

Prenatal Attachment: Where Do We Go from Here?

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Abstract: Over the past 30 years, there has been increasing research in the areas of the identification, and measurement, of the relationship between the parents-to-be and their unborn child. This research is of importance because of the potential link between prenatal attitudes and attachment and parental behaviour both before and after birth (Condon & Corkindale, 1997; Pollock & Percy, 1999). The literature on prenatal attachment has clearly demonstrated that individual differences do exist in this early relationship, varying from being highly “attached” early in the pregnancy to demonstrating low, or no, attachment during pregnancy (Doan & Howell, 1998). Doan, Zimmerman and Howell (1997, 1998) also found that, even prior to becoming pregnant, there are individual differences in non-pregnant men and women in the ability to conceptualize being pregnant and attached to the fetus, and the extent to which this conceptualization is positive. In this paper, using data collected from several of our research projects, we will discuss some of the factors that contribute to the variability in prenatal attachment, relevant measurement issues and the implications for both future research and clinical work with families.

Zusammenfassung: *Pränatale Bindung: Wohin geht der Weg von der jetzigen Forschungssituation aus?* In den letzten Jahren gab es eine wachsende Forschung zur Erfassung und zur Messung der Beziehung zwischen den werdenden Eltern und ihrem ungeborenen Kind. Diese Forschung versuchte die Bedeutung, die Wirksamkeit der Verbindung zwischen vorgeburtlichen Verhaltensweisen und Bindung mit dem elterlichen Verhalten vor und nach der Geburt zu erfassen (Condon u. Corkindale 1997; Pollock u. Percy 1999). Die Literatur über das pränatale Bindungsverhalten hat eindeutig gezeigt, daß es hier individuelle Unterschiede gibt, die von hoher Verbundenheit schon früh in der Schwangerschaft bis hin zu niedriger oder keiner Verbundenheit während der Schwangerschaft reichen (Doan u. Howell 1998). Doan, Zimmerman und Hovel (1997, 1998) fanden auch, daß es vor Eintritt der Schwangerschaft individuelle Unterschiede bei Männern und Frauen in der Fähigkeit gibt, sich von der Schwangerschaft eine Vorstellung zu machen, eine Bindung an das Kind zu entwickeln und in Bezug auf das Ausmaß, wie positiv diese Vorstellungen

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sind. In diesem Beitrag möchten wir die Faktoren diskutieren, die zu den Unterschieden im vorgeburtlichen beitragen. Wir gehen dabei von den Daten aus, die wir in unseren Forschungsprojekten gesammelt haben. Wir möchten die Gesichtspunkte bei den Messungen diskutieren und ebenso die Implikationen für die zukünftige Forschung und die klinische Arbeit mit Familien.

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Vignettes

AB

At 26 years of age, AB had been happily married for three years and was working in the family business. This was her first and planned pregnancy. AB's prepregnancy disposition was baby-positive, and she had expressed wishes to have children. She had preparatory reactions early in her pregnancy, including securing a birth attendant, signing up for prenatal classes, shopping for baby furniture, etc. However, in mid to late pregnancy, once fetal movements were felt, her disposition became negative. She noted fetal movements as deliberate negative behaviour on the part of the fetus, which, she stated, was meant to cause her pain and discomfort. She also expressed anger towards the fetus as she was attributing negative intentions to her (e.g., "she is hurting me on purpose", "she is kicking my bladder and will damage it", etc.). She never expressed any fond feelings to the fetus, nor did her behaviour reflect any type of interaction with her. To sum up, this mom never expressed positive prenatal emotional attachment. AB rushed to the hospital as soon as her labour began in order to receive an early epidural. She proceeded to treat the labour as a social event and invited friends and family to sit in the labour room. Upon birth, she refused to hold the baby and asked that she be cleaned up first. She continued to reject her baby by telling family and friends to hold her. Mom was the last to hold the baby, and only for a short time as she asked for the baby to be looked after by the nursery staff so she could rest. AB did not breast-feed. Upon returning home after the birth, she hired a full time (24/7) nanny for the first 30 days. While the nanny was there, AB engaged in social activities not involving the baby. The nanny was let go due to financial considerations, which left AB depressed for a while. She tried to avoid caring for the baby as she was questioning the timing of having this baby, and her own readiness to be a mother. However, about three weeks later, AB managed to snap out of her negative feelings, and got to know her baby. From then on, she cared for the baby effectively. At six years of age the child was diagnosed with severe learning disabilities. The mother was then a strong advocate for her in the school system.

