Effects of age and the preterm birth of an infant on adolescent mothers' psychological
adjustment

Lisa Farnell and Liz Jones

Griffith University

Jennifer Rowe

University of the Sunshine Coast

Nicola Sheeran

Griffith University,

RUNNING HEAD: Psychological adjustment in adolescent mothers

Author Note

Lisa Farnell, School of Psychology, Griffith University, Brisbane QLD 4111 AUSTRALIA,

Phone: +61 7 3735 3329 Fax: +61 7 3735 3388

Liz Jones, School of Psychology, Griffith University, Brisbane QLD 4111 AUSTRALIA,

Phone: +61 7 3735 3365 Fax: +61 7 3735 3388

Jennifer Rowe, School of Health and Sport Sciences, University of the Sunshine Coast

Locked Bag 4, Maroochydore DC QLD 4558 AUSTRALIA Phone: +61 7 5456 5160 Fax:

+61 7 5456 5010

Nicola Sheeran, School of Psychology, Griffith University, Brisbane QLD 4111

AUSTRALIA Phone: +61 7 3735 3303 Fax: +61 7 3735 3388.

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Correspondence concerning this article should be addressed to Liz Jones, School of Psychology, Griffith University, Brisbane QLD 4111 AUSTRALIA. Email: l.jones@griffith.edu.au

Abstract

This study examined the psychological impact of preterm birth among adolescent mothers and how it compared to the psychological impact of preterm birth among adult mothers and full term birth among adolescent mothers. Fifty two mothers completed a survey immediately prior to the discharge of their infant from hospital and approximately three months later. Contrary to our hypotheses, adult mothers of preterm infants reported higher levels of psychological distress and threat appraisal pre-discharge than did adolescent mothers. Post-discharge this difference had dissipated. At the same time, there was no difference between the mothers in the reported helpfulness of social support, although all groups reported a decline in support from pre- to post-discharge. These findings help challenge prevailing assumptions about the transition to motherhood and have implications for service delivery and interventions.

Keywords: Adolescent mothers, preterm birth, psychological adjustment.

Effects of age and the preterm birth of an infant on adolescent mothers' psychological adjustment

The transition to motherhood for many women represents a normative developmental milestone, accompanied by a sense of fulfillment and personal growth. For some, however, it is a time of upheaval, and the adjustment process may be difficult and characterized by psychological stress and disequilibrium (Fleming, Ruble, Flett, & Van Wagner, 1990). Failure to achieve or regain psychological equilibrium following childbirth has important consequences for long term maternal health outcomes, maternal-infant interaction, and infant health and wellbeing (Roux, Anderson, & Roan, 2002). Two groups of mothers who are at increased risk of experiencing psychological distress in the postpartum period are mothers of preterm or low birth weight infants (Miles, Holditch-Davis, Schwartz, & Scher, 2007; Thompson, Oehler, Catlett, & Johndrow, 1993), and adolescent mothers (Grady & Bloom, 2004; Milan, Ickovics, Kershaw, Lewis, & Meade, 2004). Mothers of preterm infants, unable to assume caregiving for their acutely ill newborns in neonatal intensive care (NICU), tend to exhibit anxiety, and experience a lack of control and alienation from their maternal role (Feldman-Reichman, Miller, Gordon, & Hendricks-Munoz, 2000; Franck, Cox, Allen, & Winter, 2005; Pinelli, 2000). Whilst the psychological impact of preterm birth and adolescent motherhood have been thoroughly documented, there is a paucity of research investigating psychological adjustment among mothers who simultaneously belong to both of these groups: adolescent mothers of preterm infants. A primary aim of this research was to examine the psychological impact of preterm birth among adolescent mothers and how it compares to the psychological impact of preterm birth among adult mothers and full term birth among adolescent mothers. More specifically, the aim was to determine whether the independent risk factors of age and preterm birth combined to increase the vulnerability of adolescent mothers of preterm infants for experiencing psychological distress, when compared with the

other two groups of mothers, in the transition to home following their infant's discharge from hospital.

