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Mothers and fathers of VLBW infants:

Similarities and differences in the first year after birth

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## Abstract

Objective: To compare *the psychosocial adjustment (i.e., anxiety, parenting self-efficacy, received and perceived support), as well as the quality of interaction with their infant* of both mothers and fathers of very-low-birthweight infants at two points in time in the first year of their infant's life.

Design: Quantitative, longitudinal design.

Participants: 61 couples who had an infant born weighing less than 1500 grams.

Main outcome measures: State-Trait Anxiety Inventory, Parenting Sense of Competence questionnaire, and the Support in Parenting Questionnaire were completed at 3 and 9 months of age. Parent-infant interaction was observed at 9 months and scored with the Nursing Child Assessment Teaching Scale.

Results: Fathers' reported parenting self-efficacy was significantly lower than mothers' at both 3 and 9 months of age. Fathers reported more received support than mothers, and the amount of support that both mothers and fathers reported that they received increased significantly from the 3 to the 9-month assessment. Mothers and fathers reported similar levels of anxiety and perceived helpfulness of the support they received, and were equally sensitive and responsive in interactions with their infant at 9 months of age.

Conclusion: Similarities as well as differences between mothers and fathers were observed. It would be important for nurses to assess mothers and fathers, how any differences are perceived by the couple and how any differences might be affecting them.

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60 Keywords: Very-low-birthweight, mothers, fathers, anxiety, support, parenting self-efficacy,

61 parent-child interaction

62 Callouts

63 The vast majority of studies of parents of preterm, VLBW infants have studied only mothers.

64 (page 5)

65 Similarities as well as differences between mothers and fathers of VLBW infants were observed

66 in the first year after their infant's birth. (page 15)

67 The findings highlight the value of assessing both parents, and how any differences are perceived

68 by the couple and how these might be affecting them. (page 21)

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## Introduction

Children born very-low-birthweight (VLBW) weigh less than 1500 grams at their birth and are typically born prematurely, some as early as sixteen weeks before term. Approximately 60,000 children per year are born VLBW in the United States (Martin et al., 2006) and 3300 in Canada (Statistics Canada, 2006). Over the past twenty years, research has provided evidence that fathers make unique and important contributions to the well-being of their children beginning in infancy (2000). There is an ever-growing body of literature that examines the responses of mothers and fathers who have a child with a chronic or life-threatening illness. Yet in contrast, the vast majority of studies of parents of preterm, VLBW infants have studied only mothers. Previous studies comparing mothers and fathers of children born VLBW have been few. *In the review of the literature that follows, only studies of the parents of VLBW, preterm infants or parents of infants who required Neonatal Intensive Care have been included.*

Giving birth many months prematurely is a stressful event for parents and VLBW infants may remain in hospital for several months after birth. Researchers have compared mothers' and fathers' psychological distress *following the birth of a VLBW infant* and three particular types of distress have been examined: stress related to the Neonatal Intensive Care Unit (NICU), parenting stress and anxiety. Most studies have found that mothers are more distressed than fathers, but findings have not consistently supported this pattern. While one study reported that mothers found the NICU environment to be more stressful than fathers (Miles, Funk, & Kasper, 1992), a second study found no differences between mothers and fathers (Shields-Poe & Pinelli, 1997). An investigation of parents of toddlers *born VLBW* reported no differences in mothers' and fathers' parenting stress (Tommiska, Ostberg, & Fellman, 2002). When comparing mothers' level of anxiety to that of fathers', most researchers have found that mothers are more anxious during the NICU hospitalization or shortly after discharge (Doering, Dracup, & Moser, 1999;

94 Shields-Poe et al., 1997; Zanardo & Freato, 2001). However others have found no differences  
95 (Auslander, Netzer, & Arad, 2003; Miles et al., 1992).

