The Pennsylvania State University

The Graduate School

College of Health and Human Development

PREDICTORS OF PARENTAL COMMITMENT TO HOME VISITATION PROGRAM

AMONG AFRICAN AMERICAN SAMPLE

A Thesis in

Human Development and Family Studies

by

Fumiyuki Chin

© 2010 Fumiyuki Chin

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

May 2010
The thesis of Fumiyuki Chin was reviewed and approved* by the following:

Douglas M. Teti  
Professor of Human Development and Family Studies  
Thesis Adviser

J. Douglas Coastworth  
Associate Professor of Human Development and Family Studies

Steven H. Zarit  
Professor of Human Development and Family Studies  
Head of the Department of Human Development and Family Studies

*Signatures are on file in the Graduate School.
ABSTRACT

Parental commitment to early intervention plays a significant role in the extent to which children benefit from the program. Understanding the predictors of parental commitment to early intervention is important if one is interested in maximizing parental involvement. The present study examined predictors of parental commitment to early intervention using a sample of 138 low-income African American mothers that participated in a home visiting intervention program aimed at promoting the development of their preterm infants and the parent-infant relationship. The participants were randomly assigned to an intervention or control group. Both intervention and control mothers received a home visiting program, and thus commitment to home visiting was able to be assessed in both groups. Predictors of commitment included sociodemographic variables, infant medical variables, and parents’ state of mind regarding attachment, which was assessed using the Adult Attachment Interview (AAI). Commitment was assessed in three ways: marker measures of general involvement, interventionists’ ratings of overall parental commitment, and parents’ engagement with the intervention activities. Higher socioeconomic risk was associated with lower commitment regardless of group status. In contrast, higher infant medical risk was associated with lower commitment only for the control group. Autonomous mothers were found to be more committed to intervention compared to non-autonomous mothers; however, this was only seen in the intervention group. Multiple regression analyses revealed that when socioeconomic risk and maternal attachment status were used as predictors, only socioeconomic risk significantly predicted commitment. The results suggest that socioeconomic risk is a major obstacle for parental commitment to intervention. It is likely that autonomous parents were more encouraged to participate in the present intervention because of the content of the program that was congruent with their values and needs. The present study underscores the importance of understanding how intervention programs can be tailored to improve levels of involvement from the participants who are at high-risk for low commitment.
# TABLE OF CONTENTS

List of Tables........................................................................................................ v
Acknowledgements................................................................................................. vi

INTRODUCTION..................................................................................................... 1

METHODS.............................................................................................................. 13
  Participants ........................................................................................................... 13
  Procedure .............................................................................................................. 14
  Measures ............................................................................................................... 16
  Analysis Plan ........................................................................................................ 20

RESULTS............................................................................................................... 22

DISCUSSION.......................................................................................................... 28

References............................................................................................................. 36

Appendix: Tables................................................................................................... 43
LIST OF TABLES

Table 1: Infant medical and maternal sociodemographic information at post-intervention …… 43
Table 2: Intercorrelations among predictor variables..............................................................44
Table 3: The percentage of marital status at each AAI classification........................................45
Table 4: Intercorrelations among commitment variables..........................................................46
Table 5: Correlations among sociodemographic factors and commitment variables.............47
Table 6: Stepwise multiple regression analysis predicting total number of “no-shows” without
clear reason/explanation by sociodemographic factors..........................................................48
Table 7: Stepwise multiple regression analysis predicting frequency of massage
by sociodemographic factors..................................................................................................49
Table 8: Stepwise multiple regression examining sociodemographic predictors of
interventionists’ rating of commitment...................................................................................50
Table 9: Correlations between gestational age at birth and commitment variables.............51
Table 10: Multiple regression analysis assessing the moderating effect of group status on the
relation between gestational age (GA) at birth and total number of cancelled visits…52
Table 11: Multiple regression analysis predicting interventionists’ ratings of commitment from
adult attachment status (autonomous vs. non-autonomous, group status, and their
interaction)............................................................................................................................53
Table 12: Mean commitment variables by adult attachment status (autonomous vs. non-
autonomous).........................................................................................................................54
Table 13: Final multiple regression analysis predicting total number of “no-shows” without clear
reason/explanation, including all previously significant predictors of commitment to
intervention...............................................................................................................................55
Table 14: Final multiple regression analysis predicting frequency of massage, including all
previously significant predictors of commitment to intervention.................................56
Table 15: Final multiple regression analysis predicting interventionists’ ratings of commitment,
including all previously significant predictors of commitment to intervention………57
ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Douglas Teti, for his advise, support, and encouragement. You inspired me to study this subject and deepen my interest. I would also like to thank Dr. Douglas Coatsworth for being on my committee. Lastly, I would like to thank my friends and families for all their love and support.
Predictors of commitment to home visitation program among African American sample.

Introduction

Parents play an integral role in a child’s development. Particularly in the early years, parents organize child’s life by making decisions about a child’s activities, and virtually all theories of child development identify the central role played by quality of parenting in shaping a child developmental outcomes (Baumrind, 1966, 1967; Bowlby, 1969; Teti & Candelaria, 2002).

