Published in final edited form as:

J Reprod Infant Psychol. 2012 July 1; 30(3): 261–277. doi:10.1080/02646838.2012.717263.

Use of selective serotonin reuptake inhibitors (SSRIs) during pregnancy and disorganized infant-mother attachment

Beth R. Troutman and Allison M. Momany

Department of Psychiatry, University of Iowa, Iowa City, United States

Abstract

Objective—Examine the quality of infant-mother attachment in a prospective case series of infants whose mothers took selective serotonin reuptake inhibitors (SSRIs) during pregnancy.

Background—SSRIs are prescribed to 2 to 6% of pregnant women (National Collaborating Centre for Mental Health, 2007; Stewart, 2011). Recent articles on the use of SSRIs during pregnancy note the increased risk for problematic infant-mother relationships among mothers with untreated postpartum depression (Gentile, 2011; Stewart, 2011). However, little is known about the quality of infant-mother relationships among mothers who took SSRIs during pregnancy.

Methods—Five mothers who took SSRIs during pregnancy were recruited from a community study of infant development. Mothers completed ratings of postpartum depression symptoms (Beck Depression Inventory) 4 to 6 times between 1 month and 1 year following the infant's birth. At 1 year postpartum, quality of infant-mother attachment was assessed using the strange situation procedure.

Results—Four of the 5 infant-mother dyads (80%) were classified as disorganized, a rate considerably higher than in postpartum depression samples.

Conclusion—These results are used to raise questions about the clinical implications of research on in utero exposure to SSRIs, perinatal depression, and disorganized attachment. Specifically, this case series raises questions about using research on the link between postpartum depression and infant-mother attachment as a rationale for the use of SSRIs during pregnancy. Current research indicates use of SSRIs during pregnancy may: 1) increase risk for disorganized attachment, 2) decrease risk for disorganized attachment, or 3) have no effect on disorganized attachment.

Introduction

Studies conducted in the U.S. and Canada indicate approximately one in ten pregnant women experience major depression (Gavin et al., 2005; Gaynes et al., 2005; Marcus, Flynn, Blow, & Barry, 2005; Oberlander, Warburton, Misri, Aghajanian, & Hertzman, 2006; Troutman & Cutrona, 1990). Based on a review of research on perinatal depression, Gavin et al. (2005) estimated that 12.7% of pregnant women have an episode of major depression and 18.4% of pregnant women have an episode of major or minor depression. In the face of this rate of depression, it is probably not surprising the use of selective serotonin reuptake inhibitors (SSRIs) to treat prenatal depression is increasing with recent estimates indicating 2 to 6% of women in Western countries take SSRIs during pregnancy (Andrade et al., 2008; Bakker, Kolling, & van den Berg, 2008; Marcus, et al., 2005; Ramos, Oraichi, & Rey, 2007; Reefhuis, Rasmussen, & Friedman, 2006).

Several studies of the emotional and behavioural functioning of infants exposed to SSRIs in utero have been conducted in the past decade. Up to 30% of neonates exposed to SSRIs in utero exhibit a “neonatal withdrawal syndrome” or “SSRI discontinuation syndrome” characterized by agitation, jitteriness, and irritability (Casper, Fleisher, & Lee-Ancas, 2003; Chambers, Johnson, Dick, Felix, & Jones, 1996; Rampono et al., 2009). Longer in utero SSRI-exposure is associated with slightly lower Apgar scores at birth and observer ratings of poorer emotional regulation, motor quality, and orientation/engagement at 12 to 40 months (Casper, et al., 2011). Although suggestive of long-term effects on emotional development, the wide age range at follow-up limits the interpretation of these results. Mothers who take SSRIs during pregnancy rate their children as exhibiting more internalizing and externalizing behaviour at age 3 than mothers who do not take SSRIs during pregnancy (Oberlander et al., 2007). However, there is no significant effect of in utero exposure after statistically controlling for prenatal and postpartum depressed mood. A population-based case control study indicates a 2-fold increased risk of autism spectrum disorders in children exposed to SSRIs in utero with no increased risk among children whose mothers have a history of mental health treatment but do not take SSRIs during pregnancy (Croen, Grether, Yoshida, Odouli, & Hendrick, 2011).

Given the risks associated with in utero exposure to SSRIs, routine use of SSRIs for mild or moderate depression during pregnancy is not recommended (National Collaborating Centre for Mental Health, 2007; Stewart, 2011). However, under the following circumstances, SSRIs may be used to treat mild or moderate depression during pregnancy: history of severe depression, depressive symptoms have not responded to psychotherapy, the woman has expressed a preference for SSRIs, psychotherapy is not accessible, or depressive symptoms have previously responded to SSRIs (National Collaborating Centre for Mental Health, 2007; Stewart, 2011). Recent articles note the need to weigh the risk associated with SSRI exposure against the risk associated with untreated prenatal depression, e.g. the potential risk of untreated prenatal depression leading to postpartum depression and subsequent problems in the developing infant-mother relationship (Gentile, 2011; Grzeskowiak, et al., 2011; National Collaborating Centre for Mental Health, 2007; Parry, 2009; Stewart, 2011). However, since there is no research on the developing infant-mother relationship among infants whose mothers were treated with SSRIs during pregnancy, there is no evidence the use of SSRIs during pregnancy ameliorates this risk.

Much of the research on the impact of postpartum depression on the developing infant-mother relationship is based on attachment theory. Although the majority of infants become attached to their caregivers by the end of the first year, there is significant variability in the quality of the attachment relationship and these individual differences have implications for later social and emotional functioning (Cassidy & Shaver, 2008). After extensive naturalistic observations of infant-mother interactions, Ainsworth and colleagues (Ainsworth, Blehar, Waters, & Wall, 1978) developed a standardized laboratory procedure known as the Strange Situation Procedure to examine individual differences in the quality of infant-mother attachment. This procedure involves a series of situations designed to assess the balance between exploration and seeking proximity to the attachment figure. The parent and child enter a novel playroom with attractive toys (designed to activate exploratory behaviour). The baby is then confronted with a series of increasingly stressful situations designed to activate attachment behaviour: the entrance of a stranger who first talks to the mother and then initiates interaction with the baby, an initial brief separation where the mother leaves the child with the stranger, and a second brief separation where the child is left alone in the room. The child's response to the mother when she returns following these separations is especially important in evaluating the quality of infant-mother attachment. The Strange Situation Procedure has been described as the “‘gold standard’ for systematically identifying patterns of infant-parent attachment” (Zeanah, Berlin, & Boris, 2011).

