ADOLESCENT PARENTING, SUBTHRESHOLD NEGLECT, AND INFANT ATTACHMENT

A Dissertation

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by

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AND INFANT ATTACHMENT

Abstract

by

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This project investigated the impact of subthreshold neglect on the security and organization of infant-mother attachment bonds. Subthreshold neglect was defined as poor parenting that was not severe enough to mandate involvement of child protection agencies. On average, teen mothers were more neglectful than low-resource and high-resource adult mothers; however, the rates of insecure and disorganized attachment did not differ significantly between teens and adults. Across all groups, subthreshold neglect of children’s developmental advance and emotional needs was associated with insecure infant-mother attachment. Specifically, mothers who were more neglectful were more likely to have children with an insecure-avoidant attachment pattern. Subthreshold neglect was not associated with the disorganization of the attachment bond. Results are discussed in terms of differences between subthreshold and substantiated child neglect as well as implications for intervention and prevention with subthreshold neglect.
To my parents, Jim and Lynda Farris, who made it possible for me to pursue and accomplish my goals. I’m dancing! Thank you for the lessons.
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INTRODUCTION

Attachment theory, based on the pioneering work of John Bowlby (1958, 1969/1982) and Mary Ainsworth (1963, 1964), has contributed to developmental psychologists’ understanding of the influence of parent-child relationships on children’s socioemotional development. According to the basic tenets of this theory, children form enduring affective bonds with their caregivers in the first year of life (Ainsworth, Blehar, Waters, & Wall, 1978). These early bonds are thought to have a subsequent impact on children’s development throughout the lifespan (Thompson, 1999).

The overall security and organization of attachment bonds result, in large part, from variations in early caregiving experiences (Ainsworth et al., 1978; Solomon & George, 1999). Observational research with mothers and infants has demonstrated that the security of the attachment bond is at risk when caregivers fail to attend to their infants in a responsive and sensitive manner (Ainsworth et al., 1978). Certain risk factors, such as adolescent parenting, may increase the likelihood of unresponsive caregiving and, in turn, jeopardize the formation of a secure infant-mother attachment bond (Lounds, Borkowski, Whitman, Maxwell, & Weed, 2005). The present study investigated the impact of early unresponsive caregiving, in the form of “subthreshold neglect,” on the security and organization of infant-mother attachment bonds at one year of age, with a focus on understanding differences between adolescent versus adult mothers and their firstborn children.
Infant Attachment

With the exception of extreme circumstances, such as growing up in an institutional setting with no stable care provider, all children will develop an attachment bond to at least one caregiver by the end of their first year of life (Weinfeld, Sroufe, Egeland, & Carlson, 1999). Individual differences in attachment security reflect the balance between the infant’s confidence in being able to explore the environment and their ability to use the caregiver as a secure base for comfort and protection when distressed. Difference in the quality of attachment relationships are largely dependent on variations in the history of care provided by the adult to whom the attachment bond is directed (Weinfeld et al., 1999). The majority of infants form secure attachment bonds, in part due to caregivers being responsive and sensitive to their needs (Ainsworth et al., 1978). A sizable minority, however, develop insecure attachments, which are thought to result from inconsistent or insensitive parenting. Over time, these experiences are thought to lead to the development of an internal working model, or a mental model used to evaluate the potential consequences of alternative courses of action and in turn allow for the expression of flexible and adaptive behavior (Bretherton & Munholland, 1999).

The security of infant attachment can be assessed in the laboratory with the Strange Situation paradigm developed by Ainsworth and Wittig (1969). This standardized procedure consists of eight three-minute episodes in which infants are increasingly stressed by being introduced to a novel environment, left in the room with a stranger, and left alone in the room (Ainsworth et al., 1978; Ainsworth & Wittig, 1969). The paradigm is coded on four infant behaviors – proximity seeking, contact maintenance, avoidance, and resistance – during two episodes when the infant and
mother are reunited after the separations. The inducement of distress during this laboratory procedure is intended to activate and/or intensify the infant’s attachment system so that the security of the attachment relationship can be assessed by observing the infant’s behaviors when distressed.

Based on the study of numerous infants and mothers using the Strange Situation paradigm, Ainsworth and colleagues (Ainsworth, Bell, & Stayton, 1971; Ainsworth et al., 1978; Ainsworth & Wittig, 1969) described three distinct attachment classifications. Secure infants, designated as “Group B,” use their caregiver as a secure base from which to explore their surroundings. During reunion episodes of the Strange Situation, secure infants seek out and maintain proximity and contact with their mothers, with little or no tendencies to resist or avoid this contact. In contrast to secure infants, insecure infants are not as confident in relying upon their mother as a secure base. There are two categories of insecurity: avoidant and resistant. Insecure-avoidant, or “Group A,” infants display conspicuous avoidance of proximity to and/or interaction with their mother during reunion episodes, with little or no tendency toward active resistance. Insecure-resistant, or “Group C,” infants, display conspicuous contact- and/or interaction-resisting behaviors, marked by little or no tendency to ignore their mother during reunions. Insecure-resistant infants often show moderate to strong proximity seeking and contact maintenance, which, coupled with the demonstration of resistance, has led some to view Group C infants as “ambivalent” to their mothers.

In some cases, an infant’s classification as A, B, or C may become secondary to a classification of D, which represents a disorganized and/or disoriented attachment system (Main, 1990; Main & Solomon, 1986). This classification was added to Ainsworth’s
original scheme in an attempt to describe a diverse array of previously unrecognized fearful, odd, disorganized, or overtly conflicted behaviors exhibited during the Strange Situation procedure (Lyons-Ruth & Jacobvitz, 1999). Group D infants tend to display a variety of anomalous behaviors throughout the procedure, such as freezing, trance-like behavior and irregular stereotyped movements. Main and Hesse (Hesse & Main, 2000, 2006; Main & Hesse, 1990) have proposed that disorganization/disorientation in infant attachment is associated with highly inappropriate care (e.g., frightening parental behavior), which results in contradictory behavioral responses in infants who simultaneously view their caregiver as a source of comfort and a source of alarm. The conflicting tendencies to flee and approach the caregiver result in a situation of “fright without solution” (Main, 1995), which leads the infant to display a host of mistimed, interrupted, and/or incomplete movements and expressions in the caregiver’s presence (Lyons-Ruth & Jacobvitz, 1999).

Disorganization is scored on a 9-point scale that is distinct from the interactive behavior rating system used for the original ABC classification system (Main & Hesse, 1990). Higher scores on the D scale represent relatively greater degrees of disorganization and/or disorientation. Except in rare cases where the infant’s behavior is considered unclassifiable, all children are assigned an A/B/C classification based on the interactive behaviors described above (i.e., proximity seeking, contact maintenance, resistance, and avoidance). When children meet criteria for disorganization, the A/B/C classification becomes secondary to the primary classification of D. For example, a child who displays behaviors consistent with a secure mental model of attachment may lapse into disorganization briefly during the procedure. This child would be assigned a primary
classification of “D” and a secondary classification of “B,” resulting in a final classification of “D/B.”

The responsivity and sensitivity of maternal caregiving behavior during the infant’s first year of life has been consistently associated with attachment security at 12 months of age (Ainsworth et al., 1978; van IJzendoorn, Goldberg, Kroonenberg, & Frenkl, 1992). Mothers who are more sensitive and responsive to their infant’s signals and communications are more likely to have children with secure attachment bonds, whereas insensitive and unresponsive parenting is associated with insecure infant attachment. Recent empirical research has suggested that unresponsive caregiving in the form of child neglect is associated with insecure-resistant infant attachment bonds (Finzi, Ram, Har-Even, Shnit, & Weizman, 2001). On the other hand, maternal rejection of infant communication, anger directed toward the infant, and physical abuse have been associated with insecure-avoidant attachment patterns (Ainsworth et al., 1978; Finzi et al., 2001). Although general relationships between inadequate parenting and insecure attachment have been established, much of the research in this area has conceptualized maltreatment in terms of neglect or abuse that is severe enough to place the child in imminent danger. Much remains to be understood about the effects of less severe forms of maltreatment, such as subthreshold levels of child neglect.