In light of the significance of parents for child development, early intervention programs for at-risk children have put great effort into including parents as involved partners in intervention implementation. The centrality of parental involvement in early intervention is embraced in federal legislation, mandating intervention services for children at risk for developmental delay. Specifically, Part H of P. L. 99-457, the Individuals with Disabilities Education Act of 1990 [IDEA], mandates parental involvement in early intervention services for children up to age three, who have disabilities or who are at biological or environmental risk (Guralnick, 1997; Walter Reed Army Medical Center, n.d.). Partly in response to P. L. 99-457, early interventionists and researchers have been interested in whether the level and quality of parental involvement in early intervention influence intervention efficacy (Gavidia-Payne & Stoneman, 1997; Guralnick, 1997; Heinicke, Goorsky, Moscov, Dudley, Gordon, Schneider, & Guthrie, 2000; Korfmacher, Green, Staerke, Petersen, Cook, Roggman, Faldowski, & Schiffman, 2008; McKay & Bannon, 2004; Miedel & Reynolds, 1999; White, Taylor, & Moss, 1992). Research findings indicate the critical importance of parental involvement for the success of early intervention. A result of the UCLA Family Development Project intervention indicated that variation in infant security of attachment to their mothers, and maternal responsiveness to infant’s needs were anticipated by mothers’ involvement in the home-intervention (Heinicke,
Another study found a positive relation between parental involvement in the early intervention (the Infant Health and Development Program), and children’s IQ scores at age three and borderline intellectual functioning (Ramey, Bryant, Wasik, Sparling, Fendt, & LaVange, 1992). Parents have the greatest influence, compared to teacher or therapist, on child development even if parents have limited time because of work or other duties (Mahoney & Wiggers, 2007). Clearly, parental commitment plays a significant role in the differential outcomes of early intervention.

The purpose of the present study is to examine predictors of parental commitment to early intervention, particularly for an African American sample that participated in a home visiting intervention program aimed at promoting the development of their preterm infants. In the sections below, I will review the literatures that define the term commitment. I will then present findings on the relationships between commitment to intervention and three specific predictors, including sociodemographic factors, infant medical variables and parent’s state of mind regarding attachment.

Assessment of Commitment to Intervention

Across studies, variations exist in the expression and definition of the term commitment. Often, commitment is used interchangeably with words such as involvement, engagement, and participation. Some studies specifically define commitment. In a study by Ramey et al. (1992) that examined intervention delivery and the outcome of the Infant Health and Development Program, participation in intervention was defined as the total frequency with which parents participated in home visits, attended parent group meetings, and visited child development centers when intervention activities were taking place. Dunst, Leet, and Trivette (1988) used the sum of three scales that collectively assessed mothers’ belief in having the time, energy, and
investment in intervention to measure commitment. Additionally, Heinicke et al. (2000) defined mother’s involvement in the intervention according to three major aspects of their home visits, and summarized into three ratings: positive connection between the intervenor and the mother, trust the mother held in the intervenor, and work that reflected the extent the mother used the intervention.

Other studies have conceptualized commitment more broadly. For example, Dumas, Nissley-Tsiopinis, and Moreland (2007) defined engagement in a preventive program as the entire process that begins from parents’ intent to enroll and actual enrollment, to their attendance and quality of participation. Similarly, McKay and Bannon (2004) conceptualized engagement in child mental health services as a process that begins from the identification of a child’s mental health difficulties by parents, teachers, or other adults who regularly interact with the child, and ending with the child receiving the care through a referral. Korfmacher et al. (2008) also defined involvement as the process of the parents’ initial connection to the program and using its services in a way that serves the needs of the family. Korfmacher et al. (2008), however, further divided involvement in two dimensions including participation (i.e., quantity of family’s contact with the program), and engagement (i.e., family’s emotional involvement in the program).

Evidently, there is no fixed definition of the concept of commitment. The variation in conceptualization leads to differences in measurement, which in turn influences the findings across studies. Studies show that intention to participate in an intervention does not always turn into actual participation and/or reflect the level of engagement in the program (Dumas et al., 2007; McGuigan, Katzev, & Pratt, 2003; Nordstrom, Dumas, & Gitter, 2008). The timing of measurement, therefore, could result in different findings regarding the level of parental commitment to intervention. Further, initial attendance and ongoing engagement in intervention
are related, but are multiply influenced by the characteristics of the family, the child, and the services (McKay & Bannon, 2004). More precise definitions and measurements of commitment are needed. In the present study, commitment was measured in three ways: objective (i.e., overall level of participation), subjective (i.e., interventionist ratings), and parental involvement in specific intervention activities.

**Predictors of Commitment**

A number of factors have been identified as predictors of commitment, such as sociodemographic factors (e.g., Waanders, Mendez, & Downer, 2007; Spoth et al., 1997; Raikes et al., 2006), and familial factors including child health status (e.g., Gavidia-Payne & Stoneman, 1997; Kazdin et al., 1997; Korfmacher et al., 2008; Kucheler-O’shea et al., 1999; McKay et al., 2004). In addition, a small number of studies have examined parent’s state of mind regarding attachment as a predictor of commitment (Heinicke et al., 2006, Heinicke et al., 2008; Korfmacher et al., 2008). To further understand factors that predict parental commitment to intervention, the present study examined three major variables: (a) sociodemographic variables including maternal age, education, marital status, income, and receipt of state/ federal assistance; (b) infant medical variables including length of stay in Neonatal Intensive Care Unit (NICU), birth weight, gestational age (GA) at birth, small for GA status, and cumulative medical risk; and (c) parent’s state of mind regarding attachment.