The three patterns of attachment originally identified by Ainsworth et al. (1978) are now referred to as organized patterns of attachment. Eighty-five percent of the dyads seen in middle class community samples are classified as exhibiting an organized pattern of attachment and the majority of infants with an organized pattern of attachment (73% in community samples) exhibit a secure attachment relationship (B) (van Ijzendoorn, et al., 1999). Securely attached infants exhibit a balance between proximity-seeking and exploration. They directly communicate distress in situations that provoke uncertainty or fear, seek proximity to their mother when distressed, are soothed by their mother, and return to exploration. In the other two organized patterns of attachment, the baby emphasizes proximity-seeking (insecure-resistant) (C) or exploration (insecure-avoidant) (A) rather than exhibiting a balance between proximity-seeking and exploration.

The classification of disorganized attachment (D) was developed by Main and Solomon (1990) after reviewing videotapes of dyads that were difficult to classify in the original organized attachment classifications. The infants in these dyads exhibit a variety of conflict behaviours in stressful situations while in the presence of their caregiver indicating a breakdown in the infant's ability to effectively use the mother for emotional regulation under stressful circumstances (Main & Solomon, 1990; van Ijzendoorn, et al., 1999). Breakdowns sufficient to classify a dyad as disorganized can range from brief interruptions in an otherwise organized pattern of attachment to global disorganization. The majority of infant-mother dyads classified as disorganized are given a secondary, best-fitting Ainsworth et al. (1978) classification. For example, an infant classified as disorganized/secure might exhibit an overall pattern of going to their parent for comfort when distressed but exhibit conflict behaviours in the context of comfort-seeking (e.g. briefly freezing or engaging in stereotypies such as hair twisting or rocking on the approach to the parent or turning around and backing toward the parent for comfort). In the relatively rare circumstance where the dyad exhibits global disorganization and a secondary best-fitting Ainsworth et al. (1978) classification cannot be identified, the secondary classification is "cannot classify". Longitudinal studies indicate disorganized attachment, assessed at 12 to 18 months of age in the Strange Situation Procedure, is associated with aggressive, oppositional, and disruptive behaviour at home and school at 2 to 9 years of age, poorer social and cognitive development at 7 years of age, symptoms of posttraumatic stress disorder at 8 ½ years of age, and symptoms of borderline personality disorder at 28 years of age.

One of the factors associated with disorganized infant-mother attachment is maternal postpartum depression (Martins & Gaffan, 2000). A meta-analysis of seven U.S. and British studies indicates postpartum depression is associated with increased risk for disorganized infant-mother attachment from an average rate of 17% in nondepressed community comparison groups to 28% among infants of mothers with postpartum depression (Martins & Gaffan, 2000). In a longitudinal study of Australian infant-mother dyads attending a residential centre for mothers experiencing significant difficulties managing their infants, the rate of disorganized attachment was 18% in dyads where the mother experienced no or brief postpartum depression and 40% in dyads where the mother experienced chronic postpartum depression (McMahon, Barnett, Kowalenko, & Tennant, 2006).

The clinical implications of the link between postpartum depression and infant-mother attachment has been discussed in several recent reviews on treatment options for prenatal and postpartum depression (Gentile, 2011; Grzeskowiak, et al., 2011; National Collaborating Centre for Mental Health, 2007; Parry, 2009; Stewart, 2011). This prospective case series contributes to the ongoing discussion regarding SSRI use during pregnancy by examining symptoms of postpartum depression and quality of infant-mother attachment in 5 mothers who took SSRIs during pregnancy.

Method

Participants

Participants were recruited from a larger community study on infant and maternal factors associated with the development of infant-mother attachment. The community sample was recruited from advertisements and birth announcements.

Procedures

The study was approved by the University of Iowa IRB. Informed consent for participation was obtained from mothers for their participation and the participation of their infant. Demographic and health information obtained during a brief postpartum interview was used to identify women who took SSRIs during pregnancy. 117 women completed the postpartum interview. Six women (5% of women interviewed) reported taking SSRIs during pregnancy. These women were invited to participate in a prospective pilot study involving in-home assessments at 2, 4, 6, and 9 months postpartum and a standardized laboratory assessment at 1 year postpartum. One of the six women who took SSRIs during pregnancy declined participation in the prospective study. The five women who agreed to participate completed at least 3 in-home assessments between 2 and 9 months postpartum and the standardized laboratory assessment conducted at the University of Iowa at 1 year postpartum.

Measures

SSRI use

A brief health interview that included questions about the use of prescription medications during pregnancy was conducted at 1 month postpartum. Mothers were also interviewed about current use of prescription medications and breastfeeding at 1, 2, 4, 6, and 9 months postpartum.

Postpartum depression symptoms

Symptoms of postpartum depression were assessed using the Beck Depression Inventory (BDI) (Beck & Steer, 1993) at 1, 2, 4, 6, 9, and 12 months postpartum. The BDI is a well-established measure of depressed mood and has been used in numerous studies of postpartum depression (Affonso, De, Horowitz, & Mayberry, 2000; Cutrona & Troutman, 1986; Harris, Huckle, Thomas, Johns, & Fung, 1989; Haslam, Pakenham, & Smith, 2006; Huffman, Lamour, Byran, & Pederson, 1990; Jarjoura & O'Hara, 1987; Lee, Yip, Chui, & Chung, 2000; O' Hara, Zekoski, Phillipps, & Wright, 1990; O'Hara, Stuart, Gorman, & Wenzel, 2000; Stuart, Couser, Schilder, O'Hara, & Gorman, 1998; Whiffen, 1988). When reporting BDI scores in the case descriptions, BDI scores are interpreted according to guidelines distributed by the Center for Cognitive Therapy (Beck, Steer, & Garbin, 1988).