Subthreshold Child Neglect

Child neglect can be conceptualized either in terms of: (1) parental actions or inactions that result in risk for or actual harm to a child (Slack, Holl, McDaniel, Yoo, & Bolger, 2004) or (2) a situation in which a child’s basic needs are unmet (Dubowitz,
Black, Starr, & Zuravin, 1993; Dubowitz et al., 2005). Neglectful parents have less frequent and lower quality interactions with their children (Azar, 2002), respond inconsistently to their children’s needs (Howe, Dooley, & Hinnings, 2000), and demonstrate low levels of warmth toward their children (Slack et al., 2004). Findings from empirical studies have consistently suggested that neglect is associated with developmental impairments (Slack, Holl, Attenbernd, McDaniel, & Stevens, 2003), including an increased likelihood of insecure and/or disorganized attachment (Barnett, Ganiban, & Cicchetti, 1999; Egeland & Sroufe, 1981; Morton & Browne, 1998). Moreover, neglect in infancy has been shown to have a long-term effect on children’s socioemotional development (Manly, Kim, Rogosch, & Cicchetti, 2001).

Researchers attempting to study neglect are faced with a challenge in defining this construct. Specifically, it is difficult to quantify neglect because it represents the absence of behaviors, as opposed to the presence of quantifiable variables. As a result, studies of child neglect have often utilized a global “yes/no” neglect variable based on substantiated reports to child protection agencies. However, less severe levels of neglect may also be detrimental to children’s development, and therefore it is important to study these “subthreshold” levels of neglect that have the potential to impair development yet are not severe enough to mandate intervention by child protection agencies. A greater understanding of subthreshold neglect will be useful in the development of intervention and prevention programs aimed at reducing the high demand placed on child protection agencies.

Prior research on child neglect has suggested that the presence and severity of neglectful behaviors may differ across various domains (Dubowitz et al., 2005). For
example, a mother may be responsive to her child’s physical needs by providing sufficient food, health care, and clothing. The same mother, however, may be unresponsive to the child’s needs for developmental advance by, for example, failing to read to the child or encourage cognitive development in other age-appropriate ways. It has been suggested that maltreatment across different domains may have unique effects on children’s development (Dubowitz, Pitts, & Black, 2004; Manly et al., 2001). A recent empirical investigation of a conceptual model of child neglect found evidence to support this hypothesis (Dubowitz et al., 2005). Findings suggested that maternal neglect to provide support (e.g., in terms of taking children places, reading to children, and talking to children) was associated with internalizing and externalizing behaviors, whereas neglect to provide attention to children (e.g., in terms of communicating love and playing with children) was associated with externalizing behaviors and social problems. These results suggest that it is valuable to consider a range of neglectful behaviors across multiple domains rather than merely a dichotomous neglect variable based solely on substantiated cases of child neglect. The continuous multi-domain approach has several benefits, including the ability to move beyond a global neglect construct and the capacity to study how the severity of subthreshold neglect across various domains influences children’s development (Dubowitz et al., 2005).

Risks for Neglect: Adolescent Parenting

Certain factors may place families at risk for neglect and, in turn, heighten the likelihood of insecure and/or disorganized attachment. Teen mothers often provide higher rates of unresponsive and insensitive parenting and lower rates of warmth and high-
quality interactions than adult mothers (Borkowski, Bisconti, Willard, Keogh, Whitman, & Weed, 2002; Egeland & Farber, 1984). Moreover, adolescent mothers and their families often live in poverty (Whitman, Borkowski, Keogh, & Weed, 2001), which further increases the risk for neglect (Coulton, Korbin, & Su, 1999; Drake & Pandey, 1996; Jones & McCurdy, 1992; Korbin, Coulton, Chard, Platt-Houston, & Su, 1998). Notably, several studies have reported that the rates of insecure attachment are substantially higher among children born to adolescent mothers than among children in normative low-risk samples. For example, findings from one longitudinal study reported that the majority of their sample of children born to teen mothers met criteria for disorganized (41%) or insecure (22%) attachment at one year of age (Whitman et al., 2001). Along these same lines, another study of children born to teen mothers reported that 76% of their sample demonstrated insecure or disorganized attachment (Broussard, 1995). In the more general population, only 34% of children typically meet criteria for insecure attachment (Ainsworth et al., 1978) and approximately 15% qualify for a classification of D (Lyons-Ruth & Jacobvitz, 1999; van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Despite these findings, it remains unclear whether teen parenting itself is a risk factor for neglect, or whether there are other factors associated with teen parenting, such as low socioeconomic status or low cognitive readiness to parent, that heighten the likelihood of neglect.

Present Study

Although it has been established that adolescent parenting and child neglect are associated with insecure and/or disorganized attachment (Barnett et al., 1999; Broussard,
1995; Egeland & Sroufe, 1981; Morton & Browne, 1998; Whitman et al., 2001), much
remains to be understood about: (1) the effects of “subthreshold neglect,” in which
parents provide unresponsive and/or inattentive care that is severe enough to put children
at risk for maladjustment but less severe than the legal criteria used to define child
neglect, (2) the effects of subthreshold neglect across various domains, and (3) variations
between adolescent versus adult mothers in the provision of subthreshold neglect. The
present study investigated these topics. It was hypothesized that there would be
differences between adolescent and adult mothers, such that adolescent mothers would
engage in a greater frequency and severity of subthreshold neglectful behaviors than adult
mothers. Moreover, it was expected that there would be higher rates of insecure and
disorganized attachment among children born to teen mothers than children of adult
mothers. Finally, it was hypothesized that children who were exposed to subthreshold
neglect would be more likely to have insecure and disorganized attachment patterns at 12
months of age.
METHOD

Participants

The sample for the present study was drawn from the Parenting for the First Time (PFT) project, conducted by the Centers for the Prevention of Child Neglect. The PFT project is a longitudinal study of a representative sample of primiparous teen and adult mothers and their children, focusing on their diverse social and cultural contexts, the early identification of child neglect, the antecedents and consequences of neglect, and the availability and impact of community support systems. Primiparous mothers were recruited into three groups: adolescents (less than 19 years of age at the time of the child's birth), low-resource adults (older than 21 with a high school education, on average), and high-resource adults (older than 21 with a 4-year college degree, on average). A total of 682 mothers were recruited during their pregnancies through primary care facilities in South Bend, Indiana; Kansas City, Kansas and Missouri; Washington, D.C.; and Birmingham, Alabama. Participants for the present study were 251 primiparous mothers and their children drawn from the PFT project. Participants were selected for the present study if they participated in the Strange Situation procedure at the 12-month assessment. The participants in the subsample did not differ significantly from those who were
excluded in terms of type of mother (i.e., teen vs. low-resource adult vs. high-resource adult), race, education, or socioeconomic status.

Approximately half (51.79%, \(n = 130\)) of the sample was comprised of adolescent mothers. At the time of childbirth, teen mothers ranged in age from 15 to 19 years, with an average age of 17.53 (\(SD = 1.20\)). The majority of the teens (62.31%) were African-American, 21.54% were non-Latino White, and 13.85% were Latino. On average, teen mothers reported an annual household income of $17,995. Approximately half of the children born to teen mothers were male (52.46%). The infants’ average weight at birth was 7.27 pounds (\(SD = 1.59\)) and their average length was 19.99 inches (\(SD = 1.19\)).