The period immediately preceding discharge, as the transition from hospital to home approaches, presents a significant research context. Most research has examined adult parenting experience when the newborn is critically ill, in a neonatal intensive care unit (NICU) (Shields-Poe & Pinelli, 1997). The less critical contexts; a special care nursery (SCN), immediately prior to discharge, and the initial period at home, are often overlooked in research. However, there is evidence that these represent further significant timeframes for parenting stress and adjustment. Infants, who until discharge have received 24-hour care from professionals, go home to a less controlled environment while still developmentally immature, which in turn may make them more difficult to parent (Bakewell-Sachs & Gennaro, 2004). Further, some infants require ongoing specialized care, and have a high risk of hospital readmission (Affleck, Tennen, Allen, & Gershman, 1986; Bakewell-Sachs & Gennaro, 2004). Parents may experience joy but tempered by concern about their ability to care for their infant (Broedsgaard & Wagner, 2005; Kenner & Lott, 1990). The extent to which parenting stress and distress associated with preterm birth continues or resolves following the infant's discharge from hospital has been debated. Parental response does appear to be linked to the severity of postnatal risks (Borghini et al., 2006). Ongoing distress and anxiety have been reported, particularly in parents of very preterm and very low birth weight (VLBW) infants who are more likely to have long-term health and developmental issues (Auslander, Netzer, & Arad, 2003). Yet other research suggests that distress and concern decreases for parents following discharge (Bissell & Long, 2003; Jones, Rowe, & Becker, 2009). There is, however, a dearth of research that examines the adjustment of adolescent mothers as they prepare to assume sole care of their infant and following the transition home.

Lazarus and Folkman's (1984) model of stress and coping is a useful framework for understanding psychological adaptation to parenting (Lau & Morse, 2001; Levy-Shiff, Dimitrovsky, Shulman, & Har-Even, 1998; Rowe & Jones, 2008; Rowe & Jones, 2010). According to Lazarus and Folkman (1984), psychological adjustment can be understood in terms of an individual's response to a potentially stressful event. In this view, negative psychological outcomes are most likely to emerge when (a) perceived stress is characterized by perceptions of threat (an evaluation which takes place as part of primary appraisal), (b) personal control is found to be lacking (an evaluation which takes place as part of secondary appraisal), and (c) available sources of support are deemed unhelpful (Lazarus & Folkman, 1984). In order to establish whether adolescent mothers of preterm infants are more vulnerable to negative psychological outcomes than adult mothers of preterm infants and adolescent mothers of full term infants, the three groups were compared with respect to their perceptions of threat and control, as well as their evaluations of available social support and level of psychological distress.

Perceptions of threat

Perceptions of threat often act as a precursor for psychological distress and generally emerge when the potential consequences of a particular person-environment encounter are appraised as being negative (Lazarus & Folkman, 1984). According to Lazarus and Folkman (1984), events which are unpredictable, ambiguous, or indicative of future harm or loss are likely to be perceived as threatening. Research undertaken with mothers of preterm infants suggests that uncertainty and loss are salient concerns during the postpartum period. Mothers describe the early arrival of their baby as unexpected (Jackson, Ternestedt, & Schollin, 2003) and as representing the loss of ritualistic traditions, such as the baby shower and the birth announcement (Kenner & Lott, 1990). The initial shock of the unexpected birth, the infant's illness and hospitalisation in a NICU or SCN is often accompanied by a sense of grief as mothers mourn the loss of the ideal child and are unable to assume their caring maternal role

(Casteel, 1990; Cleveland, 2008). Adolescent mothers have reported their inability to hold and care for their preterm infant in the NICU as the greatest stressors for them (Bell, 1997). Mothers of preterm infants must also acknowledge the possibility of infant mortality or ongoing health concerns associated with the adverse birth outcome (Hughes, McCollum, Sheftel, & Sanchez, 1994; Kenner & Lott, 1990). As discharge approaches, mothers continue to express concerns regarding the infant's health and question their ability to adequately parent the fragile child outside of the controlled environment of the hospital (Garel, Dardennes, & Blondel, 2007). It is evident from these descriptive accounts that perceptions of harm, loss, ambiguity and unpredictability are salient maternal concerns during the early postpartum period. In line with these observations, Affleck, Tennen, and Rowe (1991), assert that the period immediately preceding discharge is likely to be characterized by perceptions of threat.

Although there is no equivalent literature pertaining to adolescent mothers, Lazarus and Folkman's theoretical framework emphasizes the role of loss in producing a threat appraisal. For adolescent young women the demands of motherhood signal the loss of future privileges ordinarily associated with adolescence, as well as the potential for future economic disadvantage (Hanna, 2001). Lazarus and Folkman (1984) further contend that 'off-time' events may be likely to attract perceptions of threat; historically, transitioning to motherhood during adolescence is considered off-time, occurring outside socially prescribed normative timelines (Bacon, 1974; Harari & Vinovskis, 1993). Thus, from a theoretical perspective, adolescent mothers should perceive a degree of threat associated with the responsibilities of motherhood.

Perceptions of threat for adolescent mothers of preterm infants will be influenced by characteristics associated with the hospital experience as well as characteristics associated with their age and the non-normative role transition. According to the theoretical framework outlined by Lazarus and Folkman (1984), this combination should increase the risk of a threat

appraisal. It was, therefore, predicted that perceptions of threat would be higher among adolescent mothers of preterm infants than adult mothers of preterm infants and adolescent mothers of full term infants during the transition from hospital to home with their infant.