Infant-mother attachment

Assessments of the quality of infant-mother attachment were conducted at 1 year using the Strange Situation Procedure (Ainsworth, Blehar, Waters, & Wall, 1978). Infant-mother dyads were coded for organized attachment classifications (secure (B), avoidant (A), and resistant (C)) according to Ainsworth et al.'s (1978) criteria which uses behavioural ratings of proximity seeking, contact maintaining, proximity avoidance, and contact resistance to determine pattern of attachment. Dyads were coded for disorganized attachment using Main and Solomon's (1990) criteria. Indices of disorganized attachment include: a) sequential display of contradictory behaviour patterns (e.g. crying during separation but moving away from the caregiver when they return); b) simultaneous display of contradictory behaviour patterns (e.g. moving away from caregiver while crying); c) undirected, misdirected,

incomplete, and interrupted movements and expressions (e.g. going to stranger for comfort when caregiver is present); d) stereotypies, asymmetrical movements, mistimed movements, and anomalous postures (e.g. pulling hair, rubbing body parts, lying in prone or huddled position in contexts where child is distressed and caregiver is available); e) freezing, stilling, and slowed movements and expressions (e.g. remaining motionless for at least 30 seconds with a dazed expression); f) direct indices of apprehension regarding the caregiver (e.g. hand to mouth or frightened expression when caregiver returns); g) direct indices of disorganization or disorientation (e.g. unexplained falls when parent reaches for infant or disorganized wandering). Attachment classification is moderately stable with stability over a 2 to 6 month period ranging from 50% to 81% in five samples (van Ijzendoorn, et al., 1999). Determining attachment classification from videotapes of Strange Situation Procedures involves extensive training in both the organized and disorganized coding systems. Videotaped Strange Situation Procedures for this prospective case series were coded by two expert coders (Alan Sroufe and June Sroufe) who have extensive experience coding the Strange Situation Procedure. Coders were not informed that mothers had taken SSRIs during pregnancy and were blind to all information regarding the infants and mothers. One of the tapes reported in this case series was coded independently by the two coders who agreed on the primary classification.

Case Descriptions and Analyses

We first present the five cases. This is followed by a summary and discussion of the cases. Case descriptions are derived from information obtained from semi-structured interviews (health interviews), standardized self-report ratings of depression (BDI), and standardized observation of infant-mother attachment (Strange Situation Procedure).

Case 1

SSRI use and breastfeeding—Mother was taking fluoxetine when she conceived and continued fluoxetine throughout her pregnancy. She continued to report taking fluoxetine at the 1, 2, 4, and 9 months in-home assessments. She breastfed for 1 month. Breastfeeding was discontinued at the recommendation of a lactation consultant who was concerned about the baby's exposure to SSRIs in the breast milk.

Postpartum depression ratings—Scores on the BDI were 7 (minimal) at 1 month, 6 (minimal) at 2 months, 0 (minimal) at 4 months, 0 (minimal) at 9 months, and 0 (minimal) at 1 year. In summary, this baby was exposed to an SSRI in utero and through breast milk. There was minimal exposure to postpartum depression.

Assessment of infant-mother attachment at 1 year—After entering the room, the baby explores the toys – examining each one carefully to see what it can do. She finds a toy phone with wheels and begins crawling around the room pushing the phone in front of her. She occasionally glances at her mother. After pushing the phone around the room, she pushes it over by her mother, uses the edge of her mother's chair to pull herself to standing, and vocalizes to her mother in a conversational tone. She gets down and begins pushing the phone around the room again. When the stranger enters, the baby glances up at her. After the stranger sits down, the baby looks at her, makes a couple of brief vocalizations, and crawls away pushing the phone in front of her. She quickly pushes the phone past the stranger, pauses briefly by her mother's chair, and sets off around the room again. She accidentally runs into the wall with the phone and makes a brief fuss. She then begins to purposely run the phone in to the wall making an excited squeal each time she does. After the stranger begins talking to her mother, she crawls near the stranger, accepts an offered toy from her, and sits on the floor between her mother and the stranger. When the stranger sits down and begins

interacting with her, she initially quiets and appears wary. However, after a few seconds, she accepts the stranger's bids for interaction. Her mother leaves, briefly tousling her hair on the way out the door. The baby looks up at her and watches her leave with no obvious distress, continuing to interact with the stranger. She appears subdued compared to pre-separation and her vocalizations have a slightly worried tone. She picks up and puts down several different toys as though none of them really interest her. When her mother returns, she glances up at her. She turns her attention to a toy and begins busily exploring it when her mother reaches down, pats her, and tousles her hair. When the stranger leaves, she crawls to the door. Her mother goes to the door to move her and ensure her fingers do not get caught in the door. After the mother sits back down, the baby glances at her and then returns to playing with toys. After a couple of minutes, the baby begins pushing the toy phone around the room again, turns, and happily vocalizes to her mother. The baby goes over to the door and attempts to pull herself to a standing position, falls, and fusses while looking at her mother. The fuss escalates to a cry and her mother goes and picks her up. The signal comes for the mother to leave again so she puts the baby down with a toy, rubs her head a couple of times, and leaves. After the mother leaves, the baby crawls to the door crying. She continues to cry loudly at the door. When the stranger enters, the baby glances up at her. When the stranger rubs the baby's arm, she initially shrugs off the touch but then accepts it. She quits crying and sits quietly as the stranger shows her different toys. She then turns away from the toy the stranger is showing her and fusses. The baby then briefly looks at the toy the stranger is showing her, fusses, pulls on her ears, and reaches her arms to be picked up. After being picked up by the stranger, the baby settles herself next to the stranger. The baby ventures a couple of feet away from the stranger and the stranger returns to her chair. The baby continues to look at the stranger and vocalize to her. When her mother returns, the baby's face lights up with a big smile. She expresses her delight at seeing her mother with a string of positive vocalizations. She then begins making negative vocalizations, fusses, and crawls to where her mother is sitting. She uses her mother's legs to pull herself up and stands with her hands on her mother's legs as she continues to vocalize in a plaintive tone. She fusses briefly again. Next, she turns and looks at the toys with one hand on her mother's leg. She looks across the room at the phone, crawls over to get it, and pushes it back towards the empty chair. She pulls herself up on the chair and begins playing peek-a-boo with her mother, scrunching down and then popping back up as she squeals delightedly. This dyad was classified as exhibiting an organized secure (B) infant-mother attachment.

Case 2

SSRI use and breastfeeding—This subject reported taking fluoxetine and bupropion during pregnancy and at 1 month postpartum. At 2 months postpartum, she continued to take fluoxetine and bupropion and was also taking olanzapine. At 6 months postpartum, olanzapine and fluoxetine had been discontinued. She continued to take bupropion and was also taking paroxetine. At 9 months postpartum, bupropion and paroxetine had been discontinued. She reported taking mirtazapine at the 9 months assessment. She breastfed for 3 weeks.