Low-resource adult mothers ranged from 22 to 36 years old at childbirth (\(n = 59, M = 25.69, SD = 3.09\)), and high-resource adult mothers ranged from 22 to 35 years (\(n = 62, M = 27.11, SD = 3.08\)). Ethnicity in the low-resource adult group was similar to the ethnicity of the teen mother group. Specifically, 66.67% of the low-resource mothers were African-American, 20.37% were non-Latino White, and 11.11% were Latino. Minority groups were somewhat underrepresented in the high-resource adult sample, of which 50.00% of mothers were non-Latino White, 39.66% were African-American, and 10.34% were Latino. Average household income of the low-resource adults was comparable to that of the teen mothers (\(M = $19,760\)), whereas high-resource adult mothers reported a substantially higher annual household income (\(M = $40,905\)). Sex of the children was approximately equally distributed in both adult mother comparison groups (44.90% male among low-resource adults and 46.00% male among high-resource adults). Average birth weights of infants born to low-resource and high-resource adults
were 7.03 (SD = 1.38) and 7.78 pounds (SD = 0.96), respectively. Average lengths were 19.83 (SD = 1.50) and 20.39 inches (SD = 0.97), respectively.

Design and Procedures

Assessments in the PFT project began during the last trimester of pregnancy and continued through each child’s third birthday. Data for the proposed study were gathered at four timepoints. Demographic information (e.g., age, race, education, and SES) was assessed at the prenatal interview. Measures of subthreshold neglect were assessed when infants were 4 and 8 months of age through home-based interviews and observations using the Infant/Toddler Home Observation for the Measurement of the Environment (IT-HOME; Caldwell & Bradley, 2001) and the Landry observation of parent-child interactions (Landry, Smith, Miller-Loncar, & Swank, 1997). In addition, following the home visits, interviewers rated neglectful behaviors on the Social, Emotional, and Mental Neglect Indicator, which was created for the PFT project. Attachment between mothers and their children was assessed in the lab at approximately 12 months of age using the Strange Situation paradigm.

Measures

Demographic information, such as maternal age, race, education, and socioeconomic status, was collected at the prenatal interview. This information was used for analyses regarding between-group differences in parenting and attachment.
Subthreshold neglect

The Infant/Toddler Home Observation for the Measurement of the Environment (Caldwell & Bradley, 2001) and the Landry Observation of parent-child interactions (Landry et al., 1997) were administered at the 4- and 8-month home-based assessments. Items from these measures were used to represent subthreshold neglect of children’s basic needs. Scores from the 4- and 8-month assessments, which were statistically similar, were aggregated to provide more robust estimates.

The Infant/Toddler Home Observation for the Measurement of the Environment (Bradley, 1989; Caldwell & Bradley, 2001) was used to assess the quality of the child’s environment and interactions with parental figures within that environment. The IT-HOME was completed through a semi-structured interview and naturalistic observations in the participants’ homes. The IT-HOME is a reliable measure that is related to children’s outcomes in domains such as early motor and social development, language competence, achievement, and behavior problems (Bradley, Corwyn, Pipes-McAdoo, & Garcia-Coll, 2001; Bradley, Mundfrom, Whiteside, Casey, & Barrett, 1994). Training coordinators for the Parenting for the First Time project were trained by one of the authors of the IT-HOME. Each interviewer was trained to a minimum of 90% reliability using both video and live coding procedures.

The authors of the IT-HOME used factor analysis procedures to condense the 45 dichotomous items into 6 subscales: Responsivity, Acceptance, Organization, Learning Materials, Involvement, and Variety (Caldwell & Bradley, 2001). Responsivity refers to the extent to which parents respond to children’s behavior by offering verbal, tactile, and emotional reinforcement for desired behavior as well as communicating clearly through
words and actions. Items on this scale include the parent’s willingness to let the child engage in messy play, spontaneous vocalizations from parent to child, verbal parental responses to children’s vocalizations or verbalizations, labeling an object or person during the home visit, clear and audible parental speech, parental initiations of verbal exchanges with the interviewer, fluent and easy parental conversational patterns, spontaneous praise of the child, parental vocalizations that indicate positive feelings towards the child, physical affection, and positive parental reactions to praise of child offered by the visitor. Acceptance refers to parental acceptance of less than optimal behavior from the child and avoidance of undue restrictions and punishment. This scale is comprised of lack of physical punishment, pet ownership, lack of shouting at the child, lack of hostility towards the child, absence of spankings, lack of criticism of the child, lack of interference or unnecessary restrictions, and the presence of at least 10 books. The organization scale refers to the extent to which there is regularity and predictability in the family’s schedule, to the safety of the physical environment, and to the utilization of community support services. Items include having no more than three regular child care providers, taking the child to the grocery store at least once a week, taking the child outside of the house at least four times per week, keeping up with regular doctor’s appointments and preventative health care, having a special place or location for the child’s toys, and having a safe play environment. Learning materials refers to the provision of appropriate play and learning materials capable of stimulating development. The critical notion within this scale is not the condition of the toys, but rather the child’s exposure to a variety of objects that can enhance their development. To receive a positive score on each item, the child must have access to the toy or piece of equipment. Objects
in this scale include muscle activity toys/equipment (e.g., crib gym, rocking horse); push or pull toys; stroller, walker, kiddie-car, scooter, or tricycle; cuddly or role-playing toys; learning facilitators such as a mobile, table and chair, high chair, or playpen; simple eye-hand coordination toys, defined as objects that have multiple parts that can easily fit together (e.g., beads to string); complex eye-hand coordination toys, through which the child’s manipulation of individual pieces can create an item that is more and different from that created with repetitive combinations of similar identical components (e.g., lego blocks); and toys for literature and music. Finally, the remaining item in this scale refers to whether the parent provides toys for the child to play with during the home visit. The involvement scale defines the extent to which the parent is actively involved in the child’s learning and provides stimulation for increasingly mature behavior. Involvement is comprised of talking to children while doing household work, consciously encouraging developmental advance, investing maturing toys (i.e., those which call for abilities slightly beyond the child’s current capacities) with value via personal attention, structuring the child’s play periods, providing toys that challenge the child to develop new skills, and keeping the child in visual range with frequent looks in the child’s direction. The variety scale encompasses the inclusion in daily life of people and events that bring some diversity into the child’s life. Items include provision of daily care by the child’s father, reading stories to the child at last three times per week, whether the child eats at least one meal per day with the mother and father, visiting with relatives on a regular basis, and the child’s possession of at least three books of his/her own.

In addition to the factor analytically described scales, we considered four scales from the IT-HOME based on previous research which has developed subscales that are
important for children’s development (Linver, Martin, & Brooks-Gunn, 2004). *Parental warmth* was comprised of six items: spontaneous parental vocalization, verbal parental responses to the child’s vocalizations, spontaneous praise of child, parental vocalizations that indicate positive feelings towards the child, physical affection, and positive parental reactions to praise of child offered by the visitor. *Parental verbal skills* was comprised of three items: distinct and audible parental speech, parental initiation of verbal exchanges with the interviewer, and free and easy parental conversational style. *Support of learning and literacy* was comprised of nine items: labeling objects, presence of at least 10 books, muscle/activity toys, push/pull toys, complex eye-hand coordination toys, talking to the child while doing household work, reading stories to the child at least three times per week, at least three or more books belonging to the child, and exposure to literature. *Promotion of developmental advance* was comprised of four items: conscious encouragement of developmental advance, investing maturing toys with value via personal attention, structuring child’s play periods, and providing toys that challenge the child to develop new skills.

