, SD = 5.03), weight from 351-2817 grams (M = 1301.75, SD = 928.44), and hospital stay 2-160 days (M = 78.20, SD = 57.60). Measures Demographic Information. Information was first obtained about the 1) age of parents, 2) age and number of children, 3) occupation of mother and father, 4) income of mother and father, 5) ethnicity of mother and father, 6) level of education of mother and father, 7) marital status of both parents, 8) whether or not the volunteers had other children, 9) if so, if these children where also born prematurely and if they experienced any medical complications, 10) whether or not the mother or father sought professional counseling since the birth of the child and for how long, and 11) if so, whether or not they perceived counseling as helpful. Posttraumatic Stress Disorder Symptomology. Participants completed the Impact of Event Scale (Horowitz, Wilner, &Alvarez, 1979). This 15 item, self-report questionnaire rates the occurrence frequency of experiences during the past week on a 4-point scale differentiating experiences with regard to avoidance and intrusion. This measure assessed participants' PTSD symptoms. Participants also completed the Perinatal Stress Survey which consists of two questionnaires: the Perinatal PTSD Questionnaire and the Postnatal Complications Rating (DeMier et al., 1996). This tool was utilized in the sole published study assessing PTSD symptomology in mothers of premature low birth weight infants (DeMeir et al., 1996). The Perinatal PTSD Questionnaire is a 14-item tool developed to measure symptoms related to PTSD resulting from the birth of a child and to indicate the magnitude of stress relating to childbirth (Hynan, 1991). The questions assess three aspects of the disorder 1) flashbacks, 2) avoidance or numbing response, 3) arousal and hypervigilance, through the respondent's yes or no answers to items. This questionnaire has been shown to correlate positively with measures of neonatal risk (Hynan, 1991), and possesses both internal consistency (coefficient alpha = .83) and test retest reliability r(67) = .92; p <.01 (DeMier et al., 1996). Social Support. The Social Support Questionnaire (SSQ) was utilized to measure social support (Sarason, Levine, Basham, &Sarason, 1983). The SSQ is a self report questionnaire that measures two dimensions of social support 1) the number of social supports the participant believes to have and 2) the degree to which the participant is satisfied with such support. The SSQ has high internal consistency for both the number and support components (coefficient alpha=.97 and .94 respectively). A factor

analysis of the number and support scores revealed that they are indeed separate constructs within the realm of social support. Test-retest correlations for the number component are .90 and .83 for the subjective component of the instrument (Sarason et al., 1983). Marital Satisfaction. When both parents of an infant volunteered for the study, they were asked to complete the Marital Adjustment Test (MAT) (Locke &Wallace, 1959). This 15 item, self-report questionnaire is one of the most widely used measures of marital satisfaction (O'Leary, 1987). The MAT has high reliability at .90 and differentiates maritally well-adjusted participants from maladjusted participants (Locke &Wallace, 1959). Infant Characteristics. Medical information was obtained through medical records. Such information included: gestational age, length of hospital stay, and birth weight. The Postnatal Complications Rating Scale (part of the Perinatal Stress Survey) clusters postnatal complications into eight categories in terms of their stressing effects on mothers (Hynan, 1991), where the constructs measured in this scale have been shown to account for 40% of the variance of infant risk related to maternal stress. RESULTS Parametric and nonparametric analyses were conducted. First, a repeated measures MANOVA (N = 30, 18 females, 12 males with complete data) of the three indicators of stress (scores on the Perinatal Stress Survey-Past, Perinatal Stress Survey-Present, and the Impact of Events Scale), yielded no significant differences across parent gender. However, this test had a low effect size (eta = .10) and low power (.24), probably due to the small sample size. Yet, univariate tests did indicate that mothers' past stress scores (M = 5.50) tended to exceed those of fathers (M=3.25) ($F(1,28)=3.01, p < .09$). Incorporating social support and dyadic satisfaction as dependent variables further eliminated 12 mothers and two fathers. Univariate tests in this case nonetheless indicated that differences in mothers' and fathers' scores on the Perinatal Stress Survey-Past approached significance ($F(1, 14) = 4.19$, $p = .06$), where again mothers' scores (M= 6.67, SD = 2.73) were greater than fathers' (M=3.60, SD = 3.0). Here, while power remained low (.27), the effect size was larger (eta = .37). A MANOVA also failed to detect a significant difference between mothers' and fathers' stress symptoms when crossed with gender of their infant, nor was the effect of infant gender statistically significant. Small cell sizes (<5) precluded a test of the interaction between parent gender and infant gender. Likewise, no significant differences were found between mothers' and fathers' avoidant or intrusive stress symptoms when crossed with infant gender. Given the small samples, a nonparametric test, the Wilcoxon matched-pairs signed ranks test, was subsequently used to analyze these data. This revealed a significant difference between mothers' and fathers' past stress symptoms as measured by the Perinatal Stress Survey-Past ($z = -2.27$, $p = .02$). Inspection