96       Theorists have recognized that support is important in shaping parenting behaviour  
97 (Belsky & Vondra, 1989). Three aspects of support namely, perceived available support, received  
98 support and perception of the helpfulness of support, have been examined in previous studies of  
99 parents of NICU infants. Perceived available support is defined as the support that the person  
100 feels that they have available to them. A study of parents of infants hospitalized in the NICU  
101 found no differences between mothers and fathers in their perceived available support just prior  
102 to discharge from the unit (Doering et al., 1999). Received support refers to the recipient's view  
103 of the support they have actually received within interpersonal transactions (Dunkel-Schetter &  
104 Bennett, 1990), and mothers and fathers have reported similar levels of received support shortly  
105 after discharge from the NICU (Auslander et al., 2003). Other studies have considered parents'  
106 perception of the helpfulness of the support they receive. Miles and colleagues (1996) found that  
107 at NICU admission fathers reported that the support they received was more helpful than what  
108 mothers reported. However, one week later differences were no longer apparent. Thus, it would  
109 appear that perhaps mothers and fathers perceive they have available and receive similar amounts  
110 of support during hospitalization, and that early in the hospitalization mothers find the support  
111 they receive to be more helpful than do fathers, but with time differences seem to dissipate.

112       Interactions between mothers and their VLBW children have been studied extensively  
113 over the past 25 years, and researchers have consistently found that when mothers of *VLBW*  
114 *infants* interact sensitively and responsively with their infant in the first few years of life their  
115 child has better later developmental outcomes (Landry, Smith, Swank, Assel, & Vellet, 2001;  
116 Moore, Saylor, & Boyce, 1998; Smith, Landry, & Swank, 2000). Despite the knowledge that  
117 sensitive interaction is important to the development of the VLBW infant, very few studies have

observed fathers with their infant or compared father's interactions to those of mother's. Observation of mothers and fathers interacting with their infant revealed that mothers engaged in more caregiving than fathers early and later in the NICU hospitalization (Levy-Shiff, Sharir, & Mogilner, 1989). Mothers also talked to and held their infants more than fathers in the early period, but there were no differences later. In contrast, fathers engaged in more play and stimulation than mothers at both times. Harrison (1990) found no differences between mothers' and fathers' sensitivity with their 3-month old infants *born of VLBW*. These findings suggest that although mothers and fathers *of VLBW infants* may engage in different types of interactive behaviours, they may be equally sensitive and responsive to their infant's cues.

Previous investigations comparing mothers and fathers share several common limitations. First, study participants have typically been a heterogeneous group of parents of NICU infants, not parents of VLBW infants. The heterogeneity of the NICU population means that parents are caring for vastly different infants. Second, parents have been studied usually at only one point in time early in the infant's life, and they should be assessed at multiple points in time to provide an understanding of the patterns of similarities and differences across mothers and fathers over time as infants grow and develop. Lastly, previous studies have compared mothers and fathers on a limited range of variables (*i.e., psychological distress and support*).

Parenting self-efficacy refers to the beliefs or judgments a parent holds about their ability to organize and execute tasks related to parenting a child (de Montigny & Lacharite, 2005). Parents often experience feelings of guilt, failure, and inadequacy following a preterm birth (May, 1997) and these feelings may undermine their parenting self-efficacy. As well, parents of VLBW infants may also feel less self-efficacious as nurses assume much of the infant's care for many months after birth. Earlier research has found that mothers of VLBW children report lower parenting self-efficacy compared to mothers *of normal birthweight* (NBW) children (Gross,

Rocissano, & Roncoli, 1989; Rutledge & Pridham, 1987). However, previous studies have not compared the parenting self-efficacy of mothers and fathers.

*This study* extends previous research in this area by comparing mothers and fathers at two points in time in their infant's first year of life and by limiting the sample to parents of VLBW infants. Bio-social-behavioural shifts are points at which the interaction of biological maturation and behavioural changes results in the reorganization of a child's overall functioning (Cole & Cole, 2001). *These shifts are characterized by the emergence of new and significant forms of behaviour, as well as neurophysiological changes (e.g., changes in sleep, EEG patterns). The new child behaviours that emerge during these shifts bring about fundamental changes in the infant's relationship with his/her social environment, and thus require persons in the infant's social environment to also behave differently. Thus, during a bio-social-behavioural shift parents need to adapt and develop new parenting skills.* Research in developmental psychology supports the existence of two major bio-social-behavioural shifts during the first postnatal year, the first taking place at 2 ½ months of age and the second between 7 to 9 months (Cole & Cole, 2001). Thus, *it was* decided to assess mothers and fathers around the time of these shifts, that is, when their infant was 3 months of age (corrected age) and again when the infant was 9 months of age. The following research questions were examined: (a) Do mothers and fathers of VLBW infants differ in their level of state anxiety, received support, perceived helpfulness of support, parenting self-efficacy, and sensitivity of their interaction with their infant? and (b) Does mothers' and fathers' state anxiety, received and perceived helpfulness of support, and parenting self-efficacy, change from 3- to 9-months?