Postpartum depression ratings—Scores on the BDI were 27 (moderate) at 2 months, 28 (moderate) at 6 months, 12 (minimal) at 9 months, and 12 (minimal) at 1 year. In summary, this baby was exposed to an SSRI in utero and through breast milk. The baby was exposed to moderate postpartum depression for 6 months.

Assessment of infant-mother attachment at 1 year—After entering the room, the baby begins exploring toys. She begins to vocalize to herself in a sing-song tone as she examines the toys. When the stranger enters, the baby quiets briefly. The baby then vocalizes briefly in the direction of the stranger, walks away from her, sits down and studies

her from a distance. After the stranger begins talking, the baby lifts up her dress. She puts her dress down and begins pulling at her hair. When the stranger initiates interaction with the baby, the baby is initially wary but then warms up to the stranger and begins interacting with her. When her mother leaves, the baby fusses, gets up, and walks after her. She accepts the stranger's offer of a toy, returning to interact with her. She alternates between moving away from the stranger and initiating contact with her until her mother returns. When her mother enters, the baby looks at her mother, makes a positive vocalization, and continues to interact with the stranger. She brings a toy to her mother and vocalizes briefly. She then sits down near her mother and begins exploring toys. The baby begins to fuss and pull at her hair. Her fussing increases when she realizes her mother is leaving. She stands at the door and cries after her mother has left. The baby is crying hard when the stranger enters and allows the stranger to pick her up. On two additional occasions, the stranger puts the baby down and the baby fusses and reaches to be picked up. When her mother enters, she reaches for her mother from the stranger's lap. She quiets on her mother's lap. After her mother puts her down, she picks up a toy, fusses, and begins mouthing the toy. She brings the toy over by her mother's chair and stands by her mother's chair mouthing the toy. This dyad was classified as disorganized with a secondary, best-fitting classification of secure (D/B).

Case 3

SSRI use and breast feeding—This subject reported taking fluoxetine during the last trimester of pregnancy. At the 1 month postpartum assessment, she reported taking sertraline. She did not report taking any prescription medication at the 4 months postpartum assessment but reported taking fluoxetine at 6 and 9 months postpartum. She reported breastfeeding at 1 month but had discontinued breastfeeding at the 4 months assessment.

Postpartum depression ratings—Scores on the BDI were 7 (minimal) at 1 month, 6 (minimal) at 4 months, 13 (minimal) at 6 months, 13 (minimal) at 9 months, and 4 (minimal) at 1 year. In summary, this baby was exposed to an SSRI in utero and through breast milk. There was minimal exposure to postpartum depression.

Assessment of infant-mother attachment at 1 year—After entering the room, the baby explores the toys, crawling from toy to toy as he investigates how they work. He crawls over by his mother's chair with a toy phone. After holding the phone to his ear and chattering, he offers the phone to his mother. He crawls over to the other chair, pulls to a stand on the chair, and begins touching the electrical outlet covers. His mother firmly says "No. Owie." He collapses in sobs against the chair. He lies on the floor and continues to cry loudly. When the stranger enters, he looks at her and stops crying. He crawls to the toy phone, brings it near the stranger's chair, and looks up at the stranger. He rolls the phone back and forth near the stranger's chair, occasionally glancing at the stranger. When the stranger sits on the floor near him, he goes to his mother's chair and places his hand on his mother's leg. When the stranger offers him a toy, he lets go of his mother's leg and looks at the toy. He eventually accepts the toy from the stranger and takes it near his mother's chair. When his mother leaves, he begins crying and crawling to the door. He lies down and continues to cry. He crawls a couple of feet then lies down again crying. When his mother enters, he looks at her, begins crying more intensely, and lies down again. His mother wipes his nose. He turns his head away from her and continues to lie on the floor and cry. His mother rubs his back and he turns away from her again. His mother stands him up and moves towards the chair. He stands and fusses intermittently while rubbing his eyes. His mother moves towards him and he leans in to her while fussing softly. When she sits him on the floor, he fusses loudly in protest. When she leaves the second time, he crawls to the door crying. He cries loudly at the door. When the stranger enters, he accepts her rubbing his back but continues to fuss. He cries loudly when the stranger stops rubbing his back. His

mother enters and picks him up. He quiets but appears anxious. He rubs his head with one hand while clinging to his mother with the other. He then places his hand between his body and his mother's body. This dyad was classified as disorganized with a secondary, best-fitting classification of resistant (D/C).

Case 4

SSRI use and breastfeeding—This subject reported taking fluoxetine during her last trimester of pregnancy and continued to report taking fluoxetine at the 1, 2, 4, 6, and 9 months postpartum assessments. She reported breastfeeding throughout this period.

Postpartum depression ratings—Scores on the BDI were 15 (mild) at 1 month, 14 (mild) at 2 months, 18 (mild) at 4 months, 8 (minimal) at 6 months, 6 (minimal) at 9 months, and 5 (minimal) at 1 year. In summary, this baby was exposed to an SSRI in utero and through breast milk. The baby was also exposed to mild postpartum depression for 4 months.

Assessment of infant-mother attachment at 1 year—After entering the room, the baby begins exploring toys near his mother's chair. He briefly crawls away to explore toys but brings them back by his mother's chair. When the stranger enters, the baby studies her warily. He then moves closer to his mother, clinging to his mother's leg with one hand while he plays with a toy with the other hand. He then crawls under his mother's chair. After the stranger begins talking to his mother, the baby crawls out from under the chair and sits midway between his mother's chair and the stranger's chair. The baby initially accepts the stranger's bids for interaction but then moves closer to his mother. The baby begins crying when his mother leaves and continues to cry loudly while sitting in place. When his mother returns, the baby looks at her while crying loudly. The baby then turns away from his mother and picks up a toy. The baby continues to cry and lies on the floor in a huddled position. His mother reaches out her arms to him. The baby looks up at his mother and then crawls away from her while crying. When the baby reaches the wall he sits with his back to the wall and looks at his mother while crying loudly. He looks away from his mother and abruptly stops crying. After sitting quietly with a dazed expression for about a minute, he begins fussing intermittently, eventually collapsing on the floor in a huddled position again. When his mother pushes a toy to him, he briefly quiets and looks at it and then resumes crying. When his mother leaves, he begins crying loudly and crawls to the door. The baby continues to cry at the door during the separation. When he sees the door opening, he quickly crawls away from the door. After the stranger enters, he crawls back to the door and continues to cry while briefly reaching with one hand to touch the stranger. When his mother enters, the baby continues to sit and cry. When his mother puts her arms out to him, he extends his arms. He accepts his mother's hug while averting his head. His mother goes and sits in her chair. The baby sits and looks at his mother while crying. His mother reaches out her arms to him. The baby crawls closer. He then stops, sits down, and continues to cry. The baby then turns and crawls to the door while crying loudly. When he reaches the door, he turns and faces his mother while crying loudly. His mother holds out her arms to him. He quickly crawls towards his mother and crawls under his mother's chair. He sits under the chair crying loudly until his mother pulls him out from under the chair. He calms briefly while leaning towards his mother. His mother wipes his nose and then begins repeatedly dangling the tissue in his face in a teasing manner. He begins crying again. This dyad was classified as exhibiting a disorganized infant-mother attachment with a secondary, best-fitting classification of resistant (D/C).