Perceptions of control

When a person-environment encounter is perceived as threatening, the risk for psychological distress increases when available resources considered necessary for adapting to environmental demands are evaluated as lacking (Lazarus & Folkman, 1984). Of particular significance in the evaluation of available resources is the degree to which the encounter is perceived as being controllable. Given the importance of this construct in informing psychological outcomes, the degree to which adolescent mothers of preterm infants are at increased risk for psychological distress when compared with adult mothers of preterm infants and adolescent mothers of full term infants will depend on each group's respective perceptions of control.

Several studies have examined perceptions of control among mothers of preterm infants, with mixed results. When asked by researchers to indicate their perceptions of control following the first weeks of their preterm infant's hospitalization in a NICU, mothers interviewed by Hughes, et al. (1994) indicated an extreme lack of perceived control. In contrast, when asked to rate the degree to which they believed they had personally influenced their infants' recovery, mothers interviewed by Affleck, et al. (1991) indicated a moderate amount of personal control. Similarly, Feldman-Reichman et al., (2000) found that mothers of preterm infants and medically fragile infants perceived a moderately high degree of control. However, when appraisals of control were global rather than specific to a particular facet of the experience, and were sought during the infant's hospitalization rather than retrospectively, mothers of preterm infants appear to appraise the situation as relatively out of their control. Thus despite inconsistencies between study results, mothers of preterm infants

appear to appraise the situation as relatively out of their control when assessed during the infants' hospitalization.

As with perceptions of threat, there is no direct evidence pertaining to adolescent mothers' perceptions of control as they transition to motherhood. However, indirect evidence pertaining to (a) factors associated with adolescence, (b) the social status of adolescent mothers and (c) the inherent nature of NICU's and SCN's, suggests that adolescent mothers, particularly those who give birth to a preterm infant, may perceive a lack of control following the birth. The search for autonomy forms a primary developmental task of adolescence (Zimmer-Gembeck, Ducat, & Collins, 2011). In addition, adolescent mothers are considered relatively powerless due to their status as a socially disadvantaged group (Hanna, 2001). Taken together, these factors suggest that issues of control are likely to be a salient concern for younger mothers. The NICU and SCN, however, are highly organized environments, in which adult mothers are unable to experience a high degree of control. Given this combination of factors, perceptions of control among adolescent mothers of preterm infants are unlikely to be high. Instead, adolescence may exacerbate the existing predisposition to perceptions of lack of control expressed by adult mothers of preterm infants. Accordingly, it was expected that perceptions of control would be lower among adolescent mothers of preterm infants than either adult mothers of preterm infants or adolescent mothers of full term infants during the transition from hospital to home with their infant.

Perceptions of Social Support

Social support refers to the "emotional, psychological, physical, informational, instrumental, and material aid and assistance provided by others that directly or indirectly influences the behavior of the recipient" (Dunst, Trivette, & Hamby, 1994, p. 152). As well as being independently associated with positive psychological adjustment, social support also functions to inform perceptions of threat (Affleck et al., 1991; Lazarus & Folkman, 1984). Effective social support during the early postpartum period is integral in promoting positive

psychological health among mothers of preterm infants and adolescent mothers alike, with four key sources of support identified as promoting a positive transition to motherhood for these mothers: the mother's spouse or partner and his family, the mother's own family, her informal support network, and professional services (Birkeland, Thompson, & Phares, 2005; Bunting & McAuley, 2004a; Cochran & Niego, 2002; Turner, Grindstaff, & Phillips, 1990).

Theoretical and empirical evidence suggests that mothers of preterm infants and adolescent mothers may struggle to secure the support necessary to facilitate maternal adjustment (Cleveland, 2008). Whereas the birth of an infant usually stimulates social contact and increases the opportunity for support, the birth of a preterm infant may reduce the support available to mothers (Affleck et al., 1991; Kenner & Lott, 1990) and mothers' fear of exposing the infant to possible contagious diseases may lead to disruption of social networks (Broedsgaard & Wagner, 2005). Thus, despite the importance of support for mothers of preterm infants, the availability of helpful sources of support may be compromised due to the unique circumstances created by preterm birth. In addition, mothers of preterm infants have indicated that the support offered during the infants' hospitalization is not helpful, and instead serves to exacerbate worry during this period (Affleck, et al., 1991). The availability of social support may be a particularly salient concern at the point of discharge given evidence that support often decreases during the period of hospitalization (Thompson et al., 1993).