## Methods

*A longitudinal* design was used to answer the research questions. Mothers and fathers were assessed twice, first when their infant was 3-months old, and again at 9-months of age.

## Participants

The participants were the mothers and fathers of infants weighing less than 1500 grams at birth and born at less than 32 weeks gestation, and hospitalized in one of two participating NICU's in a *large eastern Canadian city*. Couples were included if they: (a) were the biological parents of the infant, (b) were married or co-habiting, (c) were able to read English or French and (d) both agreed to participate. Couples were excluded if the infant had a major congenital anomaly, or major motor or sensory handicap. Parents of multiples were included, but one infant from each multiple set was randomly selected and included.

## Procedure

The study received ethical approval by the Institutional Review Boards at the two data collection sites. Couples who met the inclusion criteria were recruited prior to their infant's discharge from the NICU. Data collection occurred in the home *when the infant was 3 and 9 months of age (corrected for prematurity)*. At the first home visit, consent was obtained and parents completed the self-report questionnaires independently. At the second home visit, parents responded to the same questionnaires and performed a teaching task with their infant.

## Measures

*State Anxiety.* Parent's anxiety was measured with the state portion State-Trait Anxiety Inventory (STAI), which consists of 20-items scored on a 4-point scale (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Raw scores were converted into standardized scores and higher scores reflect higher anxiety. Evidence of the construct validity of the STAI has been provided by studies that have found that STAI scores increase in stressful situations, and decrease after relaxation training (Spielberger et al., 1983). Internal consistency has been reported to be high (Cronbach's  $\alpha > .9$ ) (Spielberger et al., 1983).

189       *Received and Perceived Helpfulness of Support.* The Support in Parenting (SIP) is a self-  
190 report measure, consisting of 14-items, 7-items that assess the perceived frequency of  
191 instrumental, emotional, and informational support received from the respondent's social  
192 network, and 7-items that assess their subjective evaluation of the extent to which the support  
193 received helped them cope with the demands of parenting (Feeley, Gottlieb, & Zelkowitz, 2005).  
194 The SIP yields two scores, a Received Support score and a Perceived Helpfulness score. Higher  
195 scores are indicative of greater received support and greater perceived helpfulness of support.  
196 Evidence of validity has been demonstrated as mothers' SIP Received and Perceived Helpfulness  
197 scores have been found to correlate significantly with *another measure of support, that is*  
198 Pattison's Psychosocial Inventory, as well as with a measure of the quality of mothers' marital  
199 relationship (Feeley et al., 2005). Internal consistency has been found to be high for both scores  
200 (Cronbach's alpha coefficient .79 -.87 range).

201       *Parenting self-efficacy.* The seven-item Efficacy subscale from Gibaud-Wallston and  
202 Wandersman's (1978) Parenting Sense of Competence questionnaire (PSOC) was used to assess  
203 parenting self-efficacy. Higher scores are indicative of lower self-efficacy. With respect to  
204 construct validity, PSOC scores have been correlated with Coopersmith's Self-Esteem Inventory  
205 (Gibaud-Wallston, 1977), and with the Parental Locus of Control Scale (Lovejoy, Verda, &  
206 Hays, 1997). Alpha coefficients have been reported to range from .70 to .76 for the Efficacy  
207 subscale (Johnston & Mash, 1989).

208       *Parent-Infant Interaction.* Parent-infant interaction was assessed with the Nursing Child  
209 Assessment Teaching Scale (NCATS), an established observational measure that assesses the  
210 teaching interactions of parents with children under three years of age (Sumner & Spietz, 1994).  
211 The Total NCATS score consists of 73 dichotomous items, with 50-items assessing parent  
212 behaviors and 23-items assessing infant behaviors. Higher scores indicate more sensitive

interaction. Evidence supports the predictive validity of this measure (Sumner et al., 1994).

Internal consistency as evaluated with Cronbach's alpha is reported to be high (i.e., .87).