CD

CD was 30 years old at the time of her first, but unplanned pregnancy. She had been happily married for one year when the baby was born. She had expressed positive attitudes to others' babies but never mentioned a wish or plan to have a baby of her own. From early on in the pregnancy, CD was preoccupied with her own body and expressed extreme fear of gaining weight. She would spend a lot of time in front of a mirror to examine the degree to which her collarbones were

visible. CD never mentioned or discussed the baby, (although her husband was excited and preparing). CD apparently did not develop either a cognitive, or an emotional, prenatal attachment to her fetus, nor did she appear to be able to conceptualize the fetus as a real baby inside her. The baby was delivered by cesarean, under general anesthetic. CD reported that the baby refused to breastfeed. The father cared for the baby while CD returned to work as soon as she had recovered from surgery. CD was extremely interested however, in the appearance of her baby, as she felt it was a reflection of her. The baby was well dressed but had no meaningful relationship with mother. The father was the primary emotional caregiver. The child is well adjusted.

EF

EF was 28 years of age and happily married for 2 years at the time of her first, and planned pregnancy. She worked full time as a professional secretary. Prior to becoming pregnant EF had positive attitudes towards children and babies and expressed wishes and plans to have her own. Once pregnant, however, EF hated every moment of pregnancy. She detested the physical changes and the weight gain and described the pregnancy as an invasion by the fetus. She could not stand the feeling of the fetus moving inside her. The experience of pregnancy was extremely negative to the point that she was unable to relate to the fetus emotionally, while cognitively, she was very aware of the presence of the fetus. Once the baby was born, she was immediately able to relate emotionally and positively to the baby. Although she did not breastfeed (she did not intend to do so), she was able to engage in all appropriate postnatal bonding behaviours. EF is a happy and effective well-bonded mother with a well-adjusted child.

HI

HI was 36 of age, and had been married 9 years when she had her first and planned pregnancy. She was a full-time teacher of adolescent children. HI's attitudes to pregnancy and babies could best be characterized as indifferent and disinterested. HI never intended to become pregnant and, therefore, never conceptualized pregnancy and never imagined herself being pregnant. However, her husband desperately wanted children, and finally convinced her to get pregnant. HI was extremely disappointed she became pregnant, and underwent all possible prenatal tests with the hope that she would have an excuse to abort the fetus. All the tests were fine and she "put up" with being pregnant. During the pregnancy, she showed no preoccupation with any aspect of it, to the extent that she never bought any maternity clothes and as late as 32 weeks of pregnancy, she stated she had no emotional closeness with the fetus and expected to feel indifferent if she lost the pregnancy at this time. It appeared that HI deliberately avoided emotional closeness or attachment, although she could conceptualize the baby. HI maintained cognitively and emotionally that this was her husband's baby and not hers. At the birth, as soon as the baby was born, her disposition changed to the other extreme and she felt an "unexpected closeness" to the baby and wanted to be close to him and hold him. She refused to hand the baby back to the nurses, and asked that all procedures be carried out in her lap so the baby would remain

close to her. Although she never intended to do so, she successfully breastfed the baby. Mother and baby are well-adjusted and have a very close relationship.

JK

JK was 30 years old, and married happily for four years, when her first, and planned child was conceived. Before becoming pregnant, she could hardly wait to have children, but had to postpone childbearing to complete her professional training. Her attitudes to pregnancy and babies was always very positive and she wanted, and planned, to be a mother. She was elated to find out she was pregnant, and despite severe nausea for the first six months, she thoroughly enjoyed her pregnancy. JK, who is extremely attractive, felt even more beautiful during pregnancy. She engaged in many antenatal attachment behaviours, such as talking to her fetus, rubbing her belly in response to fetal movements, reading to her baby. She was delighted when the baby moved and reported a very strong emotional bond to the baby. Although she did not want to know the sex of the baby ahead of time, she could easily describe some personality characteristics of the fetus, e.g., playful, engaging and alert. Once the baby was born, she held her immediately and nursed her in the first few minutes. She remained very close and attached to the child, who is very well adjusted and gifted.