Social support is also problematic for adolescent mothers. Postpartum adolescents have increased needs for emotional, material and informational support (Logson & Koniak-Griffin, 2005). However, the changing and sometimes unreliable nature of adolescent support systems may interfere with their ability to secure vital support during the postpartum period (Borkowski, Bisconti, Willard, Keogh, & Whitman, 2002), potentially exacerbating the challenges associated with parenting (Passino et al., 1993). Although her mother and romantic partner most commonly provide social support in the postpartum period, the support is often vastly different from their expectations and is often conflictual (Borkowski et al.,

2002; Bunting & McAuley, 2004a, 2004b). Moreover, adolescent mothers may feel alienated from peers due to their changing role (Letourneau, Stewart, & Barnfather, 2004), with Gee and Rhodes (1999) finding that peer relationships were transformed following an adolescent's transition to motherhood. The potential for adolescent mothers to struggle to secure appropriate social support following the transition to motherhood is clear.

There is evidence that the need for social support increases in response to concurrent stressors (Clemmens, 2001; Spear, 2004), thus we proposed that adolescent mothers of preterm infants would be likely to experience both an increased need for social support following the birth of their infant and potentially decreased support resulting in adolescent mothers of preterm infants perceiving available sources of support as less helpful than adult mothers of preterm infants and adolescent mothers of full term infants.

Hypotheses

In line with the preceding literature review, the following hypotheses were proposed. When compared with adult mothers of preterm infants and adolescent mothers of full term infants, in the transitional period from preparing for the infant's discharge home to 3 months after discharge, adolescent mothers of preterm infants would (a) perceive more threat, (b) perceive less control, (c) perceive available sources of social support as less helpful, and, consequently, (d) experience more symptoms of psychological distress.

Method

Participants

The sample consisted of 52 participants comprising three groups: 13 adolescent mothers of preterm (26-37 weeks completed gestation; $M = 32.9$, $SD = 2.77$; 781g-3317g birth weight; $M = 1859.36$, $SD = 594.10$) infants; 13 adolescent mothers of full term (38-41 weeks completed gestation; $M = 39.88$, $SD = .93$; correct weight (≥ 2500 g, $M = 3553.56$ g) infants, and 26 adult mothers of preterm (28-36 weeks completed gestation; $M = 33.18$, $SD = 1.99$) infants. There were no significant differences between the Adult preterm and

adolescent preterm infants in terms of birthweight or completed gestation. The 52 mothers were part of a sample of 73 mothers who were recruited into the study. Only mothers who completed both the pre-discharge and post-discharge questionnaires were included in the current study. There were no significant differences between mothers who completed questionnaires both before and after discharge and mothers who only completed the questionnaire pre-discharge on any of the measures described below.

Participants were recruited from five SCN's in SE Queensland, Australia in both regional and metropolitan hospitals, and data for the adult mothers were collected as part of another study (see Jones et al., 2009). Demographic information for the three groups is provided in Table 1.

INSERT TABLE 1 ABOUT HERE

Materials

Participants completed four scales and a selection of demographic questions. This information formed part of a larger questionnaire investigating adjustment to parenting. Demographic information included age, marital status, and parity.

Perceptions of threat and control. Perceptions of threat and control were measured using the relevant subscales of the Stress Appraisal Measure (SAM; Peacock & Wong, 1990). Each subscale is comprised of four items which are rated using a five-point Likert scale from 0 (*strongly disagree*) to 4 (*strongly agree*), with higher scores reflecting increased perceptions of threat or control. The SAM has been used with parents of medically at risk (e.g., Pelchat et al., 1999) and preterm infants (e.g., Affleck et al., 1991; Feldman-Reichman et al., 2000). The measure has demonstrated internal consistency ($\alpha = .65 - .90$ for each of the scales; Peacock and Wong, 1990) and convergent validity (Peacock & Wong, 1990; Roesch & Rowley, 2005) and has been validated for use with adolescents (Rowley, Roesch, Jurica, & Vaughn, 2005).

Social Support. Social support was measured using the 18-item Family Support Scale (FSS; Dunst et al., 1994). Participants are required to rate the helpfulness of support received from 5 domains: ‘informal kinship’, ‘spouse/partner support’, ‘social organizations’, ‘formal kinship’ and ‘professional services’. Scores range from 1 (*not helpful at all*) to 4 (*extremely helpful*). A response of zero indicates that the source of support named in the item is not available. The FSS has good reliability ($\alpha = .79$, test-retest reliability .91, item-total correlation .75; Dunst et al., 1994), demonstrable content, convergent, discriminant and criterion validity, and was developed specifically for use among parents of medically at-risk children and infants (e.g., Feldman-Reichman et al., 2000).