The Landry Observation of parent-child interactions (Landry et al., 1997) was used to code home-based interactions between the mother and infant at 4 and 8 months postpartum. The original coding system was developed by Landry et al. (1997), but was modified for the Parenting for the First Time project to be used with younger infants and for a shorter duration. Interactions were observed for approximately 30 minutes, which included a 2-minute adjustment period, four 5-minute observation periods, and up to 2 minutes between each observation period to write notes and code the observed behaviors. The mothers were asked to do what they would normally do during that time of day and
to keep the child within their visual range. Mothers received scores ranging from 1 to 5 (with higher scores indicating more positive parenting) on the following constructs: (1) display of positive affect, which refers to the number of smiles directed towards the child; (2) warmth/sensitivity, which refers to behaviors such as maintaining proximity to the child, physical affection, and encouragement/praise of the child; (3) contingent responsiveness, which refers to involvement with the child, patience, and prompt and sensitive responses to the child’s signals; (4) physical intrusiveness, which refers to expression of impatience, removing things from the child without good reason, and unnecessary or disruptive repositioning; (5) punitive tone, which refers to negative, impatient, abrupt, or angry tones when dealing with the child; (6) verbal content, which refers to the extent to which mothers scold, taunt, or demean their children; and (7) general verbalness, which refers to the amount of time spent talking to child. The general verbalness category was not part of the original observation developed by Landry et al. (1997), but was added for the Parenting for the First Time project. Interviewers were trained to a minimum of 80% concordance with a master coder on both videotaped and on-site interactions for all categories in the coding scheme. An internal consistency coefficient of .81 was found for ratings of the mothers behaviors using the original rating schema, with reliabilities ranging from .80 to .84 (Hammond, Landry, Swank, & Smith, 1999). For the purposes of the present study, scores from each construct were averaged across the four observation periods for each home visit in order to provide more stable estimates.

The Social, Emotional, and Mental Neglect Indicator scale was completed by interviewers following home-based assessments. This measure consists of a Likert-type
scale that was rated based on the interviewer's global impressions of the mother's attention to her child's socioemotional development. Anchors on the scale were: (1) neglect, (2) subthreshold neglect, (3) poorly stimulated child, (4) somewhat stimulated child, and (5) well stimulated child. Interviewers were trained to rate these items reliably, and a protocol was in place to make a report to local child protection agencies if the indicators were severe enough to suggest imminent harm to the child.

Attachment

Attachment was assessed at 12 months of age with the Strange Situation paradigm (Ainsworth et al., 1978; Ainsworth & Wittig, 1969). Videotapes of the Strange Situation were coded by a rater who was trained by Alan Sroufe and Elizabeth Carlson at the University of Minnesota, in accord with the guidelines recommended by Ainsworth et al. (1978) for coding ABC and Main (1990) for coding D. The coder for the present study established adequate reliability with master coders for ABC attachment classifications.
RESULTS

Results are presented in three sections. The first section presents the prevalence of attachment classifications for the sample as a whole and within each group. The next section describes the subthreshold neglect scales, including the procedures used to derive these scales as well as descriptive data regarding scores obtained by adolescent, low-resource adult, and high-resource adult mothers. The third section describes the relationships between subthreshold neglect and infant attachment classifications.

Attachment Classifications

Attachment classifications for the sample as a whole as well as for the subsamples of teen, low-resource adult, and high-resource adult mothers are provided in Table 1. When considering three-way ABC classifications, the majority of children in the sample (63.75%) were securely attached to their mothers. As expected, insecure-avoidant was the second most prevalent classification (20.32%), followed by insecure-resistant (15.94%). Classification rates varied somewhat between groups. Specifically, approximately 61% of children with teen or low-resource adult mothers were securely attached, whereas more than 70% of children with high-resource adult mothers were securely attached. Although these differences appeared to be of practical significance, they were not statistically significant.
### TABLE 1
ATTACHMENT CLASSIFICATIONS BY TYPE OF MOTHER

<table>
<thead>
<tr>
<th>Type of Mother</th>
<th>Secure</th>
<th>Insecure-Avoidant</th>
<th>Insecure-Resistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teen</td>
<td>60.00</td>
<td>23.08</td>
<td>16.92</td>
</tr>
<tr>
<td>Low-resource adult</td>
<td>62.96</td>
<td>24.07</td>
<td>12.96</td>
</tr>
<tr>
<td>High-resource adult</td>
<td>70.69</td>
<td>12.07</td>
<td>17.24</td>
</tr>
<tr>
<td>Entire sample</td>
<td>63.75</td>
<td>20.32</td>
<td>15.94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Mother</th>
<th>Disorganized</th>
<th>Organized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teen</td>
<td>20.00</td>
<td>80.00</td>
</tr>
<tr>
<td>Low-resource adult</td>
<td>25.93</td>
<td>74.07</td>
</tr>
<tr>
<td>High-resource adult</td>
<td>27.59</td>
<td>72.41</td>
</tr>
<tr>
<td>Entire sample</td>
<td>23.51</td>
<td>76.49</td>
</tr>
</tbody>
</table>
When considering two-way Disorganization classifications, 23.51% of children in the sample were assigned a primary classification of D. Classification rates varied slightly between groups. Specifically, 20% of children with teen mothers, 26% of children with low-resource adult mothers, and 28% of children with high-resource adult mothers were Disorganized (see Table 1). Between-group differences were not statistically significant.

Subthreshold Neglect

In order to determine which variables represented subthreshold neglect, 17 indicators from the IT-HOME (Caldwell & Bradley, 2001) and the Landry Observations (Landry et al., 1997) were tested for their association with an interviewer rating of socioemotional neglect. This step was taken to ensure that the indicators utilized in the present study were consistent with child neglect rather than parenting in general. In order to determine which indicators to use, the interviewer rating of socioemotional neglect was first dichotomized into “neglectful” (i.e., scores below 3) and “non-neglectful” (i.e., scores above 3) categories. When categorized this way, 12.77% of the overall sample was rated as neglectful. The prevalence of neglectful mothers differed significantly between groups ($F_{2,182} = 4.55, p < .05$), with 18.89% of teens, 14.63% of low-resource adults, and 1.85% of high-resource adults rated as neglectful of their children’s socioemotional development. Pairwise comparisons conducted through crosstabs procedures indicated that both teens ($\chi^2 = 8.96, p < .01$) and low-resource adults ($\chi^2 = 5.58, p < .05$) were significantly more neglectful than high-resource adult mothers. The frequency of neglect did not differ significantly between teens and low-resource adults.
The dichotomous neglect variable was used as a predictor in a series of one-way ANOVAs with the 17 parenting indicators as dependent variables. Using an adjusted α of .05/17 = 0.003 to control for the familywise error rate when running 17 analyses (Maxwell & Delaney, 2004), the neglect variable was a significant predictor of 11 indicators from the IT-HOME and Landry Observations. Specifically, neglectful versus non-neglectful mothers were rated significantly different from one another on acceptance, provision of learning materials, involvement, variety, parental warmth, support of learning and literacy, promotion of developmental advance, display of positive affect, warmth directed towards the child, responsiveness, and general verbalness (see Table 2). All results were in the expected direction, such that higher scores on the parenting indicators (i.e., more optimal parenting) were associated with non-neglectful parenting based on the interviewer ratings. These results indicate that the 11 significant variables were consistent with the construct of neglect. Because mothers in the sample used for the present study were not reported to Child Protective Services during the project, these variables were considered indicators of subthreshold child neglect. Descriptive data for the 11 variables chosen to represent subthreshold neglect are presented in Table 3.