Table 1 illustrates the different cognitive and emotional dispositions described in the vignettes.

Table 1. Cognitive and Affective Dispositions of Mothers Pre-, During, and Post-Pregnancy.

	Pre-Pregnancy Cognitive/Emotional	Pregnancy Cognitive/Emotional	Post-Birth Cognitive/Emotional
AB	pos/pos	pos/neg	pos/neg
CD	pos/neg	neg/neg	neg/neg
EF	pos/pos	pos/neg	pos/pos
HI	neg/neg	neg/neg	pos/pos
JK	pos/pos	pos/pos	pos/pos

Note: Cognitive aspect = ability to cognitively conceptualize pregnancy, fetus and baby (pos = able; neg = unable). Emotional aspect = ability to conceptualize an emotional relationship and experience (pos = a positive experience and/or positive attributes to fetus/baby; neg = conceptualizing a negative experience, negative attributes of fetus/baby, or inability to conceptualize the fetus/baby and the emotional relationship)

The vignettes are examples of the way women describe the experience of pregnancy. By no means are these the only possible descriptions. However, they do provide us with some insight about the great variability that exists. The vignettes suggest that:

- a. There is considerable variability in the degree to which pregnant women can form an abstract conceptualization of a fetus;

- b. Their emotional view of their pregnancy may be either positive or negative;
- c. Women, who have never been pregnant, are able to conceptualize being pregnant;
- d. Never pregnant women vary in the degree to which they imagine the pregnancy as a positive experience;
- e. The lack of an ability to have a positive conceptualization of pregnancy, before and during pregnancy, may be indicative of problems in their later relationship with their child;
- f. There is a need to understand the factors that affect the ability to conceptualize the idea of pregnancy; the factors influencing processes during pregnancy and the interrelationship of these factors with post-birth bonding;
- g. Women differ in their ability to cognitively conceptualize a fetus, form an emotional attachment to it and engage in behaviours that reflect this attachment, e.g. talking to the baby, rubbing one's belly to promote fetal movements, etc.
- h. The relationship between the conceptualization of, and reaction to, pregnancy, and the interactional style with the infant after birth, vary.

Being emotionally attached to the fetus and displaying behaviours that express that relationship have both been considered important components of prenatal attachment (Cranley, 1981; Condon, 1993). Maternal-fetal attachment was defined originally by Cranley (1981, p. 282) as "the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child". Cranley developed the Maternal Fetal Attachment Scale to measure this concept. Weaver and Cranley (1983) modified the original scale to assess Paternal Fetal attachment. A more recent definition was offered by Condon and Corkindale (1997) who suggested that prenatal attachment referred to "the emotional tie or bond which normally develops between the pregnant parent and her unborn infant" (p. 359). Condon (1993) also developed a questionnaire to measure this construct, i.e., the Antenatal Attachment Scale.

While Cranley's work has stimulated a great deal of research on parental fetal attachment, there is clear evidence that studies utilizing her measure have resulted in inconsistent findings (Condon, 1993; Cox, 2002). Cranley's scale has also been criticized for the following reasons: 1. As Condon (1993) points out, Cranley's scale includes items that measure "the woman's attitude to the pregnancy state and the motherhood role" (p. 168); 2. The factors of the scale, as outlined by Cranley, were not derived by statistical analysis and do not stand up to statistical scrutiny (Zimmerman, 1993); and 3. the Paternal Attachment Scale is a mere "translation" of the mother's version and does not reflect necessarily the issues a father-to-be experiences (Zimmerman, 1993).

Since the development of Cranley's 1981 measure, several other research tools have been developed. Beck (1999) reported that, in addition to Cranley's measure, some of the other measures included the Prenatal Maternal Attachment Scale by LoBiondo-Wood and Vito-O'Rourke in 1990; and the Prenatal Attachment Inventory by Muller in 1993. Cox (2002) pointed out that two additional tools were not included in Beck's list, i.e., Rees' Prenatal Tool, developed in 1980 and the Antenatal Emotional Attachment Scale of Condon in 1993.