The teaching task was performed according to the NCATS guidelines. Five teaching tasks appropriate for infants 6 - 12 months of age were chosen from a list of possible tasks. Parents were asked to indicate which of the tasks their infant could not perform and this task was attempted. Any other persons present were asked to leave the room, and the interaction was videotaped with each parent separately. In order to control for infant fatigue, the parent who performed the teaching task first was determined by a coin flip. In 52% of the couples, fathers performed the task first. The observed interactions ranged from 2 -13 minutes for mothers ( $M = 5.57$ ,  $SD = 2.7$ ) and 2 to 14 minutes for fathers ( $M = 5.43$ ,  $SD = 2.8$ ). The videotapes were scored by a NCATS trained rater blind to the infants' medical history. A randomly selected sub-set of interaction videotapes (i.e., 20%) were scored independently by a second trained rater, and the kappa coefficient was .72 indicating high inter-rater reliability.

*Other measures. In this study, how ill the infant was during the NICU hospitalization was measured with the Revised Nursery Neurobiologic Score (NBRS) developed by Brazy and colleagues (1991; 1993). The NBRS was developed to measure how ill infants are during the NICU hospitalization after their birth. The measure was developed to assess the presence of and severity of medical events that could cause cell injury through hypoxia, insufficient blood flow, inadequate supply of substrate needed for cellular metabolism, or direct tissue injury. The NBRS includes seven items that assess the presence, severity and duration of seven medical events including: mechanical ventilation, seizures, intraventricular haemorrhage, periventricular leukomalacia, infection, and hypoglycaemia. Zero points are given if the medical event has not occurred during the infant's hospitalization; if the event occurred, the item is then scored 1, 2, or 4 according to the duration and severity of the event. The total NBRS score is the sum of the*

scores for individual items. Scores can range from 0 to 28, and increasing scores are indicative of greater risk for abnormal neurodevelopment. The measure can be scored in 5 minutes following a review of the NICU medical record. The predictive validity of the NBRIS has been established in a series of studies of the neurodevelopmental, cognitive, and developmental outcomes of VLBW children. NBRIS scores have been shown to correlate with clinical neurological examination scores at 6-, 15-, and 24-months (Brazy et al., 1991). NBRIS scores have also been correlated with infant's score on a measure of cognitive development, the Bayley Scales of Infant Development at 6-, 15- and 24-months of age (Brazy, Eckerman, Oehler, Goldstein, & O'Rand, 1991).

In this study, the NBRIS measure was scored by a neonatologist at site 1, and at site 2 by a research assistant. The research assistant received training from the neonatologist to score the NBRIS. The medical record of 20% of the sample was randomly selected and scored by both the research assistant and neonatologist to establish interrater reliability. A comparison of the scores assigned by both raters indicated that the percentage agreement was 95%, and the kappa coefficient was .85, indicating excellent interrater reliability.

## Findings

Sociodemographic characteristics of the mothers, fathers and infants who participated are presented in Table 1. Most couples ( $n = 44$ ) were married and 62% ( $n = 38$ ) were first-time parents. The majority of the mothers (84%;  $n = 51$ ) and fathers (89%;  $n = 54$ ) were Canadian born. Nonetheless, 10 mothers (16%) and 6 fathers (10%) were recent immigrants from various geographic locations. At 9-months, 66% ( $n = 40$ ) of the mothers were the infant's primary daytime caregiver and 56% ( $n = 34$ ) were not employed outside the home. The majority of the infants were singletons, however 21% ( $n = 16$ ) were born of a set of twins or triplets. Slightly more than half of the infants ( $n = 33$ ) were boys. About 30% ( $n = 18$ ) of the infants had received

more than 28 days of oxygen while in the NICU. Most infants did not have intraventricular hemorrhage (75%,  $n = 46$ ), and of those that did none were greater than grade 2. Thus, the sample included primarily healthy VLBW infants.

Repeated measures analyses of variance (ANOVA), with parent (mother-father) and time (3 or 9 months) as within-subject factors, was performed to examine differences between mothers' and fathers' on measures of state anxiety, received support, perceived helpfulness of support, and parenting self-efficacy, as well as to determine change over time.