Case 5

SSRI use and breast feeding—This subject reported taking citalopram throughout her pregnancy. She continued to report taking citalopram at the 1, 4, 6, and 9 months postpartum assessments. She reported breastfeeding at the 1, 4, 6, and 9 months postpartum assessments.

Postpartum depression ratings—Scores on the BDI were 7 (minimal) at 1 month, 13 (minimal) at 4 months, 10 (minimal) at 6 months, 16 (mild) at 9 months, and 13 (minimal) at 1 year. In summary, this baby was exposed to an SSRI in utero and through breast milk. The baby was exposed to mild postpartum depression at 9 months.

Assessment of infant-mother attachment at 1 year—After entering the room, the baby begins exploring the toys. He has recently begun walking and is still somewhat unsteady as he toddles from toy to toy. Soon after the stranger's entrance, the baby begins interacting with her. The baby engages the stranger by bringing her toys, putting his hand next to the stranger on the stranger's chair, making eye contact with her, and vocalizing to her. When the mother leaves, the baby watches her leave and does not exhibit distress. He continues to seek interaction with the stranger – bringing her toys and dancing to the music of one of the toys while looking to the stranger for a reaction. The baby smiles at his mother when she returns following the first separation. He then moves away from his mother and goes to the door where the stranger has exited. The baby then brings a toy to his mother and lightly bumps his head against his mother. The baby begins to cry loudly but abruptly stops crying when his mother distracts him with a toy. After briefly exploring the toy offered by his mother, the baby stands in front of his mother and fusses while rubbing his head. When his mother leaves again, the baby fusses and goes to the door. He fusses intermittently while going back and forth between the door and the toys. When the stranger enters, the baby looks at the stranger, smiles at her, and begins bringing her toys. He continues to interact with the stranger and does not exhibit distress. When the mother returns following the second separation, the baby looks at her and begins to fuss. He crawls to his mother and the fuss becomes a cry. The baby continues to fuss and cry while reaching for his mother. His mother reaches down and stands him on his feet. The baby then turns away from the mother, falls back on the floor and cries loudly. This dyad was classified as exhibiting a disorganized infant-mother attachment with a secondary classification of cannot classify (D/CC).

In summary, all of the infants in this case series were exposed to an SSRI in utero with exposure ranging from throughout fetal development to the last trimester of pregnancy. In addition, all infants had some exposure to an SSRI following birth through breast milk. One infant was also exposed to an atypical antidepressant, bupropion, in utero and through breast milk following birth. There was a range of exposure to symptoms of postpartum depression: one infant was exposed to moderate symptoms, two were exposed to mild symptoms, and two were exposed to minimal symptoms. Maternal postpartum depression ratings and the rate of disorganized infant-mother attachment are summarized in Table 1.

Conclusions

The women in this case series exhibited levels of depression comparable to women who have completed treatment for postpartum depression (O'Hara, et al., 2000). Without a control group, it is not possible to determine whether this resulted from the use of SSRIs during pregnancy and the postpartum period or some other factor (in mild to moderate depression, SSRIs are not significantly better than placebo in reducing depressive symptoms (Fournier et al., 2010; Kirsch et al., 2008; Mayer, 2008). The relatively low postpartum BDI scores in this case series raise the possibility some of the women were prescribed SSRIs for

mild to moderate depression during pregnancy. Given the lack of information about prenatal BDI scores, history of depression, and history of response to SSRIs, it is not possible to determine whether the use of SSRIs during pregnancy in this case series is consistent with current guidelines (e.g. (National Collaborating Centre for Mental Health, 2007; Stewart, 2011)). However, the rate of SSRI use during pregnancy in the community sample these women were recruited from (5%) is comparable to the rate seen in other community samples (2 to 6%) (Andrade, et al., 2008; Bakker, et al., 2008; Marcus, et al., 2005; Ramos, et al., 2007; Reefhuis, et al., 2006).

All of the women in this case series continued to take antidepressants following birth. The only woman who had discontinued her SSRI by the nine months assessment had switched to a noradrenergic and specific serotonergic antidepressant. The continuation of SSRIs during the postpartum period is consistent with follow-up studies of women who take SSRIs during pregnancy; 64 to 100% of women who take SSRIs during pregnancy continue to take them 12 to 40 months after the infant's birth (Oberlander et al., 2010; Oberlander, et al., 2007).

Despite relatively little exposure to clinically significant postpartum depression, four of the five infants with in utero exposure to SSRIs developed disorganized infant-mother attachment. This case series raises more questions than it resolves as conclusions about causality are limited by the small sample, lack of a control group, and failure to control for potential moderating factors (e.g. other psychosocial risk factors, exposure to other psychiatric medications). The questions raised by these cases are examined in three hypothetical models of the potential impact of in utero SSRI exposure on disorganized attachment highlighting current knowledge of in utero SSRI exposure, postpartum depression, and disorganized attachment.

Figure 1 depicts the hypothesis in utero SSRI exposure leads to disorganized attachment by directly impacting the developing serotonin system. The serotonin system is involved in modulating the emotional response to environmental stressors. Since SSRIs are known to cross the placenta, it stands to reason in utero exposure to medications that affect serotonin will affect the infant's emotional functioning (Rampono, et al., 2009). Animal models indicate exposure to SSRIs early in development leads to increased responsiveness to stress (Ansorge, Zhou, Lira, Hen, & Gingrich, 2004). This model suggests SSRI use during pregnancy increases risk for disorganized attachment by impacting the developing serotonin system and responsiveness to stress. That is, infants exposed to SSRIs in utero are more easily stressed and, therefore, more likely to develop disorganized attachment. This model is based on extrapolation from research on the serotonin system. Although research in human infants has not examined whether in utero SSRI exposure increases stress responsivity and subsequent risk for disorganized attachment, studies of the initial and long-term association of in utero SSRI exposure and emotional and behavioural functioning are consistent with this model (Casper, et al., 2003; Casper, et al., 2011; Chambers, et al., 1996; Croen, et al., 2011; Oberlander, et al., 2007; Rampono, et al., 2009).