Psychological Distress. Psychological distress was measured using the twelve-item General Health Questionnaire (GHQ 12; Goldberg & Williams, 1988). The GHQ is designed to identify disruptions in normal functioning and the emergence of new and distressing symptoms. Participants are asked to describe how often they experience 12 different psychological health symptoms on a 4-point scale from 0 (*not at all*) to 3 (*much more than usual*) giving a possible total score range of 0-36. The GHQ12 has been used extensively in research surrounding stress and coping and psychometric properties are sound: the measure has good internal consistency, construct validity and discriminant validity, and has been validated for use with young adolescent Australians (Tait, French, & Hulse, 2003). Participants were asked to respond based on how they felt since the birth of their baby.

Procedure

Prior to data collection, ethical approval was obtained from each of the hospitals involved as well as from the Griffith University Human Research Ethics Committee. The sample was collected in two stages. Adult mothers were recruited in the first stage of the study and adolescent mothers in the second stage. All pregnant and postpartum mothers who met the eligibility criteria during the data collection period were approached to participate.

Recruitment. Adolescent mothers were recruited both antenatally and postnatally, and adult mothers were recruited postnatally only. Antenatal recruitment of adolescent mothers occurred during age-specific antenatal sessions, wherein a member of the research team provided a recruitment flyer to pregnant adolescent women due to birth during the recruitment phase of the project. Those who indicated an interest in participation were provided with an information sheet and asked to sign an initial consent form giving the researcher permission to re-establish contact following the birth of the infant. Once contact was re-established, an interview was scheduled.

Postnatal recruitment of both adolescent mothers of preterm infants and adult mothers of preterm infants was through weekly contact with the SCN's. Postnatal recruitment of adolescent mothers of full term infants was achieved through weekly contact with the maternity wards. In all cases, potential participants who met inclusion criteria were identified through consultation with hospital staff and were subsequently approached by a member of the research team and invited to participate in the project. Once agreement to participate was established, a meeting between the researcher and the mother was scheduled.

Data collection. For adolescent and adult mothers of preterm infants, data collection was scheduled to take place during the week prior to the infant being discharged from the SCN. For adolescent mothers of full term infants, data collection was scheduled to occur between two days post birth and seven days post discharge, as most women birthing without complications are discharged within 48 hours of birth making data collection in hospital often impractical. Three adult mothers completed the questionnaire in the days immediately following discharge due to the baby being discharged with little warning. Those participants who completed the questionnaires after discharge were reminded to answer the question in reference to how they were feeling in the week prior to taking their baby home and their responses were not significantly different to the remaining adult mothers on any measure. Additionally, mothers participated in an interview after completing the questionnaire, which

focused on their experiences as mothers. The interview data was gathered with different, albeit related, research questions in mind, so is not reported in the current study. The research team contacted participants approximately three months following their baby's discharge from hospital to complete the second component of the study. A time was arranged to meet with participants to complete the second survey and participate in a second interview.

Results

Mean scores were calculated for all scales and sub-scales and the alphas are presented in Table 2. A series of two way analyses of variance (ANOVAs) were conducted and the between subjects factor was group (adolescent mothers of preterm infants, adult mothers of preterm infants and adolescent mothers of full term infants) and the within subjects factor was time (two time points: pre-discharge and 3 months after discharge). All post hoc analyses were conducted using analyses of simple effects and the significance level for all analyses was .05.

Perceptions of Threat and Control

Analyses of variance were conducted for the threat and the two control subscales of the SAM. There was a significant interaction for the 'threat' subscale ($F(2,41) = 4.35, p = .019$), with posthoc analyses indicating that adult mothers of preterm infants reported significantly higher levels of perceived threat than adolescent mothers of full term infants pre-discharge. There was also a trend toward adult mothers of preterm infants having higher levels of threat than adolescent mothers of preterm infants ($p = .09$) pre-discharge. No other significant between group differences were uncovered and there was no difference between the groups post-discharge. There were no significant effects for the controllable by self and controllable by others sub-scales and means indicate that participants perceived reasonably high levels of control (means > 4 on 5-point scale).

INSERT TABLE 2 ABOUT HERE

Social Support

Differences in the perceived helpfulness of social support between the three groups were assessed using the FSS. In order to ensure sufficient cases from which to draw meaningful conclusions, items which were endorsed as 'not available' or were missing data by greater than 50 percent of respondents were excluded from further analyses, resulting in the removal of eight items (*'my own children'*, *'co-workers'*, *'parent groups/clubs'*, *'place of worship/religious organization'*, *'school/daycare program'*, *'professional helpers'*, *'professional agencies'*, *'early intervention program'*). Because the hypotheses concerned *perceived helpfulness* of available support rather than *overall availability*, values that corresponded with a response of 'not available' were treated as missing data. A measure of helpfulness of social support was calculated using the remaining sources of social support (*'my parents'*, *'my partner/spouses parents'*, *'my relatives/kin'*, *'my partner/spouse's relatives'*, *'partner/spouse'*, *'my friends'*, *'my partner/spouse's friends'*, *'other parents'*, *'my family or child's doctor'*).