of means indicated that mothers experienced more stress symptoms six months after the birth of their premature children (M = 5.75, SD = 3.42) than did fathers (M = 3.25, SD = 2.90). When the analysis of past stress indicators was broken down into intrusive and avoidant symptoms, the Wilcoxon test also indicated that there was a significant difference in the intrusive symptoms experienced by mothers and fathers ($z = -2.55$, $p = .01$). Inspection of means suggested that again, mothers experienced more intrusive stress symptoms six months after the birth of their baby (M = 4.08, SD = 2.31) than did fathers (M = 1.92, SD = 1.83). There were no significant differences in the magnitude of avoidance symptoms between mothers and fathers. DISCUSSION Despite the small sample size, the analysis did reveal some important findings. Both our parametric and nonparametric tests indicated that mothers reported experiencing more PTSD symptoms six months after the premature birth than did fathers. In this respect, the MANOVA only approached significance, while the Wilcoxon test showed a significant difference. Furthermore, the Wilcoxon test indicated that mothers specifically reported experiencing more intrusive PTSD symptoms than did fathers. The fact that mothers reported more stress symptoms six months after the birth is not only consistent with the above literature, but it also makes intuitive sense that the mother, as the parent who carried and gave birth to the infant would be more traumatized by the premature birth of her child. She is the one who physically experienced labor prior to when she was emotionally prepared to do so. Furthermore, she is the parent on whom the birth related interventions are performed (i.e., cesarean section). Intrusive symptoms may be more prominent because the opportunity or need to avoid a situation reminiscent of the birth may not present itself as often as unwanted and unsolicited reminders of the

experience are elicited. For example, situations that are usually avoided by premature parents include television programs about premature infants or visiting a new mother and baby in the hospital. Such opportunities are fairly rare in everyday life; therefore, it makes sense that intrusive memories occur more often than such avoidable situations. Furthermore, parents who have the tendency to engage in avoidant behavior probably are not the parents who volunteered for a study asking them questions on the topic they are prone to avoid. Given that mothers experience more stress symptoms than fathers six months after birth in general, it is not surprising that they experience more intrusive symptoms than fathers. These findings have important implications for medical staff interacting with parents of premature infants within the first six months or so of the birth. Pediatricians, obstetricians, gynecologists, family practitioners, and mental health professionals who have such parents as patients/clients need to pay special attention to the emotional health of these parents, especially mothers. Although we recognize that our sample of fathers is small in size, our results indicate that mothers may especially experience symptoms of PTSD related to the premature birth of their child. These symptoms, if left untreated, have the potential to develop into serious mental health conditions. These medical professionals should be educated about the symptoms of PTSD and other comorbid disorders such as depression so they can easily identify them in these parents. It is especially important that such symptoms not be dismissed as minor postpartum blues. Possible Explanations for our Small Sample Size Unfortunately, small sample sizes precluded us from running the analyses that were initially planned, and ultimately, our limited sample may also be the reason why few significant results were found. Our low response rate begs the question, what prevented families for volunteering for our study? These reasons could be one or more of many. First, anecdotal accounts indicate that parents of premature children are very busy. These parents often have more medical appointments (pediatricians, ophthalmologists, speech pathologists, early development classes, physical therapists), and more complex daily routines than families of term infants, thus, they may not have believed they had the time to return our postcard and later fill out our questionnaires. Second, again anecdotal accounts suggest that these parents may have less trust in medical professionals than parents of term infants due to their often confusing and painful NICU experiences post-birth. Therefore, they may have been more hesitant to make themselves vulnerable and share their personal emotions and experiences with another medical professional whom they had never met. Third, the questionnaires themselves may not have contained the inquiries parents expected, perhaps explaining the low return rate of questionnaires among parents who initially returned volunteer postcards. One mother father couple who did return their questionnaire, but also included a letter sharing their disappointment with our questions supports this hypothesis. What follows is an excerpt of their letter: I was under the impression that the questionnaires would contain questions that would actually ask for information relating to the experiences from the NICU period ... Examples of what you could have asked are: What do you think about the NICU closing for an undisclosed amount of time to all parents during certain treatments to an individual infant? ... Do you think health care professionals can make the parents' situation less stressful by informing