Figure 2 depicts the hypothesis use of SSRIs during pregnancy indirectly benefits the infant by positively impacting maternal behaviour and improving security of attachment. According to this model, the treatment of depression in mothers-to-be should decrease symptoms of postpartum depression, reduce the infant's exposure to postpartum depression and the detrimental maternal behaviour associated with it, and improve the quality of infant-mother attachment. Our case series is not consistent with this model and raises questions about the hypothesis that in utero exposure to SSRIs improves the quality of infant-mother attachment by decreasing the infant's exposure to postpartum depression.

Although there is considerable research supporting the association of postpartum depression and disorganized attachment (Martins & Gaffan, 2000), there is no research indicating SSRI-treatment of prenatal or postpartum depression decreases risk for disorganized infant-mother attachment. Research on psychological interventions for postpartum depression indicate effectively treating symptoms of postpartum depression may not be sufficient to improve the quality of infant-mother attachment; psychological interventions for postpartum depression fail to improve the quality of infant-mother attachment despite successfully treating the depression (Forman et al., 2007; Gelfand, Teti, Seiner, & Jameson, 1996; Murray, Cooper, Wilson, & Romaniuk, 2003).

Figure 3 depicts the hypothesis in utero SSRI exposure leads to a decrease in maternal depression but has no effect on the infant. According to this model, SSRI use during pregnancy neither increases nor decreases risk for disorganized attachment since shared genetic and/or environmental risk accounts for the association of postpartum depression and disorganized attachment but this shared risk is not affected by use of SSRIs. For example, a polymorphism in the promoter region of the serotonin transporter gene (SLC6A4) affects the transcription rate of the gene with the short (*s*) allele transcriptionally less efficient than the long (*l*) allele. There is a significant body of research indicating carriers of the short allele are at increased risk of developing depression under stress (Karg, Burmeister, Shedden, & Sen, 2011). Recent research on the genetics of attachment indicates infant carriers of the short allele are at increased risk of developing disorganized attachment (Gervai, 2009; Spangler, Johann, Ronai, & Zimmerman, 2009). Unresolved adult attachment, a maternal factor that is strongly associated with disorganized attachment, is also associated with this polymorphism (Caspers et al., 2009).

Previous research suggests several possible shared environmental factors that could account for the association of maternal depression and disorganized infant-mother attachment. Environmental factors associated with increased risk for both perinatal depression and disorganized infant-mother attachment include giving birth during adolescence, less education, and lower socioeconomic status (Broussard, 1995; Bunevicius et al., 2009; Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010; Spieker & Bensley, 1994; Troutman & Cutrona, 1990).

This case series illustrates the need for well-controlled clinical studies on the impact of SSRIs during pregnancy on the mother, the infant, and the quality of infant-mother attachment. Such studies will help women and their doctors make more informed decisions regarding the use of SSRIs during pregnancy and plan for possible risks.

Acknowledgments

This research was supported by grants from the FHL Foundation, the National Institute of Child Health and Human Development (NICHD) (R03 HD37232-02), and the University of Iowa (international travel grant, College of Medicine research award, Children's Miracle Network grant, Iowa Center for Research by Undergraduates, and Obermann Center for Advanced Studies Spelmann Rockefeller grant) to Beth Troutman.

We are grateful to Rick Leonhardt, Kate Hancock, and Betty Simon for consultation and support, the mothers and infants who participated in this study, and the research assistants who assisted with recruitment, data collection, and data entry. Portions of these data were presented at the Marce Society International Biennial Scientific Meeting, Oxford University, UK, September, 2004.

References

- Affonso D, De A, Horowitz J, Mayberry L. An international study exploring levels of postpartum depressive symptomatology. *Journal of Psychosomatic Research*. 2000