With regard to the relationship of prenatal attachment to postnatal interactional behaviors, prenatal attachment has been related to maternal feelings to

the infant after delivery (Leifer, 1977); to the intention of mothers to breast feed (Foster, Slade & Wilson, 1996); to the intended or expected length of breastfeeding (Zimmerman & Doan, 1995); to later feeding behavior (Fuller, 1990); to maternal sensitivity to the cues of her infant (Fuller, 1990) and postnatal maternal involvement with their infant (Siddiqui & Hagglof, 2000). In addition, Muller (1996) reported a significant correlation between prenatal and postnatal attachment. However, she noted that the size of the correlation suggested other factors also influenced the postnatal scores.

In the following discussion, we will examine how our research relates to each of the above mentioned issues, i.e., the variability of prenatal attachment scores; the ability of never-pregnant women (and men) to conceptualize being pregnant and being attached to an imagined fetus; the factors that may relate to the ability of never-pregnant women (and men) to conceptualize pregnancy as a positive experience; the factors that are related to a parent's level of prenatal attachment and finally, some of the methodological issues relating to the definition and measurement of prenatal attachment.

The Variability of Prenatal Attachment Scores

One of the consistent findings from our studies, using Cranley's fetal attachment scale, was the wide range of variability of scores, (e.g., Doan & Green, 2001; Doan & Howell, 1998; Doan, Zimmerman & Howell, 1997; Guger & Doan, 1995; Zimmerman (in progress) and Zimmerman & Doan, 1995). For example, in the Doan and Green study, with a group of pregnant women in their second or third trimester, they found a range of scores from 29 to 107 on Cranley's attachment measure, in which the possible range of scores is 24 to 120. An interesting finding, in this study, was the bimodal distribution of scores, in which there was a low attachment group, with scores that varied between 27 and 54, and a high attachment group, scoring between 74 and 108.

Cranley also noted the issue of variability of scores. In 1981, for example, she reported that by the third trimester 78 % of the women in her study engaged in defined attachment behaviours. It is not clear what this says about the other 22 %.

Further support for the existence of variability in attachment scores was found in the study by Doan and Green (2001), who used Muller's (1993) Maternal Prenatal Attachment Inventory. The results showed that scores ranged from 38 to 93, when the possible score was 27 to 108. Condon (1985) also commented that it has been suggested that approximately 10–15 per cent of women develop only a minimal attachment prenatally.

What is clearly demonstrated in all of these studies is that there is a wide variability of responses on a number of prenatal attachment measures. The finding of varying levels of prenatal attachment leads to questions about the research, theoretical and clinical implications of those scoring lower on their prenatal attitudes and behaviour and their later ability to be attached to their newborn infant.

Theoretically, parent fetal attachment represents the earliest relationship parents have with their children. The understanding of this attachment relationship and some of the factors that "facilitate or inhibit its development (and influence its intensity) may provide important insights into the determinants of more

complex subsequent relationships such as the maternal-infant one” (Condon & Corkindale, 1997, p. 360). Condon and Corkindale also discussed some of the clinical implications of understanding this relationship. They summarized some of the research that suggests that “an understanding of this relationship provides a framework for conceptualizing reactions to foetal loss in both early and late pregnancy” (p. 360). They also noted that “the need to protect and safeguard an object may be strongly influenced by the nature and intensity of the attachment to it. A ‘much-loved’ foetus should be at far less risk of neglect or abuse, the mother being less likely to indulge in behaviours, including alcohol and nicotine use, which potentially endanger it” (p. 360).

The Ability of Never Pregnant Women (and Men) to Conceptualize an Imagined Pregnancy and Prenatal Attachment to an Imagined Fetus

Using Cranley’s attachment scales (Cranley, 1981; Weaver & Cranley, 1983), Guger and Doan (1995) compared maternal fetal attachment in pregnant women (in the first four months of gestation) with a group of never pregnant women, who planned to become pregnant in the future. The groups were matched for age, education, marital status and income. Not only were never pregnant women able to conceptualize a pregnancy and feel attachment to an imagined fetus, but they scored higher than their pregnant counterparts. The mean scores were 91.83 and 85.95 respectively, where the possible range of scores was 24 to 120. These scores were consistent with the normative data, on prenatal attachment of pregnant women, summarized by Cox (2002).