the parents on what is going on with their baby? ... Do you think it's less stressful when a health care professional or team of professionals is assigned to your baby? This couple then provided their answers to some of the questions they posed. For example, in response to their first question, they said: My answer to this question would be that this is very inconsiderate and frustrating for parents who have limited time to see their baby and perhaps have traveled a distance to be with their infant. There is no warning when they are going to do this. To the second question they replied: My answer would be that it is very traumatic to visit your baby and see that baby doing worse, has an I-V line in their head, is re-incubated, or perhaps not even able to find your baby because they have move(d) him. This letter provides evidence that some parents expected to be able to answer questions related directly to the NICU experience, which our questions did not address. Perhaps our questions were not face valid enough for parents to readily see the link between studying their emotional stress reactions, social support received, and marital satisfaction and how this information could help professionals better serve their needs. Finally, the low return rate might be explained by parents' fear of reliving the birth of

their infant as a result of completing our questionnaires. The act of doing so runs the risk of making salient traumatic and painful memories of their child's birth and following complications. This fear may not only explain the reason why parents chose not to return the postcards, but also why they did not return the questionnaires after initially volunteering. In our consent form, we made clear that such memories were the largest risk to participating in the study. In fact, two mothers called the lead researcher after completing the questionnaires to inquire about counseling referrals. Although a referral sheet was included in the packet, these mothers asked if any services were available located closer to their homes. Although these mothers did complete the forms, their inquires suggest that other parents also may be concerned about how they are currently coping and perhaps participating in this study would be too emotionally difficult for them at the present time. Less than half of the fathers than mothers returned questionnaire packets. This discrepancy in mothers' and fathers' participation rates may have occurred for a variety of reasons. First, our initial requests for volunteers were sent out to the parent(s) names provided by the hospitals. The hospitals' databases did not indicate whether the parents were married or single, thus, we could not access such this information until the interested parent(s) returned the postcard. Of the single parents who replied to our request, all were mothers. It is likely that the women of divorced or unmarried couples had custody of their child, and thus they were the ones who received our postcard and subsequently replied. However, 85% of the women who volunteered were married, and only 13% of their spouses also volunteered. A reason for this finding may be that the mothers are the primary caretakers of the children; thus, when a request for volunteers came in the mail relating to their childbirth experience, the couple may have assumed the mother was the more appropriate person to volunteer. Alternatively, our results indicate that mothers were more negatively affected by the premature birth of the child, and as such, mothers may have been more inclined to see the merit in our study and volunteer as a result. In these cases perhaps fathers were simply too emotionally distant from the premature birth to see the value in this sort of study. Finally, fathers may have been too intensely affected by the premature birth, perhaps viewing it as a result of something they did, to respond. Our low sample size certainly questions the generalizability of our results, wherein it could be that the stress experienced by these parents is much greater than that reported in our study because those parents most affected are reluctant to participate in a study of this nature. Conversely, the parents who chose to participate may have been the most affected and looking for an opportunity to express heretofore privately held feelings about the birth of a high-risk child. Therefore, they were eager to share and process their experiences via the questionnaires they completed. Recommendations for Future Research The aspect of the data collection that seems to warrant the most consideration in further research is increasing sample sizes. To this end, researchers might make a number of changes; first, they might chose to conduct one-on-one interviews with volunteers to decrease the number of parents who initially volunteer, but later fail to return the questionnaires. second, increasing the face validity of the questionnaire packet to reflect the study's purpose might increase volunteer rate. To do so, researchers could include a questionnaire asking specific questions related to the NICU stay itself and interactions with the NICU staff. Furthermore, an open-ended section might be included which would invite participants to write about aspects of their experiences they believe are important. Third, researchers might choose to conduct a prospective longitudinal study that would make contact with parents shortly after the birth of their children, some of whom may be born prematurely. This would allow for a direct longitudinal prospective comparison of parents whose children were born full-term versus those born prematurely. Consent for the study could be given at that time and parents would then be asked the appropriate questions at various points during a set amount of years. Although this would require considerably more resources, it would not only increase the quality of information, but it may increase the likelihood that parents would follow-through because they had early contact with the researchers and could develop a trusting relationship with them. In addition to increasing the sample size, other alterations could be made to increase the quality of the data so gathered. More exhaustive attempts could be made to gain the cooperation of NICU's to increase the potential volunteer pool. Furthermore, increased efforts to contact NICU's whose databases