A two way ANOVA was conducted to compare the three groups of mothers on helpfulness of social support across time. There was a main effect for time ($F(1,47) = 4.15, p = .047$) with helpfulness of social support declining from pre-discharge to post-discharge. There were no other significant effects.

Psychological Distress

A two way ANOVA was used to test for differences in psychological wellbeing, as measured by the GHQ and there was a significant interaction between group and time ($F(2,49) = 3.26, p = .047$). Analysis of simple effects revealed that adult mothers of preterm infants reported more symptoms of psychological distress than did adolescent mothers of full term infants pre-discharge. There were no significant differences between the two adolescent groups. Post-discharge there was no significant difference between the groups of mothers. Four adult mothers of preterm infants and two adolescent mothers of preterm infants reported significant psychological distress pre-discharge. Post-discharge two adult mothers of preterm

infants, two adolescent mothers of preterm infants, and four adolescent mothers of full term infants reported significant psychological distress. Adolescent mothers of full term infants also reported an increase in psychological distress from pre-discharge to post-discharge.

Discussion

This study proposed that adolescent motherhood and preterm birth represent separate risk factors that may combine to elevate the risk of maternal psychological distress among mothers who simultaneously belong to both groups: adolescent mothers of preterm infants, particularly during the maternal transition period when they bring their infants home from hospital. In line with this assertion, a number of hypotheses were proposed, which, overall, received limited support: adolescent mothers of preterm infants did *not* perceive more threat, less control, or higher levels of psychological distress, nor did they indicate that available social support was less helpful than adolescent mothers of preterm infants or adult mothers of preterm infants. Instead, the results suggest that at both the point of their infant's discharge from hospital and three months post-discharge adolescent mothers were adjusting well to the birth of a preterm infant: they appraised a small amount of threat but were not psychologically distressed, perceptions of control were high, and key sources of support were available and perceived as helpful. Here we discuss this pattern of results and reasons these did not align with the dual risk hypothesis proposed for the current study.

Perceptions of control, threat, and distress

Perceptions of control were expected to be lowest among adolescent mothers of preterm infants, whereas perceptions of threat and reports of psychological distress were expected to be highest among adolescent mothers of preterm infants. In contrast to this, there were no significant differences between groups with respect to appraisals of control at either time point, and adult mothers of preterm infants reported significantly higher threat appraisals and the most psychological distress pre-discharge. Adolescent mothers of preterm infants

and adolescent mothers of full term infants were indistinguishable with respect to perceptions of threat and levels of psychological distress.

The anticipated differences in perceptions of control were not found. Instead, perceptions of control were higher than expected for all three groups during the pre-discharge period. Prior research suggests that perceived control is highest when it is evaluated with respect to specific aspects of the postpartum experience. Although the instrument employed to assess control was designed to target global aspects of the postpartum experience, it is possible that mothers in all three groups focused on controllable facets when indicating degree of perceived control. High perceived threat among adult mothers of preterm infants during the pre-discharge period is consistent with prior research. At this time point, adult mothers report concerns about parenting their medically-fragile infant and the ongoing care required as a results of negative developmental sequelae resulting from preterm birth (Auslander et al., 2003; Bakewell-Sachs & Gennaro, 2004). In contrast, the results of the current study indicated a lack of perceived threat among adolescent mothers. Adolescent mothers may not be considering potential future issues in the same way as adult mothers, impacting both threat appraisals and psychological distress. Several lines of research support this assertion. First, adolescent appraisals are less differentiated and less complex than those of adults (Rowley et al., 2005). Second, adolescents have not yet developed the cognitive skills to enable them to accurately consider potential consequences (Crone, 2009; Fischhoff, 2008; Gilligan & Belenky, 1980; Spear, 2000; Sunstein, 2008). Finally, adolescent mothers hold overly positive perceptions about motherhood (Unger, Molina, & Teran, 2000), which diminish only once the reality of parenting becomes salient (Spear, 2004). Thus, adolescent mothers, regardless of the birth status of their infant, may engage in optimistic evaluations characterized by less threat and may be more 'present' orientated.