In order to condense the 11 subthreshold neglect indicators into meaningful scales, exploratory factor analysis procedures were performed through SPSS. In the first step of these analyses, principal components extraction was used to estimate the appropriate number of factors (Tabachnick & Fidell, 2001). Results from the principal components analysis suggested up to three factors, as indicated by eigenvalues greater than 1.00. Therefore, three factors were extracted in the first factor analysis procedure (Tabachnick & Fidell, 2001), in which promax rotation was used to obtain an oblique
TABLE 2
ANALYSIS OF VARIANCE FOR NEGLECT INDICATORS

<table>
<thead>
<tr>
<th>Source</th>
<th>df\textsubscript{within subjects}</th>
<th>(F)</th>
<th>(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsivity</td>
<td>173</td>
<td>7.49</td>
<td>.007</td>
</tr>
<tr>
<td>Acceptance</td>
<td>173</td>
<td>12.47</td>
<td>.001</td>
</tr>
<tr>
<td>Organization</td>
<td>173</td>
<td>5.14</td>
<td>.025</td>
</tr>
<tr>
<td>Learning materials</td>
<td>173</td>
<td>13.18</td>
<td>.000</td>
</tr>
<tr>
<td>Involvement</td>
<td>173</td>
<td>18.03</td>
<td>.000</td>
</tr>
<tr>
<td>Variety</td>
<td>174</td>
<td>14.42</td>
<td>.000</td>
</tr>
<tr>
<td>Parental warmth</td>
<td>173</td>
<td>9.56</td>
<td>.002</td>
</tr>
<tr>
<td>Parental verbal skills</td>
<td>173</td>
<td>0.87</td>
<td>.352</td>
</tr>
<tr>
<td>Support of learning and literacy</td>
<td>173</td>
<td>14.38</td>
<td>.000</td>
</tr>
<tr>
<td>Promotion of developmental advance</td>
<td>175</td>
<td>16.29</td>
<td>.000</td>
</tr>
<tr>
<td>Display of positive affect</td>
<td>174</td>
<td>16.88</td>
<td>.000</td>
</tr>
<tr>
<td>Warmth</td>
<td>174</td>
<td>27.35</td>
<td>.000</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>174</td>
<td>17.48</td>
<td>.000</td>
</tr>
<tr>
<td>Intrusiveness</td>
<td>174</td>
<td>0.47</td>
<td>.496</td>
</tr>
<tr>
<td>Punitive tone</td>
<td>174</td>
<td>6.04</td>
<td>.015</td>
</tr>
<tr>
<td>Contingent responsiveness</td>
<td>174</td>
<td>0.14</td>
<td>.708</td>
</tr>
<tr>
<td>General verbalness</td>
<td>174</td>
<td>12.48</td>
<td>.001</td>
</tr>
</tbody>
</table>
TABLE 3
MEANS AND STANDARD DEVIATIONS OF SUBTHRESHOLD NEGLECT INDICATORS

<table>
<thead>
<tr>
<th>Indicator</th>
<th>$M$</th>
<th>$SD$</th>
<th>Range</th>
<th>$n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance</td>
<td>6.24</td>
<td>1.11</td>
<td>1.00 – 8.00</td>
<td>228</td>
</tr>
<tr>
<td>Learning materials</td>
<td>6.69</td>
<td>1.39</td>
<td>2.00 – 9.00</td>
<td>228</td>
</tr>
<tr>
<td>Involvement</td>
<td>4.20</td>
<td>1.45</td>
<td>0.50 – 6.00</td>
<td>228</td>
</tr>
<tr>
<td>Variety</td>
<td>3.18</td>
<td>1.10</td>
<td>0.00 – 5.00</td>
<td>229</td>
</tr>
<tr>
<td>Parental warmth</td>
<td>5.84</td>
<td>1.22</td>
<td>1.00 – 7.00</td>
<td>228</td>
</tr>
<tr>
<td>Support of learning and literacy</td>
<td>8.26</td>
<td>1.93</td>
<td>2.50 – 12.00</td>
<td>228</td>
</tr>
<tr>
<td>Promotion of developmental advance</td>
<td>2.58</td>
<td>1.23</td>
<td>0.00 – 4.00</td>
<td>230</td>
</tr>
<tr>
<td>Display of positive affect</td>
<td>2.86</td>
<td>0.92</td>
<td>1.00 – 5.00</td>
<td>230</td>
</tr>
<tr>
<td>Warmth</td>
<td>3.94</td>
<td>0.89</td>
<td>1.00 – 5.00</td>
<td>230</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>4.02</td>
<td>0.93</td>
<td>1.00 – 5.00</td>
<td>230</td>
</tr>
<tr>
<td>General verbalness</td>
<td>2.89</td>
<td>1.06</td>
<td>1.00 – 5.00</td>
<td>230</td>
</tr>
</tbody>
</table>

factor solution. Variables were not well-defined by this factor solution. Specifically, the complexity of the pattern matrix indicated that many variables correlated with more than one factor.

In an attempt to obtain a more meaningful factor solution, a second factor analysis was conducted in which two factors were extracted using promax rotation. This model
provided an adequate fit to the data, with the two factors accounting for 55.06% of the total variance in the indicators. With a cutoff of .45 in the pattern matrix for inclusion of a variable in interpretation of a factor (Tabachnick & Fidell, 2001), each of the 11 indicators loaded on only one factor. Loadings of variables on factors, communalities, and percents of variance accounted for are shown in Table 4. Variables are ordered and grouped by size of loading to facilitate interpretation.

For the purposes of all remaining analyses, items that loaded onto each factor were summed to produce a single scale score for each factor. Factor 1 was comprised of six items: support of learning and literacy, promotion of developmental advance, involvement, provision of learning materials, variety, and acceptance. These items all related to attention to children’s developmental advance, and therefore for interpretive purposes this factor was labeled “subthreshold neglect of developmental advance.” When summed, this scale had a range of 12.00 – 42.00 with a mean of 31.13 ($SD = 6.37$, $n = 228$). Higher scores on this scale represented more optimal parenting, and lower scales represented subthreshold neglect (i.e., the absence of optimal parenting). There were significant between-group differences on this factor ($F_{2,225} = 25.78$, $p < .001$), with teens having the most neglectful scores ($M = 29.23$, $SD = 5.99$, $n = 124$), followed by low-resource adults ($M = 30.57$, $SD = 6.30$, $n = 49$). High-resource adults had the least neglectful scores ($M = 35.90$, $SD = 4.66$, $n = 55$). Using Tukey’s WSD procedure to control for familywise error when testing all pairwise comparisons (Maxwell & Delaney, 2004), results indicated that high-resource adults were significantly less neglectful of developmental advance than teens ($t_{177} = -7.34$, $p < .001$) and low-resource adults ($t_{102} = -4.94$, $p < .001$). Teens’ and low-resource adults’ scores were not significantly different.
TABLE 4

FACTOR LOADINGS, COMMUNALITIES, AND VARIANCE ACCOUNTED FOR
BY PRINCIPAL FACTORS EXTRACTION OF TWO FACTORS

<table>
<thead>
<tr>
<th>Rotated Factor Pattern Loadings</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>h2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support of learning and literacy</td>
<td>.870</td>
<td>-.053</td>
<td>.72</td>
</tr>
<tr>
<td>Promotion of developmental advance</td>
<td>.806</td>
<td>-.033</td>
<td>.63</td>
</tr>
<tr>
<td>Involvement</td>
<td>.797</td>
<td>.011</td>
<td>.64</td>
</tr>
<tr>
<td>Learning materials</td>
<td>.704</td>
<td>.042</td>
<td>.52</td>
</tr>
<tr>
<td>Variety</td>
<td>.547</td>
<td>.120</td>
<td>.37</td>
</tr>
<tr>
<td>Acceptance</td>
<td>.454</td>
<td>.030</td>
<td>.22</td>
</tr>
<tr>
<td>Warmth</td>
<td>-.122</td>
<td>.929</td>
<td>.96</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>.002</td>
<td>.760</td>
<td>.58</td>
</tr>
<tr>
<td>General verbalness</td>
<td>.690</td>
<td>.697</td>
<td>.54</td>
</tr>
<tr>
<td>Display of positive affect</td>
<td>.043</td>
<td>.677</td>
<td>.49</td>
</tr>
<tr>
<td>Parental warmth</td>
<td>.242</td>
<td>.477</td>
<td>.39</td>
</tr>
</tbody>
</table>