contain older premature children would enable a study to compare stress symptoms of parents of differently aged children. This study contacted all NICU's in the Dallas-Fort Worth area as well as two in Wisconsin. However, a study that did a more exhaustive national outreach could yield more promising results. Once the quantity and quality of the results of a study similar to the present one are improved, further steps are warranted, wherein it will be important for an attempt to be made to link parental stress symptoms to the concrete experiences of parents of premature infants. This research would inform medical professionals whether or not they should alter their practices early on in the premature birth situation that could decrease the risk of parents experiencing PTSD symptoms afterwards. In such a study, questions such as those proposed in the parents' letters mentioned above could be asked. References REFERENCES Affleck, G., Tennen, H., &Rowe, J. (1991). Infants in crisis: How parents cope with newborn intensive care and its aftermath. New York: Springer-Verlag New York Inc. Affleck, G., Tennen, H., Rowe, J., &Higgins, P. (1990). Mother's remembrances of newborn intensive care: A predictive study. Journal of Pédiatrie Psychology, 15, 67-81. Blumberg, N. L. (1980). Effects of neonatal risk, maternal attitude, and cognitive style on early postpartum adjustment. Journal of Abnormal Psychology, 89, 139-150. Brander, T. (1936). Contribution to the knowledge of the relationship between rachitis and inferior mental endowment. Finska Lakaresallskapets Handlingar, 79, 967-966. Brander, T. (1937). On the importance of premature birth in the etiology of certain cerebral affections, with special reference to severe and lesser degrees of exogenously conditional inferior mental endowment. Acta Psychiatrica et Neurologica KjoBenhavn, 12, 313-332. Brooten, D., Gennaro, S., Brown, L. P., Butts, P., Gibbons, A. L., Bakewell-Sachs, S., &Kumar, S. P. (1988). Anxiety, depression, and hostility in mothers of preterm infants. Nursing Research, 37, 213-216. Caplan, G. (1960). Patterns of parental response to the crisis of premature birth: A preliminary approach to modifying the mental health outcome. Psychiatry, 23, 365374. Choi, M. W. (1973). A comparison of maternal psychological reactions to premature and full-size newborns. Maternal-Child Nursing Journal, 2, 1-13. Crnic, K. A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M., &Basham, R. B. (1983). Effects of stress and social support on mothers and preterm and full-term infants. Child Development, 54, 209-217. DeMier, R. L., Hynan, M. T., Harris, H. B., &Manniello, R. L. (1996). Perinatal stressors as predictors of symptoms of posttraumatic stress in mothers of infants at high-risk. Journal of Perinatology, 16, 276-280. Gennaro, S. (1988). Postpartal anxiety and depression in mothers of term and preterm infants. Nursing Research, 37, 82-84. Gennaro, S. (1995). Preterm low-birthweight infants: Health and family outcome. Family Community Health, 17, 12-21. Gennaro, S., Brooten, D., Roncoli, M., &Kumar, S. P. (1993). Stress and health outcomes among mothers of low-birth-weight infants. Western Journal of Nursing Research, 15, 97-113. Gennaro, S., &Stringer, M. (1991). Stress and health in low birthweight infants: A longitudinal study. Nursing Research, 40, 308-311. Gennaro, S., York, R., &Brooten, D. (1990). Anxiety and depression in mothers of low birth weight and very low birth weight infants: Birth through five months. Issues in Comprehensive Pediatric Nursing, 13, 97-109. Harrison, H. (1983). The premature baby book. New York: St. Martin's Press. Horowitz, M., Wilner, N., &Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. Psychosomatic Medicine, 41, 209-218. Hughes, M., &McCollum, J. (1994). Neonatal intensive care: Mothers' and fathers' perceptions of what is stressful. Journal of Early Intervention, 18, 258-268. Hughes, M., McCollum, Sheftel, D., &Sanchez, G. (1994). How parents cope with the experience of neonatal intensive care. Children's Health Care, 23, 1-14. Hynan, M. T. (1991). The perinatal stress composite: A validation study. Bulletin of the Psychonomic Society, 29, 1-3. Hynan, M. T. (1991). The emotional reactions of parents to their premature baby. Preand Peri- Natal Psychology Journal, 6, 85-95. Hynan, M. T. (1987). The pain of premature parents: A psychological guide for coping. Lanham, MD: University Press of America. Jeffcoate, J. A., Humphrey, M. E., &Lloyd, J. K. (1979). Role perception and response to stress in fathers and mothers following pre-term delivery. Social Science &Medicine, 13, 139-145. Kaplan, D. M. (1965). Study and treatment of an acute emotional disorder. Journal of Orthopsychiatry, 35, 69-77. Kaplan, D. M, &Mason, E. A. (1960). Maternal reactions to preterm birth viewed as an acute emotional disorder. Journal of Orthopsychiatry, 30, 539-552.

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