- Ainsworth, M.; Blehar, M.; Waters, E.; Wall, S. Patterns of attachment: A psychological study of the strange situation. Hillsdale, NY: Erlbaum; 1978.
- Andrade S, Raebel M, Brown J, Lane K, Livingston J, Boudreau D, et al. Use of antidepressant medications during pregnancy: A multistate study. *American Journal of Obstetrics and Gynecology*. 2008; 198(194):1–5. [PubMed: 18166295]
- Ansorge MS, Zhou M, Lira A, Hen R, Gingrich JA. Early-life blockade of the 5-HT transporter alters emotional behavior in adult mice. *Science*. 2004; 306:879–881. [PubMed: 15514160]
- Bakker M, Kolling P, van den Berg P. Increase in use of selective serotonin reuptake inhibitors in pregnancy during the last decade, a population-based cohort study from the Netherlands. *British Journal of Clinical Pharmacology*. 2008; 65:600–606. [PubMed: 17953715]
- Beck, A.; Steer, R. Beck Depression Inventory Manual. San Antonio, TX: The Psychological Corporation; 1993.
- Beck A, Steer R, Garbin M. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*. 1988; 8:77–100.
- Broussard E. Infant attachment in a sample of adolescent mothers. *Child Psychiatry and Human Development*. 1995; 25:211–219. [PubMed: 7621694]
- Bunevicius R, Kusminskas L, A B, Nadisauskiene R, Jureniene K, Pop V. Psychosocial risk factors for depression during pregnancy. *Acta Obstetrica et Gynecologica*. 2009; 88:599–605.
- Carlson E, Egeland B, Sroufe LA. A prospective investigation of the development of borderline personality symptoms. *Development and Psychopathology*. 2009; 21:1311–1334. [PubMed: 19825270]
- Casper R, Fleisher B, Lee-Ancas J. Follow-up of children of depressed mothers exposed or not exposed to antidepressant drugs. *Journal of Pediatrics*. 2003; 142:402–408. [PubMed: 12712058]
- Casper R, Gilles A, Fleisher B, Baran J, Enns G, Lazzeroni L. Length of prenatal exposure to selective serotonin reuptake inhibitor (SSRI) antidepressants: Effects on neonatal adaptation and psychomotor development. *Psychopharmacology*. 2011; 217:211–219. [PubMed: 21499702]
- Caspers K, Paradiso S, Yucuis R, Troutman B, Arndt S, Philibert R. Association between the Serotonin Transporter Promoter Polymorphism (5-HTTLPR) and adult unresolved attachment. *Developmental Psychology*. 2009; 45(1):64–76. [PubMed: 19209991]
- Cassidy, J.; Shaver, P. Handbook of attachment: Theory, research, and clinical applications. New York: The Guilford Press; 1999.
- Cassidy, J.; Shaver, P., editors. Handbook of Attachment, Second Edition. New York: Guilford Press; 2008.
- Chambers CD, Johnson KA, Dick LM, Felix RJ, Jones KL. Birth outcomes in pregnant women taking fluoxetine. *N Engl J Med*. 1996; 335(14):1010–1015. [PubMed: 8793924]
- Croen L, Grether J, Yoshida C, Odouli R, Hendrick V. Antidepressant use during pregnancy and childhood autism spectrum disorders. *Archives of General Psychiatry*. 2011
- Cutrona C, Troutman B. Social support, infant temperament, and parenting self-efficacy: A mediational model of postpartum depression. *Child Development*. 1986; 57:1507–1518. [PubMed: 3802975]
- Cyr C, Euser E, Bakermans-Kranenburg M, van IJzendoorn M. Attachment security and disorganization in maltreating and high-risk families: A series of meta-analyses. *Development and Psychopathology*. 2010; 22:87–108. [PubMed: 20102649]
- Forman D, O' Hara M, Stuart S, Gorman L, Larsen K, Coy K. Effective treatment for postpartum depression is not sufficient to improve the developing mother-child relationship. *Development and Psychopathology*. 2007; 19:585–602. [PubMed: 17459185]
- Fournier J, DeRubeis R, Hollon S, Dimidjian S, Amsterdam J, Shelton R, et al. Antidepressant drug effects and depression severity: A patient-level meta-analysis. *JAMA*. 2010; 303(1):47–53. [PubMed: 20051569]
- Gavin N, Gaynes B, Lohr K, Meltzer-Brody S, Gartlehner G, Swinson T. Perinatal depression: A systematic review of prevalence and incidence. *Obstetrics & Gynecology*. 2005; 106(5):1071–1083. [PubMed: 16260528]
- Gaynes B, Gavin N, Meltzer-Brody S, Lohr K, Swinson T, Gartlehner G, et al. Perinatal depression: Prevalence, screening accuracy, and screening outcomes. 2005

- Gelfand D, Teti D, Seiner S, Jameson P. Helping mothers fight depression: Evaluation of a home-based intervention program for depressed mothers and their infants. *Journal of Clinical Child Psychology*. 1996; 25:406–422.
- Gentile S. Selective serotonin reuptake inhibitor exposure during early pregnancy and the risk of birth defects. *Acta Psychiatrica Scandinavica*. 2011; 123:266–275. [PubMed: 21261600]
- Gervai, J. Environmental and genetic influences on early attachment. *Child and Adolescent Psychiatry and Mental Health*, 3. 2009. Retrieved from <http://www.capmh.com/content/3/1/25>. doi: 10.1186/1753-2000-3-251
- Grzeskowiak L, Gilbert A, Morrison J. Investigating outcomes following the use of selective serotonin reuptake inhibitors for treating depression in pregnancy. *Drug Safety*. 2011; 34(11):1027–1048. [PubMed: 21981432]
- Harris B, Huckle P, Thomas R, Johns S, Fung H. The use of rating scales to identify post-natal depression. *British Journal of Psychiatry*. 1989; 154:813–817. [PubMed: 2597888]
- Haslam D, Pakenham K, Smith A. Social support and postpartum depressive symptomatology: The mediating role of maternal self-efficacy. *Infant Mental Health Journal*. 2006; 27(3):276–291.
- Huffman L, Lamour M, Byran Y, Pederson F. Depressive symptomatology during pregnancy and the postpartum period: is the Beck Depression Inventory applicable? *Journal of Reproductive and Infant Psychology*. 1990; 8:87–97.
- Jarjoura D, O'Hara M. A structural model for postpartum responses to the somatic and cognitive items on the Beck Depression Inventory. *Journal of Psychopathology and Behavioral Assessment*. 1987; 9:389–402.
- Karg K, Burmeister M, Shedden K, Sen S. The serotonin transporter promoter variant (5-HTTLPR), stress, and depression meta-analysis revisited. *Archives of General Psychiatry*. 2011 doi: 10.001/archgenpsychiatry.2010.189.
- Kirsch I, Deacon B, Huedo-Medina T, Scoboria A, Moore T, Johnson B. Initial severity and antidepressant benefits: A meta-analysis of data submitted to the Food and Drug Administration. *PLoS Med*. 2008; 5(2)
- Lee D, Yip A, Chui H, Chung T. Screening for postnatal depression using the double-test strategy. *Psychosomatic Medicine*. 2000; 62:258–261. [PubMed: 10772406]
- MacDonald H, Beeghly M, Grant-Knight W, Augustyn M, Woods R, Cabral H, Rose-Jacobs R, Saxe G, Frank D. Longitudinal association between infant disorganized attachment and childhood posttraumatic stress symptoms. *Development and Psychopathology*. 2008; 20:493–508. [PubMed: 18423091]
- Madigan S, Moran G, Schuengel C, Pederson D, Otten R. Unresolved maternal attachment representations, disrupted maternal behavior and disorganized attachment in infancy: links to toddler behavior problems. *Journal of Child Psychology and Psychiatry*. 2007; 48(10):1042–1050. [PubMed: 17915005]
- Main, M.; Solomon, J. Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange situation. In: Greenberg, M.; Cicchetti, D.; Cummings, E., editors. *Attachment in the Preschool Years: Theory, Research, and Intervention*. Chicago: The University of Chicago Press; 1990.
- Marcus SM, Flynn HA, Blow F, Barry K. A screening study of antidepressant treatment rates and mood symptoms in pregnancy. *Archives of Women's Mental Health*. 2005; 8:25–27.
- Martins C, Gaffan EA. Effects of early maternal depression on patterns of infant-mother attachment: a meta-analytic investigation. *J Child Psychol Psychiatry*. 2000; 41(6):737–746. [PubMed: 11039686]
- Mayer S. Study shows difference between antidepressants and placebo is significant only in severe depression. *British Medical Journal*. 2008; 336:466.
- McMahon C, Barnett B, Kowalenko N, Tennant C. Maternal attachment state of mind moderates the impact of postnatal depression on infant attachment. *Journal of Child Psychology and Psychiatry*. 2006; 47(7):660–669. [PubMed: 16790001]
- Munson J, McMahon R, Spieker S. Structure and variability in the developmental trajectory of children's externalizing problems: Impact of infant attachment, maternal depressive

symptomatology, and child sex. *Development and Psychopathology*. 2001; 13:277–296. [PubMed: 11393647]