Doan, Zimerman & Howell (1997, 1998) measured imagined fetal attachment of 192 never-pregnant undergraduate students (84 males and 108 females). To varying degrees, all 192 participants were able to conceptualize an imagined pregnancy and their attachment to an imagined fetus. Females scored consistently higher than males in their imagined fetal attachment.

These studies support the existence of strong thoughts and feelings about pregnancy and the fetus in never-pregnant women and men, as seen also in the vignettes. As well, the results underscore the importance of further studies in this area.

Factors Related to the Ability of Never-Pregnant Individuals to Conceptualize Pregnancy as a Positive Experience

To examine how non-pregnant women conceptualized pregnancy, Guger and Doan (1995) looked at measures of fetal attachment (Cranley’s, 1981 Maternal Fetal Attachment Scale), attitudes to pregnancy and a test of formal reasoning. They found that attachment scores were correlated with the identification with the motherhood role, acceptance of pregnancy and preparation for labour. Formal reasoning was not related to any of the other measures.

In the previously mentioned two studies by Doan, Zimerman and Howell (1997, 1998), they measured fetal attachment, using Cranley’s scale, a sex-role identification scale and an empathy scale. Empathy was positively correlated with fetal attachment for both males and females in the first study, but only for males in the

second study. Fetal attachment was correlated with traditional sex roles for both males and females. The results of these studies suggested that empathic concern might play a central role in conceptualizing pregnancy as a positive experience and forming an attachment with a preborn child.

Factors Related to the Parent's Level of Prenatal Attachment

The connection between breastfeeding and attachment was examined by Zimmerman and Doan in 1995. Breastfeeding is often described as one of the bonding behaviours of the mother and is accepted as bonding-enhancing. Therefore, the study was designed to assess the likelihood of breastfeeding by inquiring about the intention to breastfeed and the intended length of breast-feeding. The results indicated that for the mothers-to-be, but not for the fathers-to-be, the intended or expected length of breastfeeding was significantly positively correlated with one of the attachment subscales. The mothers who reported a high interest and acceptance of the maternal role, as well as acknowledging the fetus as a person, expected to breastfeed longer. These findings were further supported by Foster, Slade and Wilson (1996) who found that intending to breast feed was correlated with higher fetal attachment.

Doan and Howell (1998) examined fetal attachment (Cranley's scale), attitudes to pregnancy, empathy and perception of self and partner (a measure of partner independence and interdependence) in 41 pregnant couples. For fathers-to-be, the total attachment score was related to attitudes to pregnancy in the following way: the higher the fetal attachment, the lower the concern for the wellbeing of the self and the baby; the higher the acceptance of pregnancy, the higher the identification with the motherhood role, the preparation for labour, and the perception of the relationship with the husband. For mothers-to-be, the fetal attachment score was related in the following way: the higher the fetal attachment, the lower the concern for the wellbeing of self and baby; the higher the fetal attachment, the higher the scores on preparation for labour.

An analysis of the preliminary data of a study of 164 mothers-to-be by Zimmerman (in progress) suggested that the women's ratings of their emotional reaction to the news that they were pregnant (i.e., from extremely upset to extremely happy) was significantly correlated with prenatal attachment. Women who had experienced a previous loss in pregnancy had higher empathy scores and the ability to conceptualize the fetus as a distinct person, as well as general empathic concern, may be important factors in a model of prenatal attachment.

As seen in the above brief descriptions of these studies, emotional and cognitive factors are emerging as important areas of research.

Methodological Issues Relating to the Definition and Measurement of Prenatal Attachment

We approached the methodological issues relating to the measurement of prenatal attachment in three ways: by examining the sensitivity of the fetal attachment measure to variations in related factors (Doan & Green, 2001; Kunkel, 2002); through factor analyses of the Maternal Fetal Attachment Scale scores (Guger,

1994; Zimmerman, 1993); and by an extensive review and analysis of the Maternal Fetal Attachment Scale (Cox, 2002).