Percent of Variance Explained by Each Factor

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41.11</td>
<td>13.95</td>
<td>55.06</td>
</tr>
</tbody>
</table>
Factor 2 was comprised of five items: warmth directed towards the child, responsiveness, general verbalness, display of positive affect, and parental warmth. These items were all related to emotional interactions between mothers and children, and therefore for interpretive purposes this factor was labeled “subthreshold neglect of emotional needs.” When summed, this scale had a range of 5.50 – 26.50 with a mean of 19.56 (SD = 4.01, n = 228). Higher scores on this scale represented more optimal parenting, and lower scales represented subthreshold neglect (i.e., the absence of optimal parenting). There were significant between-group differences on this factor ($F_{2, 225} = 17.43, p < .001$), with teens having the most neglectful scores ($M = 18.30, SD = 3.88, n = 124$), followed by low-resource adults ($M = 20.26, SD = 4.04, n = 49$). High-resource adults had the least neglectful scores ($M = 21.78, SD = 3.16, n = 55$). Using Tukey’s WSD procedure to control for familywise error when testing all pairwise comparisons (Maxwell & Delaney, 2004), results indicated that teens were significantly more neglectful of their children’s emotional needs than low-resource adults ($t_{177} = -2.97, p < .01$) and high-resource adults ($t_{177} = -5.84, p < .001$). Low- and high-resource adults’ scores were not significantly different.

Subthreshold Neglect Scales as Predictors of Attachment Classifications

Two sets of logistic regression analyses were performed in order to address the questions of whether the subthreshold neglect scales were significant predictors of: (1) the security of the attachment bond, and (2) the organization of the attachment bond.
Security of the attachment bond.

Four multinomial logistic regression analyses were performed through SPSS NOMREG to assess prediction of membership in one of three categories of attachment security (i.e., secure, insecure-avoidant, insecure-resistant). Multinomial logistic regression is a more general form of binary regression where more than two response categories are permissible (Tabachnick & Fidell, 2001). The first analysis assessed the impact of the type of mother (i.e., teen, low-resource adult, or high-resource adult) on ABC classifications. This variable was nonsignificant and therefore was excluded from the following subthreshold neglect analyses. This result was not surprising, given that attachment security classifications were statistically equivalent between groups.

The remaining three multinomial logistic regression models investigated the role of subthreshold neglect of developmental advance and emotional needs, separately and simultaneously, on ABC classifications. Parameter estimates ($B$), standard errors of $B$ ($SE_B$), and odds ratios (OR) with 95% confidence intervals (95% CI) of the OR for each of the insecure vs. secure group contrasts are presented in Table 5. All statistical tests and odds ratios were calculated with reference to the secure classification to determine whether the factor scale scores differentially predicted insecure-avoidant and insecure-resistant versus secure attachment. The secure classification was selected as the reference group because it is the developmentally normative classification. With secure attachment as the reference group, Table 5 shows parameter estimates ($B$) and associated information for insecure-avoidant and insecure-resistant classifications contrasted with secure. Data presented in this table should be interpreted as the increased or decreased chance of being insecure-avoidant or insecure-resistant compared to secure. For example, when the
predictor coefficient for insecure-avoidant was positive, the OR indicated the increased odds of being insecure-resistant rather than secure when there was a one-unit increase in the independent variable. When the predictor coefficient for an insecure classification was negative, the OR indicated the decreased odds of being insecure rather than secure when there was a one-unit increase in the independent variable. In addition to the multinomial logistic regression models tested with secure attachment as the reference group, models were reestimated using insecure-avoidant as the reference group. This approach allowed for comparisons to be made between insecure-avoidant versus insecure-resistant classifications.

Subthreshold neglect of developmental advance (i.e., Factor 1) was a significant predictor of attachment security (χ² = 13.98, p = .001). The model had a pseudo-R² of 0.070 (Nagelkerke, 1991). The model correctly predicted 97.2% of secure attachments, 6.3% of insecure-avoidant attachments, and 0.0% of insecure-resistant attachments, with an overall 61.4% correct classification rate. Although the model did not correctly classify most of the insecure cases, this scale was able to distinguish between insecure-avoidant and secure classifications, suggesting that subthreshold neglect of children’s developmental advance was associated with a higher likelihood of insecure-avoidant than secure attachment (OR = 0.91, 95% CI = 0.86 – 0.96). Subthreshold neglect of developmental advance also distinguished between insecure-resistant and insecure-avoidant classifications, suggesting that subthreshold neglect of children’s developmental advance was associated with a higher likelihood of insecure-avoidant than insecure-resistant attachment (OR = 1.10, 95% CI = 1.03 – 1.18).
### TABLE 5

**MULTINOMIAL LOGISTIC REGRESSION PREDICTING ATTACHMENT SECURITY FROM SUBTHRESHOLD NEGLECT**

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>$B$</th>
<th>$SE\ B$</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Subthreshold educational neglect</td>
<td>13.98**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insecure-avoidant vs. secure</td>
<td>-0.10**</td>
<td>0.03</td>
<td>0.91</td>
<td>0.86 – 0.96</td>
<td></td>
</tr>
<tr>
<td>Insecure-resistant vs. secure</td>
<td>0.00</td>
<td>0.03</td>
<td>0.95</td>
<td>0.94 – 1.06</td>
<td></td>
</tr>
<tr>
<td>Insecure-resistant vs. insecure-avoidant</td>
<td>0.10**</td>
<td>0.04</td>
<td>1.10</td>
<td>1.03 – 1.18</td>
<td></td>
</tr>
<tr>
<td>2. Subthreshold emotional neglect</td>
<td>6.08*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insecure-avoidant vs. secure</td>
<td>-0.10*</td>
<td>0.04</td>
<td>0.90</td>
<td>0.83 – 0.98</td>
<td></td>
</tr>
<tr>
<td>Insecure-resistant vs. secure</td>
<td>-0.04</td>
<td>0.05</td>
<td>0.96</td>
<td>0.88 – 1.05</td>
<td></td>
</tr>
<tr>
<td>Insecure-resistant vs. insecure-avoidant</td>
<td>0.06</td>
<td>0.05</td>
<td>1.06</td>
<td>0.96 – 1.18</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05. **p < .01.

Subthreshold neglect of emotional needs (i.e., Factor 2) was also a significant predictor of attachment security ($\chi^2 = 6.08, p < .05$). The model had a pseudo-$R^2$ of 0.031 (Nagelkerke, 1991). The model correctly predicted 100.0% of secure attachments, 2.1% of insecure-avoidant attachments, and 0.0% of insecure-resistant attachments, with an overall 62.3% correct classification rate. Although the model did not correctly classify most of the insecure cases, this scale was able to distinguish between insecure-avoidant
and secure classifications, suggesting that subthreshold neglect of children’s emotional needs was associated with a higher likelihood of insecure-avoidant than secure attachment (OR = 0.90, 95% CI = 0.83 – 0.98).

The final multinomial logistic regression analysis included both factors as simultaneous predictors of attachment security. Simultaneous consideration of subthreshold neglect of both developmental advance and emotional needs produced a good model fit ($\chi^2 = 15.42, p < .01$), with a pseudo-$R^2$ of 0.078 (Nagelkerke, 1991). The model correctly predicted 97.2% of secure attachments, 8.3% of insecure-avoidant attachments, and 0.0% of insecure-resistant attachments, with an overall 61.8% correct classification rate. Although the model did not correctly classify most of the insecure cases, this model suggested that subthreshold neglect of developmental advance was able to distinguish between insecure-avoidant and secure classifications, such that subthreshold neglect of developmental advance was associated with a higher likelihood of insecure-avoidant than secure attachment (OR = 0.92, 95% CI = 0.87 – 0.98). Subthreshold neglect of emotional needs was not a significant predictor of any two-way comparisons in this model.