**Sociodemographic predictors.** Previous research has examined various dimensions of sociodemographic factors and their association to commitment. The present study examines commitment to intervention in a sample of African American parents of preterm infants. Ethnic minorities including African Americans have been found to be less likely to engage in child mental health services and research compared to whites (Dumka et al., 1997; Gross et al., 2001;
McKay et al., 2004; McLoyd, 1990). Difficulty in recruitment and retention of minority families could be attributed to chronic economic stress, frequent moves, and language barriers (Dumka et al., 1997; McLoyd, 1990). Ethnic minority families may also be reluctant to engage in early intervention services because this population historically has received unethical treatment, and they often have negative experiences with social agencies (Gross et al, 2001; McLoyd, 1990).

Importantly, minority status is often confounded with socioeconomic risk factors such as low-income, receipt of state/ federal assistance, single parenthood, and neighborhood stress. There are mixed findings regarding socioeconomic stress and commitment. Waanders et al. (2007) found a negative association between economic strain and parent involvement in preschool education, and more financial and social supports were associated with consistency in attendance to an intervention program (Kuchler-O’Shea et al., 1999). On the contrary, Dumas et al. (2007) found that high levels of family and financial stress were associated with higher intent to enroll in intervention. The authors emphasized, however, that the attendance was most predicted by time availability; that is, stress was associated with higher intent to enroll for mothers who reported fewer time constraints (Dumas et al., 2007). Similarly, Dunst et al. (1988) found that family resources including time, physical and emotional energy, and personal belief and investment to adhere to intervention was also associated with commitment to intervention. Family resources (e.g., time, physical and emotional energy) were closely associated with the socioeconomic context, and the above studies show that deficiencies in either source could lead to lower commitment.

In addition to socioeconomic risk factors, education is another sociodemographic variable that is often associated with commitment to intervention. Waanders et al. (2007) found that parents’ sense of efficacy regarding education and their level of education was positively related
to their involvement in preschool child’s education. Similarly, higher education was related to receiving more services among families who had children with disabilities (Kochanek & Buca, 1995). Education is related to knowledge, and knowledge about child development and parenting is an important factor that is associated with commitment. Knowledge may derive from formal schooling (i.e., education) and/or prior experiences, and it is likely to raise the recognition and awareness of the benefits from an early intervention, which in turn leads to higher commitment. Smith et al. (2000) found an association between mothers’ beliefs in the benefit of early intervention for child development, and higher involvement in treatment. Likewise, Kuchler-O’Shea et al. (1999) found a positive relation between father’s education and child’s attendance to the intervention program; the authors speculated that higher education led to the recognition of the importance of intervention. Fathers with higher education were also more likely to provide emotional support and assistance in caring for the child. Level of maternal education could also explain the association between maternal age and commitment. Older mothers may be likely to have more education and experiences thus show more commitment to intervention compared to younger mothers. In fact, some studies show that younger mothers are more likely to drop out of studies compared to older mothers; however, this finding is not consistent across studies (Korfmacher et al., 2008; McGuigan et al., 2003). Some studies found higher engagement among younger mothers than older mothers (Korfmacher et al., 2008). In regard to the finding indicating lower effect size of intervention with low-SES and adolescent mothers compared to middle-class, non-adolescent mothers, Bakermans-Kranenburg et al. (2005) suggested less education and less preparation to fully engage in the parenting role led to less motivation and commitment in the intervention. Prior experience with successful intervention is also important for later commitment. Shin et al. (2005) found a significant relation between prior experience with
exercise and exercise benefits, and commitment to a prescribed exercise plan. In sum, studies appear to show that sociodemographic factors have an indirect relation to parents’ commitment to intervention. Factors such as economic strain, low knowledge about the benefits of intervention, low education, and young age may pose obstacles to full engagement of mothers who might otherwise participate in intervention programs (Dumas et al., 2007; Korfmacher et al., 1998).

Medical/ child health/ developmental status predictors. Studies show complex relations between infant/child developmental and medical variables and parental commitment to intervention. Although the presence or diagnosis of child mental health disorder or impaired functioning is associated with greater service engagement, the association between severity of problem and engagement is inconclusive (McKay et al., 2004). In a study to examine the extent of proximal factors (i.e., sociodemographic characteristics, child behavior problems, current obstacles) in predicting commitment to the PACE program, Dumas et al. (2007) did not find severity of child behavior problems to predict intervention attendance; attendance was only predicted by the parents’ availability of time. Similarly, Dunst et al. (2001) examined commitment of mothers of developmentally delayed infants and toddlers, and found no significant association between child developmental quotient and maternal commitment. On the other hand, some studies found higher engagement in family support programs among mothers with infants who had more health risk at birth (McGuigan et al., 2003). Kuchler-O’Shea et al., (1999) found more consistency in the attendance in an early intervention program when the child had a more severe disability. In the same study, it was also found that availability of transportation, and better financial and social support predicted consistent attendance (Kuchler-O’Shea et al., 1999). As discussed earlier, it is important to consider the sociodemographic
obstacles to commitment, which might partly explain the inconsistent link between infant/child medical variables and parents’ commitment to intervention.

One important factor that influences the link between infant medical developmental variables and parental commitment level is parental perception of the serious and severity of the child’s medical/developmental condition. Studies show that parental awareness of intervention benefits was related to maternal engagement in intervention for children with developmental delay and children with conduct problems (Reid et al., 2004; Smith et al., 2000). Parents who perceive their children as in need of intervention are more likely to enroll in and commit to early intervention programs that meet their needs. Parental perception, therefore, is a factor that may partly explain the inconsistent link between infant/child medical variable and parental commitment to early intervention.