In the Doan and Green (2001) study, 46 pregnant women, in the second and third trimester of their pregnancy, filled out questionnaires on their level of fetal attachment (Cranley's, 1981 scale and Muller's, 1989 Prenatal Attachment Inventory), maternal adjustment and attitudes, strategies used to cope during stressful situations in pregnancy and a pregnancy symptom checklist. They found that while the Cranley and Muller scales of fetal attachment were highly correlated, only the Cranley's scale was correlated with the other measures.

Kunkel (2002), on the other hand, examined the responses of 34 couples to two measures of fetal attachment (Cranley's, 1981, and Condon's, 1993, scales) and the relationship of fetal attachment to marital satisfaction, depression and emotional intelligence. She found that the Cranley scale was not sensitive to variations in the other measures, whereas Condon's scale was significantly correlated with the following: depression (only for females); marital satisfaction for both males and females; and global emotional intelligence for females and not males.

The results of these two studies support the contention by Muller (1992) that fetal attachment is a multidimensional concept and should be assessed by more than one measure. In addition, with regard to Cranley's measure, which has been most consistently used in the literature, there are two methodological concerns: The first relates to the use of the subscales as outlined by Cranley. In two of our studies using factor analyses, we found that the total score of the Maternal Fetal Attachment Scale had higher internal consistency than that of the subscales (Zimmerman, 1993; and Guger, 1994). This conclusion had been previously stated by Cranley (1992).

The second methodological issue relates to the inconsistency in the research findings of factors related to maternal fetal attachment. Cox (2002), following an extensive review of Cranley's Maternal Fetal Attachment Scale, concluded that "A well-coordinated research effort in the areas of the developmental sequence of prenatal attachment and the assessment of healthy maternal fetal attachment remains urgent" (p. 61).

Where Do We Go from Here?

From our studies, we have concluded that some of the key components of any model of prenatal attachment, and its effects, must include: the pre-pregnancy ability to positively conceptualize the pregnancy, fetus and parenting and the attachment to the imagined fetus; both emotional and cognitive factors that may influence prenatal attachment; an understanding of the ecological system of the parent (e.g., marital satisfaction) as part of the context of attachment both pre- and postnatally; and a consideration of prenatal attachment of both mothers- and fathers-to-be.

Therefore, our working definition of prenatal attachment is as follows: Prenatal attachment is an abstract concept, representing the affiliative relationship between a parent and fetus, which is potentially present before pregnancy, is related to cognitive and emotional abilities to conceptualize another human being, and develops within an ecological system.

Considering that the primary interest is in preventing pathology and promoting optimal development, we are suggesting the following questions and points:

1. How, and how early, can we identify non-pregnant individuals who may be at risk for developing problems during pregnancy?
2. How can we identify pregnant women and their partners who may be at risk for developing a problematic relationship with their infants?
3. Appropriate clinical interventions for individuals who are at risk need to be explored and evaluated.
4. When conducting research, very careful consideration must be given to the measures used.
5. While we have only mentioned some of our research with fathers-to-be, we are very interested in a more in-depth understanding of the processes men go through while expecting a child. Measures used when studying expectant fathers should not merely mirror the experience of the mothers, but should recognize the uniqueness of the experience for men.
6. Future studies should examine the factors that might identify pregnant women who are more negatively reactive to the activities of their fetus and how this relates to the fetal attachment, birth experience, and the relationship to the child after birth.

Our group is presently developing a series of studies that address some of the above points. For example, in one study we will examine factors influencing high school students' ability to imagine their prenatal attachment and the factors that would influence their level of attachment. The importance of this type of research was noted by Condon, Donovan and Corkindale (2001) who used a questionnaire survey of Australian adolescents' attitudes and beliefs about pregnancy and parenthood, a "substantial idealization of many aspects of the transition to parenthood is common in this 15–18 year old age group, with males holding significantly more idealized beliefs than females" (p. 246). They suggested that even minimal intervention, from the administration of questionnaire items, which may have resulted in discussion among the students, may be sufficient to promote a more realistic view of pregnancy and parenthood.

In another study, we plan to continue to research emotional and cognitive concomitants of prenatal attachment with the intention that this information be disseminated for the purpose of training primary health providers in identifying and referring pregnant parents who are at risk.

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