Organization of the attachment bond

Four binary logistic regression analyses were performed through SPSS to assess prediction of membership in the two-way disorganized versus organized attachment classifications. The first analysis assessed the impact of the type of mother (i.e., teen, low-resource adult, or high-resource adult) on disorganization. This variable was nonsignificant and therefore was excluded from the remaining analyses. This result was
not surprising, given that the prevalence of disorganized and organized attachment classifications were statistically equivalent between groups.

The remaining three logistic regression analyses investigated the role of: (1) subthreshold neglect of developmental advance, (2) subthreshold neglect of emotional needs, and (3) subthreshold neglect of both developmental advance and emotional needs on the disorganization of the attachment bond. All predictions were nonsignificant, indicating that the subthreshold neglect scales derived for the purposes of this study were not significantly associated with the disorganization of the infant-mother attachment bond.
DISCUSSION

Maltreatment has been shown to predict a variety of negative developmental outcomes in children, including insecure and disorganized attachment (Barnett et al., 1999; Egeland & Sroufe, 1981; Finzi et al., 2001). The mothers in the present sample, however, were not truly neglectful in terms of the legal criteria used to define neglect. Rather, their behaviors represented subthreshold neglect. The outcomes of this form of neglect were different than in many previous studies of maltreatment and parenting. Specifically, the rates of insecure attachment were not elevated beyond what would be expected in typical samples, and although subthreshold neglect was associated with an increased likelihood of insecure-avoidant attachment it was not associated with disorganized attachment. These inconsistencies suggested that subthreshold neglect was a qualitatively different construct than substantiated neglect, perhaps with different precursors and sequelae.

The existing literature on maltreatment has suggested that neglect or grossly inadequate caregiving evolves from the interaction of psychological characteristics of vulnerable, at-risk mothers in the context of environmental stress and lack of support (Sroufe, Egeland, Carlson, & Collins, 2005). Furthermore, maltreatment is often intergenerational, with neglectful mothers having a history of being neglected themselves as children. It is possible that subthreshold neglect, however, resulted from a lack of information about appropriate parenting techniques or from exposure to daily stressors.
that limited parents’ abilities to respond appropriately and sensitively to children’s needs. These important differences between subthreshold and substantiated neglect can explain why the outcomes associated with subthreshold neglect were inconsistent with the results of previous studies which have suggested that neglect is associated with insecure-resistant and disorganized attachment (cf. Barnett et al., 1999; Egeland & Sroufe, 1981; Finzi et al., 2001). In sum, the scales created in the present study tapped into the elusive construct of subthreshold neglect, which most likely represented an intermediate point on a continuum ranging from adequate parenting to severe maltreatment.

Attachment among Children of Adolescent and Adult Mothers

On average, 64% of the children in the present sample were securely attached to their mothers, 20% were insecure-avoidant, and 16% were insecure-resistant. These rates were comparable to those found in normative, nonclinical populations, in which approximately 65% of children were classified as secure, 20% as insecure-avoidant, and 15% as insecure-resistant (van IJzendoorn et al., 1992). Despite the high-risk nature of the teen and low-resource adult mother groups in terms of their education and socioeconomic status, the prevalence of secure and insecure classifications did not differ significantly between groups.

The average rate of disorganization was somewhat elevated in the present sample (i.e., 24% in this sample vs. 15% in typical samples; van IJzendoorn et al., 1999). This finding was consistent with four-way A/B/C/D classification rates reported in previous studies of at-risk children. Specifically, when conceptualized this way, approximately 51% of children in the present sample were secure, 14% were insecure-avoidant, 12%
were insecure-resistant, and 24% were disorganized. Ward and Carlson (1995) reported similar rates among their sample of children born to adolescent mothers, with 43% of children classified as secure, 35% as insecure-avoidant, 4% as insecure-resistant, and 18% as disorganized. Likewise, Whitman et al. (2001) reported classifications rates of 37% secure, 22% insecure-resistant or insecure-avoidant, 41% disorganized. Although the rates varied somewhat between these studies, the common theme was that, when considering four-way classifications among children of at-risk children, the rates of security were lower than in typical populations whereas the rates of insecurity and disorganization were elevated.

The prevalence of disorganized attachment, however, did not differ significantly between groups. In general, these findings were not consistent with previous literature which has suggested that children born to teen mothers are more likely to form insecure and disorganized infant-mother attachment bonds than children of adult mothers (cf. Lounds et al., 2005; Spieker & Bensley, 1994). Ward and Carlson (1995) have reported that infants of adolescent parents sometimes resemble infants of adult parents in their rates of secure attachments. The lack of differences in attachment classifications between children of teen, low-resource adult, and high-resource adult mothers illustrated that although adolescent mothers and their children may be at risk for maladaptation as a group, there is a wide range of within-group variability among adolescent mothers (Ward & Carlson, 1995). Along these lines, previous research has indicated that many teen mothers and their children are resilient to the multitude of risks to which they are often exposed (Borkowski, Farris, Whitman, Carothers, Weed, & Keogh, 2007). Findings from the present study suggested that risk factors such as teen parenting, low education, and
low socioeconomic status were not associated with elevated rates of insecure or disorganized attachment when compared to the rates evidenced by children of high-resource adult mothers.

Subthreshold Neglect and Attachment

Recent literature has called for the development and validation of measures of child neglect that can be applied outside of the child welfare context (Slack et al., 2003). None of the mothers in the present sample were substantiated for child neglect by the time of the 12-month assessment. A sizable proportion, however, was rated by interviewers as neglectful of their children’s social, emotional, and mental needs. Thus, it was concluded that the extremes of the scales created for the present study represented subthreshold neglect, defined as failure to meet the child’s basic developmental needs without the extreme deprivation characteristic of legal definitions of child neglect. Subthreshold neglect is a new construct that has been unaddressed by previous research on attachment as an outcome of either sensitive/responsive parenting or severe forms of maltreatment.

The subthreshold neglect scales created for the present study distinguished between adolescent and adult mothers, with teens and low-resource adult mothers being rated as more neglectful of their children’s developmental advance and emotional needs than high-resource adult mothers. Moreover, the scales were predictive of the security/insecurity of the infant-mother attachment bond. These scales accounted for as much or more variance in attachment security than what is usually found in research on the influence of parenting on attachment. For example, findings from a recent meta-
analysis indicated that approximately 6% of the variance in attachment security is accounted for by maternal sensitivity (DeWolff & van IJzendoorn, 1997), whereas the subthreshold neglect scales in the present study accounted for more than 7% of the variance. It has been suggested that the small to modest effect sizes documented in previous studies may be an artifact of inadequate measures of maternal sensitivity and/or responsivity (Weinfeld et al., 1999). DeWolff and van IJzendoorn (1997) recommended that these types of measurement problems can be avoided by adopting a multidimensional approach to the study of parenting in order to replace the conventional search for the exclusive, and often small, contributions of sensitivity/responsivity. The subthreshold neglect scales created in the present study allowed this to be accomplished because they included a wider range of variables, such as maternal warmth, display of positive affect, involvement, acceptance, provision of learning materials, and support for learning and literacy. The inclusion of multiple variables, condensed into continuous scales, allowed for a greater proportion of variance to be accounted for than when sensitivity/responsivity is considered as the sole predictor of attachment classifications.