*Parent’s state of mind regarding attachment.* There is a possibility that parental perception of child’s problem and the need for intervention has origins in parents’ state of mind regarding attachment. The relationship between parent’s state of mind regarding attachment and commitment to intervention is much less studied compared to other predictor variables. Studies, nevertheless, shows the importance of studying the attachment-commitment link. A widely used measurement of parent’s state of mind regarding attachment is the Adult Attachment Interview (AAI), which assigns a person into one of four major attachment classifications (secure-autonomous/F, dismissing/D, preoccupied/E, cannot classify); a person may receive an additional classification of unresolved-disorganized/U. It is important to emphasize that security of attachment determined by the AAI reflects a person’s “state of mind with respect to attachment,” and not attachment to a single individual (Hesse, 1999, p. 421). State of mind regarding attachment originates in a person’s previous and current attachment experiences, and
research shows its correspondence to infant attachment measured by the Strange Situation (Hesse, 1999). During the AAI, an adult with secure/autonomous state of mind displays his/her value on attachment relationships and early attachment experiences. At the same time, the person shows objectivity and autonomy from past experiences such that he/she can freely express thoughts and feelings whether the experiences were positive or negative (Hesse, 1999). On the contrary, a person with dismissing state of mind minimizes/dismisses his/her attachment-related experiences, and a person with preoccupied state of mind displays preoccupation with past attachment-related experiences and relationships (Hesse, 1999). During the interview, an adult with an unresolved-disorganized state of mind displays lapses in reasoning and speech particularly when speaking of loss or abuse (Hesse, 1999) (See Method section for a detailed discussion of the adult attachment classifications). In addition to early attachment experiences, a secure/autonomous person is also found to show value in his/her current relationship. Heinicke et al. (2006, 2008) found a significant relationship between secure/autonomous adult attachment and maternal involvement in child-focused intervention. Interestingly, it was found that mothers who were classified as secure-autonomous, including those who were classified as unresolved/disorganized due to unresolved trauma or loss with a secondary classification of secure-autonomous, showed higher commitment to intervention compared to insecure mothers (Heinicke et al., 2006, 2008). Heinicke et al. (2006, 2008) suggested secure-autonomous attachment status provided mothers with a general capacity to relate to people, which served as motivation for involvement in the intervention that aimed to promote mother-child and child socio-emotional development. Further, it was found that continuous involvement was associated with better outcome (Heinicke et al., 2008).
As discussed earlier, recognition and awareness of the benefits from an early intervention influence parental commitment level. Provided that a person with secure-autonomous attachment status values relationships, s/he may more likely to commit to an intervention expressly designed to facilitate the infant and parent-infant relationship. It is important to note, however, that attachment-commitment links might be influenced by the types and features of the intervention. Korfmacher et al. (2008) found that parent engagement in activities and longer enrollment was associated with the extent that the content of home visits was focused on the child. Parental attachment status is also likely to influence parents’ perception of support, and their commitment to intervention.

Irrespective of attachment status, it is important for parents and interventionists to form supportive and trusting relationships. In the study by Gross et al. (2001), over 90% of the parents expressed personality and trustworthiness of the interventionist as incentives for participation. Korfmacher et al. (2008), in their study of maternal attachment and engagement in prevention intervention group for mothers and infants, found that secure mothers expressed more positive relationships with the facilitator and group compared to insecure mothers. Secure mothers also showed higher levels of participation and emotional commitment to the intervention (Korfmacher et al., 2008). The finding by Korfmacher et al. (2008), and other studies show the vulnerability of individuals with insecure attachment in developing supportive relationships, including relationships with interventionist (e.g., Collins & Feeney, 2004; Green et al., 2007). Further examination of attachment-commitment link is essential considering the susceptibility of insecure parents to form less optimal parent-child relationship, and their need for early intervention.

*The Present Study*
The present study aims to determine the predictors of parental commitment to a home visitation program. Specifically, the study examines the relationship between predictors and commitment among low-income African American mothers of premature infants. The present sample possesses at-risk characteristics in the three predictor domains described previously: sociodemographic factors, infant medical variables, and parent’s state of mind regarding attachment. Findings of the present study have the potential to inform the field about factors that predispose mothers to commit to early intervention programs, particularly programs that target families at both medical and environmental risk. More importantly, the present study contributes to current knowledge about the relationship between parents’ state of mind regarding attachment and parental commitment to early intervention.

In the present study, a home visitation program was implemented in both the intervention and control groups. The intervention group, however, was the only group that received the intervention aimed at promoting infant development and the infant-parent relationship. Thus, the present examination will evaluate the effects of the three predictors on two different home visiting programs, only one of which was focused on the infant-mother relationship.

Based on available literatures and theories, three research questions are proposed.

(a) What is the link between sociodemographic factors and maternal commitment to early intervention? It is proposed that higher sociodemographic risk will predict lower commitment to a home visiting program, regardless of whether the home visiting program implements the intervention or not.

(b) What is the link between infant medical risk and maternal commitment to a home visiting program? Premature infants vary widely, not simply in terms of degree of prematurity, but in terms of additional health risks associated with
being born too soon (Aylward, 2005). As discussed earlier, however, the link between child medical risk and parental commitment to intervention is inconclusive, and thus directional hypotheses are withheld.