An alternative explanation relates to differences between adolescent and adult mothers in expectations surrounding birth and motherhood. The emotional costs or benefits

associated with social role transitions depend on the degree to which the characteristics of the transition match prior goals and expectations (Alexander & Higgins, 1993). In line with this, a fundamental source of threat and distress among adult mothers of preterm infants is the violation of expectations surrounding birth and motherhood (Affleck et al., 1991). The increased perception of threat and distress reported by an adult mother of a preterm infant may, therefore, derive from an evaluation in which her expectations of motherhood are threatened by the reality the birth of an unwell preterm infant. Research among adolescent mothers indicates that their expectations of parenting may differ from those of adults. For many adolescent women, the transition to motherhood occurs against a backdrop of social and educational disadvantage and represents an opportunity to find meaning and purpose in the absence of opportunity (Lee & Gramatnev, 2006; Unger et al., 2000), as well as an opportunity to secure love and fulfill an existential need (Unger et al., 2000). Thus, whilst an adolescent may have clear expectations surrounding motherhood, they are largely undifferentiated with respect to the infant and the tasks of parenting. Instead, the expectation of a child whom she can love and who will love her is not violated by the advent of a preterm birth. Thus, there is less likelihood of a threat appraisal and the attendant psychological distress.

Post-discharge adult mothers' threat perceptions and psychological distress decreased to be no longer higher than that of adolescent mothers. This concurs with Bissell and Long's (2003) argument that the majority of parents' concerns about caring for their preterm infant dissipate quickly, as well as previous research on mothers and fathers of preterm infants (Rowe & Jones, 2010). At the same time, adolescent mothers of full term infants reported an increase in psychological distress post discharge, which is consistent with the argument that they may have had overly positive perceptions of parenting pre-discharge (see Unger et al., 2000).

Of note was the lack of significant differences between the two groups of adolescent mothers with respect to perceived threat and psychological distress at either time point.

Given that the key difference between these two groups in terms of the research question was the birth status of their infants, this suggests that the developmental considerations discussed above exert more influence than the birth context.

Perceptions of social support

It was anticipated that adolescent mothers of preterm infants would perceive available sources of support as significantly less helpful than adult mothers of preterm infants and adolescent mothers of full term infants. There was no support for this hypothesis: there were no differences in the perceived helpfulness of social support between any of the groups, either pre- or post-discharge. Instead all three groups reported a decrease in helpfulness of social support from pre-discharge to post-discharge. This is consistent with the findings of Doucette and Pinelli (2000), who found that mothers made efforts to seek out and mobilize sources of support as a strategy for responding to falling overall support in the months following discharge with a preterm infant, while extending the finding to adolescent mothers of both preterm and full-term infants.

At the same time, while there was no difference between the three groups in helpfulness of social support, there was a difference for psychological adjustment pre-discharge, suggesting that the buffering effect of social support on psychological distress may differ between adult mothers and adolescent mothers. The complex nature of social support as it impacts on adolescent mothers has been investigated by Voight, Hans and Bernstein (1996). They found that for adolescent mothers support by male partners was not correlated with maternal experience or behavior or psychological symptomatology. Moreover, the number of different types of support the grandmother provided was related positively to the quality of the adolescent's parenting behavior yet negatively to her experience of parenting, suggesting the relationship between support and adjustment may be complex for adolescents.

Future research should examine whether the buffering effect of different sources of social support differs between adolescent and adult mothers.

Limitations

There were a number of limitations to the current study. First, was the size of the samples of the adolescent mothers. Limited sample size is a common obstacle encountered in research among mothers of premature or LBW infants, due to their relative number as well as their reluctance to participate in activities which prevent them from spending time with their infant (Broedsgaard & Wagner, 2005). The challenges associated with recruiting participants from this population of mothers are exacerbated when the mother is an adolescent due to the additional ethical requirements and the limited numbers of adolescent mothers with a preterm infant. At the same time, the adolescent mothers in this study were a heterogeneous group and included young mothers with a range of risk factors for poor adjustment.

A second limitation is the equivalence of the samples. While our three groups of mothers were equivalent in being tested at the time in which they preparing to take full responsibility for the care of their infant, for mothers of full term infants this was when the infant was a few days old, whereas for mothers of preterm infants the age of their infant varied.

A further limitation relates to the Family Support Scale. The frequency of responses indicating a particular source of support was not available indicates that this measure may not be an appropriate instrument for use among adolescent mothers or mothers of preterm infants, as suggested in other studies (see Jones, et al., 2009).

An additional limitation relates to the fact that some mothers completed the measures following discharge. Patterns of distress have been shown to fluctuate between hospitalisation and the transition home (Affleck et al., 1991). Although every effort was made to ensure that mothers completed the questionnaire with reference to the period

preceding discharge, it is possible that the variations in time of completion influenced responses.

A final limitation relates to the broad age range of adolescent mothers recruited for the study (15-19 years of age). There is evidence that adolescent mothers of different ages may respond differentially to the transition to motherhood (Caldwell & Antonucci, 1997) which may have influenced the findings. The size of the samples in this study precluded examining the effects of age differences in the adolescent mothers.