Murray L, Cooper P, Wilson A, Romaniuk H. Controlled trial of the short-and long-term effect of psychological treatment of post-partum depression: 2. Impact on the mother-child relationship and child outcome. *British Journal of Psychiatry*. 2003; 182:420–427. [PubMed: 12724245]

National Collaborating Centre for Mental Health. Antenatal and postnatal mental health: The NICE guideline on clinical management and service guidance. 2007

O'Hara M, Zekoski E, Phillipps L, Wright E. Controlled prospective study of postpartum mood disorders: Comparison of childbearing and nonchildbearing women. *Journal of Abnormal Psychology*. 1990; 99:3–15. [PubMed: 2307763]

O'Hara M, Stuart S, Gorman L, Wenzel A. Efficacy of interpersonal psychotherapy for postpartum depression. *Archives of General Psychiatry*. 2000; 57(11):1039–1045. [PubMed: 11074869]

Oberlander T, Papsdorf M, Brain U, Misri S, Ross C, Grunau R. Prenatal effects of Selective Serotonin Reuptake Inhibitor antidepressants, Serotonin Transport Promotor genotype (SLC6A4), and maternal mood on child behavior at 3 years of age. *Archives of Pediatric and Adolescent Medicine*. 2010; 164(5):444–451.

Oberlander T, Reebye P, Misri S, Papsdorf M, Kim J, Grunau R. Externalizing and attentional behaviors in children of depressed mothers treated with a Selective Serotonin Reuptake Inhibitor antidepressant during pregnancy. *Archives of Pediatric and Adolescent Medicine*. 2007; 161:22–29.

Oberlander T, Warburton W, Misri S, Aghajanian J, Hertzman C. Neonatal outcomes after prenatal exposure to selective serotonin reuptake inhibitor antidepressants and maternal depression using population-based linked health data. *Archives of General Psychiatry*. 2006; 63:898–906. [PubMed: 16894066]

Parry B. Assessing risk and benefit: To treat or not to treat major depression during pregnancy with antidepressant medication. 2009; 166(5):512–514. [PubMed: 19411375]

Ramos E, Oraichi D, Rey E. Prevalence and predictors of antidepressant use in a cohort of pregnant women. *British Journal of Obstetrics and Gynecology*. 2007; 114:1055–1064.

Rampono J, Simmer K, Ilett K, Hackett L, Doherty D, Elliot R, et al. Placental transfer of SSRI and SNRI antidepressants and effects on the neonate. *Pharmacopsychiatry*. 2009; 42:95–100. [PubMed: 19452377]

Reefhuis J, Rasmussen SA, Friedman JM. Selective serotonin-reuptake inhibitors and persistent pulmonary hypertension of the newborn; reply of Chamver C, Hernandez-Diaz, S., Mitchell, A.A. (letter). *New England Journal of Medicine*. 2006; 354:2188–2190. [PubMed: 16707761]

Smeekens S, Riksen-Walraven J, van Bakel H. Multiple determinants of externalizing behavior in 5-year-olds: A longitudinal model. *Journal of Abnormal Child Psychology*. 2007; 35:347–361. [PubMed: 17243016]

Spangler G, Johann M, Ronai Z, Zimmerman P. Genetic and environmental influence on attachment and disorganization. *Journal of Child Psychology and Psychiatry*. 2009; 50(8):952–961. [PubMed: 19673052]

Spieker S, Bensley L. Roles of living arrangements and grandmother social support in adolescent mothering and infant attachment. *Developmental Psychology*. 1994; 30:102–111.

Stams G, Juffer F, van Ijzendoorn M. Maternal sensitivity, infant attachment, and temperament in early childhood predict adjustment in middle childhood: The case of adopted children and their biologically unrelated parents. *Developmental Psychology*. 2002; 38(5):806–821. [PubMed: 12220057]

Stewart D. Depression during pregnancy. *New England Journal of Medicine*. 2011; 365(17):1605–1611. [PubMed: 22029982]

Stuart S, Couser G, Schilder K, O'Hara MW, Gorman L. Postpartum anxiety and depression: Onset and comorbidity in a community sample. *Journal of Nervous and Mental Disease*. 1998; 186(7): 420–424. [PubMed: 9680043]

Troutman B, Cutrona C. Nonpsychotic postpartum depression among adolescent mothers. *Journal of Abnormal Psychology*. 1990; 99(1):69–78. [PubMed: 2307769]

- van Ijzendoorn M, Schuengel C, Bakermans-Kranenberg M. Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*. 1999; 11:225–249. [PubMed: 16506532]
- Whiffen V. Screening for postpartum depression: A methodological note. *Journal of Clinical Psychology*. 1988; 44:367–371. [PubMed: 3384962]
- Zeanah C, Berlin L, Boris N. Practitioner review: Clinical applications of attachment theory and research for infants and young children. *The Journal of Child Psychology and Psychiatry*. 2011; 52(8):819–833.

Figure 1.
Prenatal maternal SSRI treatment increases risk for disorganized attachment by impacting the development of the infant's serotonin system

Figure 2.
Prenatal maternal SSRI treatment decreases risk of disorganized attachment/increases probability of secure attachment by positively impacting maternal behaviour

Figure 3.
Prenatal maternal SSRI treatment has no impact on attachment

Table 1

Symptoms of postpartum depression and disorganized infant-mother attachment among mothers who took SSRIs during pregnancy

Beck Depression Inventory				
	<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>
1 month	4	9.0	4.0	7 to 15
2 months	3	15.7	10.6	6 to 27
4 months	4	9.2	7.9	0 to 18
6 months	4	14.8	9.1	8 to 28
9 months	5	9.4	6.0	0 to 16
1 year	5	6.8	5.0	0 to 13
Attachment Classification				
Organized	1 (20%)			
Disorganized	4 (80%)			