(c) How does maternal state of mind regarding attachment relate to commitment to home visiting? Based on Korfmacher et al. (2008), Heinicke (2006, 2008) and others (see above), it is proposed that autonomous parents will show greater commitment to home visiting than non-autonomous parents. From Korfmacher et al.’s (2008) work, this linkage is expected to be particularly salient in the intervention group because the intervention was designed to promote the parent-infant relationship, and individuals with autonomous attachment, by definition, value relationships. For the control group, however, the link between parent’s state of mind regarding attachment and commitment is unclear because their home visits were not infant-focused. Additionally, differences in the level of commitment will be examined between organized (groups F, E, and Ds) and unresolved/disorganized (U) classifications. Korfmacher et al. (1997) found U mothers to show low participation, low commitment, and relationship with the interventionist, compared to non-U mothers. Heinicke et al. (2006, 2008), however, found that secure/autonomous classification regardless of attachment organization was related to high involvement. Directional hypotheses involving unresolved/disorganized states of mind and commitment to home visiting were thus withheld.
Methods

Participants

Participants were 194 low-income, African-American mothers who participated in a 20-week, eight-session early intervention study, which was designed to promote development and parent-infant relationship of preterm infants (< 37 weeks gestational age at birth). Recruitment took place between February 2002 and December 2004 at neonatal intensive care units (NICUs) of four hospitals in the Baltimore/Washington, DC area. Mothers were recruited when their infants were at least 32 weeks post conceptual age (PCA) to ensure their medical stability and viability. Mothers were excluded from recruitment if they were less than 18-year-old, had drug problems, and/or if their infants had diagnosable chromosomal abnormalities. The Internal Review Boards of four participating hospitals and the academic institution in which the investigators affiliated approved this study.

Within 48 hours after the recruitment, mothers were randomly assigned to either the intervention (N=98) or control (N=96) groups using urn randomization (Stout et al., 1994). This randomization procedure promoted a between-groups balance of seven variables: maternal education (did not complete high school vs. high school graduate), parity (primiparous vs. multiparous), relationship status (presence vs. absence of partner), yearly family income (< $30,000 vs. ≥ $30,000), infant gestational age at birth (32-36 weeks GA vs. < 32 weeks GA), small-for-date status (presence vs. absence), and infant gender. One-way analysis of variance and chi-square analysis indicated no significant difference between the intervention and control mothers on all infant medical and sociodemographic variables (see Table 1).

Of the 194 mothers, 21 mothers dropped out of the study prior to pre-intervention assessments, leaving 173 mothers with pre-intervention data. Of the 173 mothers, 138 (79%)
mothers remained in the study at post-intervention (approximately 4 months of infant age, corrected for prematurity) including 65 of 83 (78%) in the intervention group, and 73 of 90 (81%) in the control group. Attrition analysis (analysis of variance and chi-square) indicated that mothers who dropped out of the study were more likely to be on public assistance \( \chi^2(1) = 4.91, p = .05 \). No differences were found for other sociodemographic and infant medical variables. In the present sample, 78% of the mothers were receiving public assistance, and 52% of the mothers were living below the federally established poverty threshold.

**Procedure**

Three major predictors: sociodemographic variables, infant medical status, and parent’s state of mind regarding attachment were assessed at pre-intervention. These assessments took place in the hospital (infant medical status) and during a scheduled home visit 1-2 weeks following recruitment when the infants were 32-36 weeks PCA. Parental commitment to home visitation program was measured at the termination of the intervention. Time points of eight intervention sessions were 32-36, 34-38, 36-40, 38-42, 40-44, 44-48, 48-52, and 52-56 weeks PCA. Mothers were compensated $30 after each home visitation.

**Home Visitation**

**The Intervention.** The 20-week, eight-session intervention integrated two psychoeducational components and one parent-administered infant tactile stimulation component. The intervention began while the infants were in the NICU, and continued in the home. The theoretical basis of the intervention was derived from the transactional model of development (Sameroff & Chandler, 1975), that the intervention aimed to establish positive, reciprocal transactions between infants and their caregivers to facilitate developmental outcomes; and from attachment theory (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969/1982),
that increased parental sensitivity to infants’ cues was expected to enhance the quality of infants’ attachment.

The intervention began at 32 weeks PCA for infants born < 32 weeks GA, and between 32-36 weeks PCA for infants born after 32 weeks GA. The interventionists and the intervention coordinator were certified NBAS examiners. Each family was assigned one interventionist, and a session lasted 1-2 hours. The intervention integrated following three components:

1. *Premie Talk: Understanding Your Premature Baby’s Behavior* (Cusson & DeWeese, 1992). This 20-minute video was shown to parents when the infants were 32-36 weeks PCA and 34-38 weeks PCA. Each viewing was followed by a 40-minute discussion that focused on particular behaviors, and ways to establish effective communication with preterm infants. Parents were also encouraged to discuss general questions about their infants.

2. *NBAS demonstrations with increasing parental involvement*. At 34-38 weeks PCA, the interventionist administered the Brazelton NBAS. During the first session, the parents were observers and the interventionist discussed the administration and results of the exam, emphasizing infant capacities and areas of special need. Only selected items of the NBAS were demonstrated when the infants were < 40 weeks PCA in order to minimize discomfort and stress. Parents were guided to attend to the infant’s current and ongoing state and behavioral changes, with discussion about their reflection on infant capabilities. The NBAS was repeated at each of six succeeding sessions, and the parents were encouraged to administer on their own, with guidance from the interventionist, to complete the exam by 44-48 weeks.

3. *Infant massage*. Massage therapy was introduced at 36-40 weeks PCA and at succeeding five intervention sessions, with NBAS administration following massage. At 36-40 weeks PCA, the interventionist demonstrated infant massage techniques based on methods
outlined by Field et al. (1986, 1987), and gave the parents a copy of the protocol. At each session, the interventionist and parents reviewed and practiced the massage protocol with the infant. Parents were encouraged to perform the 10-15 minute massage with their infants 2-3 times a day following their infants’ hospital discharge, and to keep a daily record of the frequency of massage.