The repeated measures ANOVA for both state anxiety and perceived support indicated no significant main effect of parent, no effect of time and no interactive effect of parent and time (Table 2). However, the repeated measures ANOVA for parenting self-efficacy indicated a significant main effect of parent, no effect of time and no interactive effect of parent and time. Fathers' reported parenting self-efficacy was significantly lower than mothers' (higher scores are indicative of lower self-efficacy). Repeated measures ANOVA for received support also revealed significant main effects of parent and of time, but no interactive effect of parent and time. Fathers reported more received support than did mothers, and the amount of support that both mothers and fathers reported that they received increased significantly from the 3- to the 9-month assessment.

A paired  $t$  test was used to evaluate differences between mothers and fathers on sensitivity of parent-infant interaction at 9 months of age, and this revealed no significant difference in mothers' ( $M = 51.6$ ,  $SD = 4.5$ ) and fathers' ( $M = 50.7$ ,  $SD = 4.6$ ) mean NCATS Total scores ( $t = 1.1$ ,  $p = .25$ ). Mothers' were no less sensitive and responsive in their interactions with their VLBW infant than were fathers when the infant was 9 months old. As the NCATS Total score includes both infant and parent subscales, a second paired  $t$ -test was conducted to compare mothers' and fathers' Parent Total score on the NCATS, thus removing the infant's contribution

to the interaction. Still we found no significant difference between mothers and fathers with respect to the quality of their interaction with their infant.

### Discussion

In this study, similarities as well as differences between mothers and fathers of VLBW infants were observed in the first year after their infant's birth. It has been noted that most studies of parents of children living with a chronic illness find more similarities than differences between mothers and fathers (Knafl & Zoeller, 2000). Although some differences were found in this study, the clinical significance of these differences between mothers and fathers is not known.

#### *Anxiety*

Contrary to some previous studies (Doering et al., 1999; Shields-Poe et al., 1997; Zanardo et al., 2001), but consistent with others (Auslander et al., 2003; Miles et al., 1992), *this study* found that mothers and fathers reported similar levels of anxiety. Most of these previous studies assessed anxiety during hospitalization or shortly after with the same measure as the current study, however sample inclusion criteria varied greatly across studies and may account for differing results.

It is noteworthy that in the current study at both assessments mothers' (46.2 and 46.7) and fathers' (46.8 and 45.9) mean state anxiety scores were greater than gender and age specific norms (Spielberger et al., 1983). Moreover, the anxiety level of parents in our VLBW sample at 9 months was greater than that of parents of infants born weighing as much as 3900 grams assessed while in the NICU (43 for mothers and 40 for fathers) and again after discharge (35.9 for mothers and 35.6 for fathers) (Auslander et al., 2003). This suggests that both mothers and fathers of VLBW infants may be particularly at risk for continued high levels of anxiety long after the infant's discharge from the NICU.

Indeed, our data indicated that parental anxiety did not decrease significantly from 3 to 9 months. A longitudinal study of mothers found that although psychological distress decreased from birth to 3 – 6 weeks postpartum, there was no significant decrease observed at 6 months. In addition, the percentage of mothers with clinically significant levels of distress at 6 months remained much the same as at the time of birth (41% and 48% respectively) (Thompson, Oehler, Catlett, & Johndrow, 1993). Similarly, Singer and colleagues (1999) observed that 26% of mothers of high-risk VLBW infants had clinically significant symptoms of anxiety at 1 month and 20% continued to do so at 8 months of age. Parental anxiety may remain high many months after the infant's birth due to the continued concerns about the infant's health and growth, as well as due to the challenges of parenting these infants, such as lower behavioral responsiveness, feeding problems and special needs (Bakewell-Sachs & Gennaro, 2004). High maternal anxiety in the early months after discharge from the NICU has been found to predict later less sensitive maternal interactive behavior (Feeley et al., 2005). *Therefore, intervention programs are needed to help parents lower their anxiety, and such programs should begin early during the NICU hospitalization. Future studies are needed that test the effectiveness of such programs in lowering the anxiety of parents of VLBW infants.*

#### *Received support*

*This study* found that fathers reported greater received support than mothers at both 3 and 9 months. There are a number of possible explanations for this finding. First, families' support networks may perceive that fathers require more support after this event, and in turn provide increased support to fathers. Second, spouses have been found to be the primary source of support to one another after the birth of an infant (McKim et al., 1995) and this was true in the current study as well. The first person that all participants listed in their support network was

their partner. Mothers of VLBW infants may also recognize their partners' need for support and respond by providing more support. Finally, although a study of parents of newly discharged low-birthweight infants found that mothers and fathers reported similar levels of received support at that time, fathers did report more work-related support than mothers (Auslander et al., 2003). Doering and colleagues (1999) argued that co-workers may constitute a significant source of support for fathers who are more likely to be employed at this time and benefit from a source of support that is not accessible to many mothers. Both mothers' and father' reports of received support increased over time and suggests that perhaps the social network may be more effective at providing support to these parents after the initial crisis of the infant's premature birth has passed.