Conclusion

The global contention of this study was that adolescent mothers of preterm infants would emerge as the most vulnerable group of mothers with respect to each of the components of the stress process. This was not supported by the majority of results, whereby adolescent mothers of preterm infants did not experience higher levels of threat appraisal, less helpful social support or higher levels of psychological distress than adult mother of preterm infants and adolescent mothers of full term infants. In the transactional theory of stress, appraisal, and coping, psychological adjustment is conceptualized as a stress outcome that is indicative of the existence of psychological stress (Lazarus & Folkman, 1984). From this perspective, the failure to find support for our hypotheses presented reflects an absence of perceived stress among adolescent mothers of preterm infants. A potential explanation for this pattern is the influence of developmental status on adolescent mothers' perceptions of their situation and anticipation of parenting challenges and infant issues as they transition home with their infant. Alternatively, the findings may reflect the expectations of adolescent mothers about birth and motherhood.

Implications for practice

Our findings have several implications. Contrary to expectations, the results indicate that the adolescent mothers of preterm infants included in the current study were not at increased risk of experiencing psychological distress following the birth and transition home

of their preterm infant when compared to adolescent mothers of full term infants and adult mothers of preterm infants. However, a considered interpretation of the findings suggests that the psychological response of adolescent mothers may be related to the developmental influences on appraisal and expectations of motherhood described above. This in turn, has implications for discharge planning and post discharge intervention programs. Intervention programs in adult parent populations have shown a positive impact of intervention on parenting stress. For example, Kaarsen, Rønning, Ulvund and Dahl (2006) found that parents of preterm infants who participated in an intervention targeting preterm infant characteristics and the impact of parenting stress on the parent-infant interaction, reported levels of parenting stress less than parents of preterm infants in the control group and comparable to those of parents of full term infants in the control group. However, the importance of targeting services to specific needs, rather than on the basis of assumptions about generic groups, has been identified if significant impacts on parenting, infant health, and family function are to be achieved (Johnson, Ring, Anderson, & Marlow, 2005).

The response of adolescent mothers in this situation may be interpreted as making them and their infants more vulnerable to adverse outcomes following discharge from hospital. On the other hand, their 'present' focus and the anticipation of mothering and nesting may be treated as protective factors or strengths to be worked with. Developing programs that are adolescent focused may be effective. Having said this, it is important, as with adult parenting support following preterm infant birth, to be aware that there is no single psychological response, issue, or need shared by all mothers of preterm infants nor universal intervention (Johnson et al., 2005). Interventions which account for the way in which individuals are appraising their situation and anticipating their needs may be an effective targeting strategy, which may provide effective support and outcomes in terms of parenting efficacy and infant health and wellbeing (Jones et al., 2009).

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Table 1.
Demographic information

	Adult PT ^a (n = 26)	Adolescent FT ^b (n = 13)	Adolescent PT ^b (n = 13)
Age			
Mean	30.36	17.58	17.12
SD	6.01	1.17	1.24
Range	-	15 – 19	15 – 19
Relationship Status			
Single	3%	21%	37%
Married	71%	-	-
De Facto	26%	79%	63%
First Child			
Yes	69%	89%	95%
No	31%	11%	5%
Yrs Education			
	13.36	10.36	10.2

^a preterm birth defined as between 30 and 37 weeks completed gestation and >1500gms

^b full term birth defined as ≥ 37 weeks completed gestation

^c preterm birth defined as < 37 weeks completed gestation

Table 2.
Mean and SD for threat, control, support and psychological distress.

		α	Adult Preterm	Adolescent Full term	Adolescent Preterm
Threat	<i>Pre-discharge</i>	.72	2.17 (.65) _a	1.68 (.49) _b	1.81 (.72) _{ab}
	<i>Post-discharge</i>		1.69 (.55)	2.07 (.69)	1.77 (.60)
Controllable by self	<i>Pre-discharge</i>	.79	4.25 (.54)	4.25 (.44)	4.26 (.76)
	<i>Post-discharge</i>		4.27 (.50)	4.24 (.40)	4.22 (.76)
Controllable by other	<i>Pre-discharge</i>	.83	4.16 (.49)	4.32 (.47)	4.14 (.84)
	<i>Post-discharge</i>		4.08 (.70)	4.18 (.19)	4.36 (.62)
Helpfulness of social support	<i>Pre-discharge</i>	.89	3.64 (.60)	3.38 (.52)	3.20 (.87)
	<i>Post-discharge</i>		3.35 (.56)	3.12 (.80)	3.08 (.88)
Psychological Distress	<i>Pre-discharge</i>	.84	13.23 (4.91) _a	8.69 (3.77) _b	10.31 (4.42) _b
	<i>Post-discharge</i>		10.04 (4.33)	10.38 (7.10)	10.92 (4.80)

Note: Means in the same row that do not share subscripts differ at $p < .05$