**Control group.** A “controlling-for-attention” control group was used in this study. For this group, the interventionist met with the mother at the same time points and for the same duration of time as the intervention mothers. During these visits, the interventionist discussed infant development, and responded to any question the mother had about her infant, but did not administer the intervention components.

**Measures**

**Pre-intervention Assessments**

*Sociodemographic variables.* Sociodemographic information was obtained from the mothers after the informed consent. The present study used sociodemographic information including maternal age, marital status, income, education, and receipt of state/federal assistance. Marital status was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner. A composite, summary measure of sociodemographic risk was derived for each mother by dichotomizing the information on income (< $20,000), education (< high school completed), and receipt of state/federal assistance. The composite measure was termed “socioeconomic risk index,” and the score ranged from 0 to 3 with 3 indicating higher risk.

*Infant medical variables.* Infant medical information was obtained from hospital records, and when the infants were 32-36 weeks PCA prior to the onset of intervention. The present study
used infant medical information on infants’ length of stay in NICU, birth weight, and GA at birth.

*Parent’s state of mind regarding attachment.* Parent’s state of mind regarding attachment was measured with the Adult Attachment Interview (AAI; George et al., 1996), which uses narratives to tap working models of attachments. The scoring of AAI assigns an individual to one of four major attachment groups: autonomous (F), dismissing (D), preoccupied (E), and cannot classify. A person with an autonomous classification values attachment relationships and acknowledges their influence, but shows autonomy in that he/she freely explores thoughts and feelings during the interview (Hesse, 1999). An individual with a dismissing classification appears to suppress the influence of attachment relationship in his/her thoughts, feelings, or daily life; attachment relationships are often presented in a positive manner that is contradicted, and/or negative attachment experiences are denied (Hesse, 1999). A person with preoccupied classification appears to be highly preoccupied with particular attachment relationship or experience; he/she might show anger and/or disorientation in feelings and thoughts (Hesse, 1999). An individual may receive an additional classification: unresolved/disorganized, which is co-classified with autonomous, dismissing or preoccupied classification. A person with an unresolved/disorganized classification shows a significant lapse in reasoning and speech during a discussion of loss or abuse (Hesse, 1999). Autonomous, dismissing, and preoccupied classifications are considered “organized” attachments whereas unresolved/disorganized is considered as a “disorganized” attachment. Reliability and validity of the AAI is well established that studies found a substantial stability of AAI classification (Benoit & Parker, 1994; Hesse, 1999); and construct validity is supported by meta-analysis, which found a significant
concordance between adult attachment classification and corresponding infant-mother attachment classification (van IJzendoorn, 1995).

The interview was conducted during a separate home visit prior to the onset of intervention by trained research assistants who were blind to group assignment. The interview typically took 45-60 minutes, and total of 160 of 173 mothers’ AAIs were obtained in the study. AAIs were audiorecorded, and were coded by two trained coders, each certified in the AAI classification system by Mary Main and Erik Hesse. Both coders were completely blind to any additional information on the mothers and infants. Interrater reliability was established on 38 transcripts, with 84% intercoder agreement (κ = .64) on autonomous vs. non-autonomous classifications, and 89% agreement (κ = .71) on the unresolved classification. Of 160 AAIs, 97 were classified as autonomous, 62 as non-autonomous (58 dismissing, 4 preoccupied), and 1 cannot classify. 31 of 159 (excluding “cannot classify”) mothers were assigned unresolved/disorganized classification. In the present study, adult attachment classification was dummy coded as 1 = autonomous, and 2= non-autonomous. Additionally, attachment status was dummy coded as 0 = non-disorganized, 1 = unresolved/disorganized, and 2 = not classifiable.

Assessments of Parental Commitment

Parental commitment was assessed in three major ways: objective measurements, interventionists' ratings, and parents’ engagement with the massage protocol.

**Objective.** Objective measurement of parental commitment was based on the number of intervention appointments, and included three measures: (1) the number of canceled intervention visits; (2) the number of “no-shows” (i.e., when the mother was not at home at a scheduled home visit) without a clear reason/ explanation; and (3) the number of “no-shows” that were followed
by a clear reason/ explanation. Higher scores on each of these, and perhaps in particular on (1) and (2), was viewed as reflecting lower levels of parental commitment to the intervention.

*Interventionists’ ratings.* For both intervention and control mothers, interventionists rated a summary 7-point scale rating of mother’s commitment to intervention/ home visitation, adapted from Project STEEP (Egeland & Erikson, 1990; Korfmacher et al., 1997). This rating was obtained at the termination of intervention/ home visitation program. Mother’s commitment to intervention/ home visitation measure was significantly correlated with the composite, summary measure of the ratings of maternal commitment to intervention ($r = .674, p = .01$); this measure was collected across eight intervention sessions only from the intervention mothers, and not used in the present study. Reliability and validity of the summary measure of the ratings of maternal commitment to intervention is presented below.

For intervention mothers, the subjective measure of parental commitment was assessed by the home visitors at each intervention beginning at 36-40 weeks PCA, using five, 5-point rating scales from the Korfmacher and colleagues’ New Mother Project: maternal involvement, conflict with material, understanding of intervention material, environmental distractions, and preoccupation with other events or crises. For each mother, a composite, summary measure was derived by averaging across the entire intervention. Cronbach’s alpha, which was derived from the full sample of 64 mothers, was $\alpha = .89$. The interrater reliability for this summary measure was established on 22 families between the intervention coordinator and the interventionists; intraclass correlation, based on absolute agreement, was .91.