#### *Perceived support*

In contrast, *when mothers' and fathers' perception of how helpful their received support was examined, it was found* that there were no differences between mothers and fathers. This finding is consistent with that of Miles and colleagues (1996) who also reported no differences between mothers and fathers after the time of admission to the NICU. *Studies are needed that examine the sources and type of support provided by the social network (i.e., family, friends, co-workers) of mothers and fathers of VLBW infants during the NICU hospitalization and afterwards. Knowledge of how mothers and fathers view the support they receive from others, their spouse in particular, is also needed to further nurses understanding of how to foster the support available to these parents.*

#### *Parenting self-efficacy*

Fathers reported lower parenting self-efficacy than mothers and this result coincides with the results of studies of parents of NBW infants (Froman & Owen, 1989; Hudson, Elek, & Fleck, 2001; Reece & Harkless, 2006). Bandura (1997) has theorized and empirical evidence supports

the notion that there are a variety of sources of self-efficacy, including past performance experiences (i.e., previous child care experience) (Gross et al., 1989), and encouragement and feedback from the social network and stress (Reece et al., 2006). Mothers are still more likely than fathers to be involved in the day-to-day care of infants (their own and others) and these past experiences contribute to their greater parenting self-efficacy (Froman & Owen, 1989). There are little data about the involvement of fathers of VLBW infants in infant care. However, Franck and Spencer (2003) observed that in the NICU fathers tend to visit less frequently and spend less time with their infants than do mothers. Furthermore, only 20% of fathers engaged in feeding and bathing of the infant compared to 75% of mothers. Another study found that after discharge, fathers of VLBW infants were more likely to be involved by doing household chores (while mothers concentrated on meeting the infant's needs) compared to fathers of NBW infants who did both household chores and infant care (Boukydis, Lester, & Hoffman, 1987). Thus fathers' lower level of involvement in infant care with their VLBW infant may contribute to their lower parenting self-efficacy. It is also possible that mothers may receive more feedback from others which enhances their self-efficacy. As well, psychological distress may decrease appraisals of self-efficacy and play a role in shaping the self-efficacy of parents of VLBW infants. However, in exploratory analyses no correlation between self-efficacy and previous child care experience (i.e., using previous children as a measure), received or perceived helpfulness of support or anxiety for either mothers or fathers at 3 or 9 months *was found*.

Although researchers have observed that both mothers and fathers of NBW infants self-efficacy increased in the first year after birth (Hudson et al., 2001), in the present study neither parents' self-efficacy increased from 3 to 9 months. A qualitative investigation revealed that following discharge from the NICU, mothers and fathers of smaller preterm infants felt unprepared to care for their infant and this feeling was still apparent at 6 months of age (Jackson,

Ternestedt, & Schollin, 2003). The parenting self-efficacy of parents of VLBW infants may develop more slowly due to the limited involvement of parents in the infants' care immediately after birth and due to the on-going challenges of caring for these infants. *Further longitudinal studies are needed to track the pattern of parenting self-efficacy of these parents over time as compared to parents of NBW children.*

#### *Quality of parent-infant interaction*

No differences were found between mothers & fathers with respect to how sensitive and responsive they were interacting with their VLBW infant in a teaching interaction at 9 months. This result supports the study by Harrison (1990) who observed mothers and fathers when their infants were 3 months old also in teaching interactions. Holden and Miller (1999) reported low levels of similarity of parenting behaviour across situations (i.e., setting or task), therefore, different interaction situations may provide a somewhat different sample of parent-infant interaction. Therefore, caution should be exercised in concluding that mothers and fathers interactive behaviour is equally sensitive in non-teaching interactions.