Subthreshold neglect of developmental advance versus emotional needs

It was anticipated that subthreshold neglect of emotional needs would account for a greater proportion of variance in attachment security than subthreshold neglect of developmental advance, primarily because attachment is an affectional bond. The results suggested, however, that dimensions of parenting related to the child’s cognitive development accounted for a greater proportion of individual differences in attachment security than dimensions related to fulfillment of emotional needs. In point of fact, the inclusion of both scales as simultaneous predictors of attachment security provided only a
slight increase in the proportion of variance accounted for, and therefore the inclusion of
subthreshold neglect of emotional needs did not significantly increase the model’s
explanatory value above and beyond considering subthreshold neglect of developmental
advance as the sole predictor of attachment security.

When developing attachment theory, Bowlby (1973) made reference to a strong
cognitive component of attachment in terms of the internal working model. A key feature
of the working model is the notion of who the attachment figures are, where they may be
found, and how they may be expected to respond. It is possible that subthreshold neglect
of the child’s developmental advance led to impairments in the development of the
working model of parents as caregivers who are likely to respond sensitively to the
infant’s cues (Bretherton & Munholland, 1999). This is not implausible, given previous
research indicating that inadequate care and stimulation have been associated with low
IQ, which represents another dimension of cognitive development (Sroufe et al., 2005).
Thus, it is possible that subthreshold neglect of developmental advance was a stronger
predictor than subthreshold neglect of emotional needs because inattentiveness to the
child’s cognitive development interfered with the child’s ability to develop an adaptive
internal working model by age one.

Subthreshold neglect and insecure-avoidant attachment

The most consistent contribution of both subthreshold neglect scales was their
association with an increased likelihood of insecure-avoidant attachment. It was expected
that subthreshold neglect would be more strongly associated with insecure-resistant, as
opposed to insecure-avoidant, attachment classifications, given previous work suggesting
that child neglect is associated with insecure-resistant attachment whereas child abuse is
associated with insecure-avoidant attachment (Finzi et al., 2001; Weinfield et al., 1999). The inconsistency between previous findings and the findings from the present study suggested that there were qualitative differences between the subthreshold neglect studied in this project versus substantiated child neglect, which is the focus of most studies of neglectful parenting (cf. Manly et al., 2001; Morton & Browne, 1998). In contrast to recent empirical findings indicating that substantiated neglect is associated with insecure-resistant attachment (Finzi et al., 2001), original theoretical work supported the link between subthreshold neglect and insecure-avoidant attachment (Bretherton & Munholland, 1999). Based on observations in naturalistic settings, Ainsworth et al. (1978) described a substantial minority of mothers who were relatively unresponsive when their infants cried at home, rarely engaged in affectionate holding, and tended to limit close bodily contact to routine care situations. Although these mothers were not truly neglectful of their infants, they did fail to attend in a prompt and sensitive manner to their children’s needs, which implied that their behaviors were similar to subthreshold neglect. Ainsworth et al. (1978) noted that the infants of these mothers were typically classified as avoidant. This anecdotal finding was documented in a later empirical study, which indicated that mothers of avoidant infants were insensitive to their infants’ timing cues and seemed to dislike close physical contact (Egeland & Farber, 1984).

Ainsworth regarded avoidance as a defensive (i.e., self-protective) adaptation to expected maternal rejection in stressful situations (Bretherton & Munholland, 1999). Along these same lines, Main (1981, 1999) drew on the work of ethologists (Chance, 1962; Tinbergen & Moynihan, 1952) to suggest three possible functions of avoidance. First, avoidance might keep the infant in proximity, insofar as not looking at the social
partner permits impulses toward flight and/or aggressive behavior to remain deactivated (Main, 1981, 1999). Second, avoidance might keep the infant in proximity by decreasing the likelihood of the mother’s withdrawing in response to eye-to-eye contact. Third, avoidance might simply assist the infant in maintaining behavioral organization, leaving further behavioral options open. Main and Ainsworth’s hypotheses regarding the functions of avoidance make it possible to understand that avoidance may be adaptive in situations of subthreshold neglect, whereas resistance may be more adaptive in cases of severe neglect in which the child needs to maximize their attachment behaviors in order to get any type of response from the caregiver.

Subthreshold neglect and disorganized attachment

The subthreshold neglect scales created for the present study were not significant predictors of attachment disorganization. Findings suggested that the impact of subthreshold neglect on the organization of the attachment bond was similar to the effects of insensitive parenting in general. Specifically, a recent meta-analysis of nearly 2,000 infant-parent dyads revealed that the correlation between parental insensitivity and infant disorganization was only .10 (van IJzendoorn et al., 1999). Conclusions from the meta-analysis suggested that within the normal, nonclinical range of parenting, insensitive parental behavior did not evoke disorganized attachment behaviors in children, although severe maltreatment did appear to be an antecedent of disorganized attachment (Barnett et al., 1999; Lyons-Ruth, Bronfman, & Parsons, 1999; van IJzendoorn et al., 1999). Most studies of maltreatment and attachment disorganization involve samples who have experienced extreme forms of neglect and/or abuse (cf. Barnett et al., 1999; Egeland & Sroufe, 1981). It is plausible that the fright evoked by this type of extremely insensitive
and disturbed parenting results in a temporary breakdown of the child’s regular strategy
to deal with negative emotions in the face of stress and therefore facilitates the
development of disorganized attachment. Thus, although severe maltreatment has been
associated with disorganized attachment, subthreshold neglect was not detrimental to the
organization of the infant-mother attachment bond.

Implications for Future Research and Intervention Programs

The present study addressed the call for the creation of measures of child neglect
that can be applied to nonclinical samples outside of the child welfare context (Slack et
al., 2003). In addition, as recommended by Dubowitz et al. (2004, 2005), the present
study conceptualized multiple domains of neglect rather than as a single overarching
substantiated neglect variable. The subthreshold neglect measures created for the present
project predicted a reasonable amount of variance in attachment security and were
particularly useful in distinguishing insecure-avoidant from secure and insecure-resistant
attachment classifications. In other words, children who were exposed to higher degrees
of subthreshold neglect were more likely to form insecure-avoidant attachments to their
mothers than children who received more optimal parenting.

Future studies with larger, more heterogeneous samples would be useful in
validating the subthreshold neglect scales that were created in the present study.
Particularly, a study involving two groups of mothers – one with substantiated child
neglect and another at-risk for neglect but not yet reported to child protection agencies –
would allow for the establishment of construct validity for the subthreshold neglect
scales. Moreover, research on subthreshold neglect and attachment should include
additional measures that have been shown to be associated with disorganized attachment, such as frightened and/or frightening parental behavior (Hesse & Main, 2006).

Subthreshold neglect poses less imminent danger to the child than more extreme forms of maltreatment and is therefore more amenable to early identification and treatment. Without intervention, maternal sensitivity and insensitivity tend to demonstrate continuity over time, and insensitivity may even be exacerbated under conditions of stress (Pianta, Sroufe, & Egeland, 1989). Recent findings from the NICHD Early Child Care Research Network have indicated that changes in parenting quality may be more important predictors of children’s outcomes than the absolute level of parenting quality (NICHD, 2006). Because the HOME and Landry Observation can be administered throughout childhood, the subthreshold neglect scales created in the present study can be used to track changes in parenting quality over time.

The subthreshold neglect scales created in the present study can also be useful in informing early intervention or primary prevention efforts (Slack et al., 2003). Because the variables that were used to comprise the subthreshold neglect scales are relatively easy to collect and score, the scales that were created for the present study can be of potential use in a variety of studies related to parenting and children’s outcomes. Therefore, the use of the subthreshold neglect scales to identify mother-child dyads who are at risk for maladaptation would allow for interventions to commence prior to exposure to more extreme forms of maltreatment. In other words, early intervention with mothers who are neglectful at subthreshold, rather than extreme, levels would allow for the cycle of maltreatment to be broken before it even begins.
REFERENCES


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