The above 7-point summary scale, and five 5-point scales of commitment to intervention/ home visitation have been used in ethnically and socioeconomically diverse samples.
Parents’ engagement with the massage protocol. At each intervention session, interventionalists reviewed the mother’s massage log, and recorded the number of times the mother or any other caregivers massaged the infant since the previous session. Total frequency was calculated across the entire intervention. Higher frequency was interpreted as higher maternal commitment to the intervention.

Analysis Plan

All statistical analyses were conducted with SPSS statistical program. Because the present study used interventionist’s rating at post-intervention, all analyses were conducted on the 138 mothers who remained in the study at post-intervention.

Sociodemographic Variables

In order to examine the association between sociodemographic variables and commitment variables, a Pearson product moment or point-biserial correlations were calculated between each sociodemographic variable (i.e., maternal age, marital status, socioeconomic risk index), and commitment variable (i.e., number of canceled visits, number of “no-shows” without clear reason/explanation, number of “no-shows” with a clear reason/explanation, interventionists’ ratings of commitment, frequency of infant massage). Next, stepwise regression was conducted, and the output was examined to determine the sociodemographic variable that was most significantly associated with the commitment variables.

Infant Medical Variables

In the same way as the sociodemographic variables, a Pearson product moment or point-biserial correlations were calculated between each infant medical variable (i.e., infants’ length of stay in NICU, birth weight, GA at birth), and commitment variable. Next, stepwise regression
was conducted, and the output was examined to determine the infant medical variable that was most significantly associated with the commitment variables.

*Parents’ State of Mind Regarding Attachment (AAI)*

In order to test the hypothesis in which autonomous mothers would show higher commitment to the home visitation program compared to non-autonomous mothers particularly for the intervention group, multiple regressions were conducted, using group status (intervention vs. control), AAI status (autonomous vs. non-autonomous), and group status X AAI status interaction terms as predictors for each commitment variable.

Similarly, in order to explore whether disorganized attachment status would create difference in maternal commitment level, multiple regressions were conducted using group status, AAI status (disorganized vs. non-disorganized), and group status X AAI status interaction as predictors for each commitment variable.

For the analysis on parents’ state of mind regarding attachment, the present study analyzed the 127 mothers who had both AAI and post-intervention data.

*Multiple Regression*

In the final analysis, the statistically significant predictors from the sociodemographic and infant medical variables, and parent’s state of mind regarding attachment were used to examine the unique contribution of each variable to commitment. This was analyzed using multiple regression.
Results

Retention

Of the 173 families with pre-intervention data, 152 families received home visits including 74 intervention and 78 control-for-attention families. Of the 74 intervention families, 9 families were lost to follow-up, including 7 families who discontinued intervention. Specifically, 2 intervention families discontinued home visits by the second visit, an additional 2 families discontinued between 3rd and 4th visits, an additional 2 families discontinued between 5th and 6th visits, and one additional family discontinued at 7th visit. Of the 78 control-for-attention families, 5 families were lost to follow-up, including 4 families who discontinued control for attention visits. Specifically, 2 control families discontinued home visits by the 2nd visit, another family between the 3rd and 4th visits, and another at the 7th visit (see Figure 1).

Preliminary analysis

In order to examine multicollinearity among the predictor variables, Pearson product moment, point-biserial correlations, and chi-square analyses were conducted. These correlations are presented in Table 2. Sociodemographic measures were moderately inter-correlated in expected directions. Older mothers were more likely to be married or living with a partner, and to be at less risk socioeconomically. Less socioeconomic risk was also associated with being married or living with a partner. Medical risk indices were highly inter-correlated: gestational age and birth weight strongly covaried, and these indices related inversely with length of stay in NICU. Finally, mothers with autonomous attachment representations were older, more likely to be married or living with a partner (see also Table 3), and to be less socioeconomically stressed than mothers with non-autonomous representations. Mothers’ resolved-unresolved attachment status and group status (intervention, control) were unrelated to any predictor variable.
None of the sociodemographic predictor variables were combined or eliminated because
the collinearity among these predictors was low-to-moderate in magnitude. However, due to high
correlations among length of stay in NICU, birth weight, and GA at birth, only GA at birth was
used for the present analyses.

Similarly, correlations between commitment variables were examined using Pearson
product moment or point-biserial correlations (see Table 4). Interventionists’ ratings of
commitment were low-to-moderately associated with other commitment variables in expected
directions. Specifically, higher ratings were associated with fewer “no-shows” with a clear
reason, fewer “no-shows” without clear reasons, and higher frequency of massage. Higher
numbers of “no-shows” without clear reasons were also associated with less frequent massage.
Commitment variables were not combined or eliminated because of low correlations among
these variables.

*Sociodemographic factors and maternal commitment to home visiting*

In order to examine the association between sociodemographic variables and
commitment-to-intervention variables, Pearson product moment or point-biserial correlations
were calculated between each sociodemographic variable (i.e., maternal age, marital status,
socioeconomic risk index), and commitment variable (i.e., number of canceled visits, number of
“no-shows” without clear reason/explanation, number of “no-shows” with a clear
reason/explanation, interventionists’ rating of commitment, frequency of infant massage) (see
Table 5). Mothers who were older and married/living with a partner received higher
interventionists’ ratings compared to mothers who were single and younger. Being
married/living with a partner was also associated with fewer “no-shows” without clear reason.
Higher socioeconomic risk was associated with more “no-shows” without clear reason, less frequent massage, and lower interventionists’ rating. All correlations were low in magnitude.