#### *Limitations*

Strengths of this study were that the participants were quite varied with respect to education, occupation, and ethnicity, reflecting the multicultural nature of the urban *Canadian* setting in which the study was conducted and that mothers and fathers were observed at two points in time. Limitations of the study include the convenience sample which could have resulted in sampling bias as both partners needed to agree to participate in the study. Such couples may be more alike than different with respect to their experience after this event. *Most of the parents in this study were first-time parents and 20% of the participants were the parents of twins or triplets. Both these groups might be more likely to feel anxious and less self-efficacious in their parenting and this may have had an effect on our findings.*

*Clinical implications*

*The findings of this study indicated that there were some significant differences in the experience of mothers and fathers of VLBW infants and highlight the value in practice of assessing both parents, how any differences are perceived by the couple, and how these might be affecting both individual parent and couple functioning.*

*The current findings and those of other studies suggest that mothers and fathers may remain anxious for some time after the infant's discharge from hospital, and nurses should not assume that parental anxiety diminishes with time. Many NICU follow-up programs routinely schedule appointments to assess the infant's growth and development at regular intervals in the first year of life, and these follow-up visits provide an opportunity for nursing assessment. Nurses in the NICU as well as nurses in follow up clinics need to identify parents whose anxiety is high and help parents to find ways to deal with their anxiety in order to promote the well-being of the parents as well as the optimal growth and development of their infant. Nurses should inquire about and actively encourage parents to verbalize their worries to staff. Nurse can then determine the sources of parents' anxiety and when appropriate, provide information and feedback that may, when possible, decrease parental anxiety. Teaching anxiety management techniques, such as relaxation training and positive imagery, to parents in the NICU might be helpful, as these techniques have been used to alleviate anxiety in childbearing women (Bastani, Hidarnia, Kazemnejad, Vafaei, & Kashaniean, 2005).*

*Nurses should also be alert for opportunities to foster the parenting self-efficacy of mothers and particularly fathers of VLBW infants. NICU nurses can serve as role models for parents by demonstrating infant care techniques. Nurses can also encourage and provide parents with opportunities to be involved in the care of their infant whenever possible during the NICU*

hospitalization. Following discharge from hospital, nurses can foster parents' self-efficacy by recognizing parents' parenting competencies and commending these.

In light of the accumulating evidence concerning the importance of support for effective parenting, nurses need to assess parents' support. For parents with low received or perceived helpfulness of support, nursing intervention might involve working with others in the parent's social network (i.e., spouse, family, friends) to help them better provide the amount and type of support that the parent feels they require. For those parents with high received or perceived helpfulness of support, nurses can help them develop strategies to maintain, recognize, and commend those persons providing helpful support in order to maintain this valuable resource.

Table 1

*Characteristics of Mothers, Fathers and Infants (n = 61)*

Variables	Mothers			Fathers		
	Mean	SD	Range	Mean	SD	Range
Age (years)	33.0	5.3	21-45	34.5	5.0	24-49
Educations (years)	14.1	3.1	8-24	14.3	2.8	9-22
Partner relationship (years)	6.9	4.2	1-21			
Infant birthweight	1103.0	257.6	545-1500			
Infant gestational age (weeks)	28.7	2.6	24-37			
Infant NBRS score	3.1	3.1	0-12			
Infant hospitalization (days)	71.8	27.6	26-129			

Table 2

*Mean scores for mothers and fathers at 3 and 9 months (n = 61)*

Variable	3 months	9 months	Effect	F
Anxiety			Parent	$F(1,60) = 0.48$
Mothers	46.25	46.82	Time	$F(1,60) = 0.01$
Fathers	46.74	45.92	Interaction	$F(1,60) = 0.69$
Self-efficacy			Parent	$F(1,60) = 15.615^{***}$
Mothers	13.73	13.67	Time	$F(1,60) = 0.00$
Fathers	16.21	16.33	Interaction	$F(1,60) = 0.04$
Received support			Parent	$F(1,60) = 9.61^*$
Mothers	8.03	8.63	Time	$F(1,60) = 6.64^*$
Fathers	9.05	10.67	Interaction	$F(1,60) = 1.81$
Perceived helpfulness			Parent	$F(1,60) = 0.96$
Mothers	19.09	19.31	Time	$F(1,60) = 0.49$
Fathers	19.42	19.67	Interaction	$F(1,60) = 0.00$

\* $p < .05$ , \*\*\* $p < .001$

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