Next, three stepwise regression analyses were conducted to further examine sociodemographic variables that were significantly associated with the commitment variables (i.e., total number of “no-shows” without clear reason/explanation, frequency of massage, interventionists’ rating of commitment) (Tables 6-8). Stepwise regression was deemed appropriate for this examination because of low collinearity among the predictor variables. In all three analyses, socioeconomic risk was the only significant predictor variable. It was significantly associated with total number of “no-shows” without clear reason/explanation, $F(1, 126) = 10.19, p < .05$ (see Table 6); frequency of massage, $F(1, 59) = 7.41, p < .05$ (see Table 7); and interventionists’ ratings of commitment, $F(1, 125) = 15.14, p < .001$ (see Table 8).

Examination of the standardized beta weights indicated that families with higher socioeconomic risk had a significantly higher number of “no-shows” without clear reason/explanation, significantly lower frequency of massage, and significantly lower ratings of commitment by the interventionists.

In addition to above stepwise regressions, multiple regressions were conducted to determine if group status moderated associations between sociodemographic predictors and commitment. For these multiple regressions, group status (1 = intervention, 2 = control) and sociodemographic variables were centered, and interaction terms were created by multiplying each centered sociodemographic variable and the centered group status variable. Multiple regression models were conducted for each sociodemographic variable and each commitment variable with the centered “main effect” and interaction terms entered as a block. These analyses revealed no significant moderating effects of group status.
**Infant medical risk factors and maternal commitment to home visiting**

Pearson product moment or point-biserial correlations were calculated between infant medical risk (i.e., GA at birth), and the commitment variables (see Table 9). Results indicated no significant correlations between infant medical risk and any commitment variable. Stepwise regression, therefore, was not conducted.

Contrary to the findings for the sociodemographic factors, further analyses using multiple regressions revealed that there was a moderating effect of group on the relation between infant medical risk and the commitment variables. A regression model was conducted for each commitment variable with the centered infant GA, centered group variable, and centered infant GA X centered group interaction term entered as a block. There was a significant group X GA at birth effect on cancelled visits, \( t (1, 133) = -2.56, p < .05 \), and \( F (3, 133) = 3.19, p < .05 \) for overall model (see Table 10). This interaction effect was probed by using Pearson product moment correlation, which revealed that younger GA at birth was significantly associated with a higher number of cancelled visits in the control group, \( r (72) = -.34, p < .01 \), but not the intervention group, \( r (65) = .10, p = .43 \).

**State of mind regarding attachment (AAI) and maternal commitment to home visiting**

For analyses involving maternal state of mind regarding attachment, the present study analyzed 127 mothers who had both AAI and post-intervention data.

In order to test the hypothesis that autonomous mothers would show stronger commitment to home visitation compared to non-autonomous mothers particularly for the intervention group, multiple regressions were conducted, using centered group status (intervention vs. control), centered AAI status (autonomous vs. non-autonomous), and centered group status X centered AAI status interaction terms as predictors for each commitment variable.
There was a significant effect of AAI status on interventionists’ rating of commitment, $t(1, 120) = -2.55, p < .05$, and $F(2, 120) = 3.72, p < .05$ for overall model (see Table 11), such that autonomous mothers had significantly higher ratings of commitment than did non-autonomous mothers (see Table 12). Moreover, a significant group X AAI status interaction effect was found for interventionists’ ratings of commitment, $t(1, 119) = 2.26, p < .05$, and $F(3, 119) = 4.26, p < .05$ for overall model (see Table 11). This interaction effect was probed by using Pearson product moment correlation, which revealed that autonomous mothers had significantly higher interventionists’ ratings only in the intervention group, $r(59) = -.43, p < .01$. A trend of the effect of AAI status was also found for the number of “no-shows” without clear reason/explanation, $t(1, 122) = 1.86, p = .07$, $F(2, 122) = 1.76, p = .07$ for overall model, and frequency of massage, $t(1, 57) = -1.82, p < .07$, $F(2, 57) = 1.68, p = .07$ for overall model, such that autonomous mothers had lower, yet non-significant, number of “no-shows” without clear reason/explanation compared to non-autonomous mothers, and autonomous mothers had higher, yet non-significant, frequency of massage compared to non-autonomous mothers.

Similarly, in order to explore whether disorganized attachment status would be related to differences in maternal commitment level, multiple regressions were conducted using centered group status, centered AAI status (disorganized vs. non-disorganized), and centered group status X centered AAI status interaction as predictors for each commitment variable. No significant effect of group, AAI status, or group X AAI status interaction was found on any of the commitment variables.

*Predictors of commitment and maternal commitment to home visiting*

In a final set of analyses (Tables 13-15), centered group status, socioeconomic risk index, centered AAI status (autonomous vs. non-autonomous), and centered group status X centered
AAI status interaction were used as predictors in multiple regressions to examine the unique contribution of each variable to commitment. Socioeconomic and AAI status variables were selected because each significantly predicted commitment in separate analyses reported above. In these analyses, socioeconomic risk was the only significant predictor variable, $t(1, 113) = 2.72$, $p < .05$ (see table 13), $t(1, 55) = -2.01$, $p < .05$ (see table 14), and $t(1, 113) = -2.90$, $p < .05$ (see table 15), respectively for number of “no-shows” without clear reason/explanation, frequency of massage, and interventionists’ rating of commitment. Group X AAI status interaction approached significance for interventionists’ rating of commitment, $t(1, 113) = 1.90$, $p = .06$ (see table 15).
Discussion

The present study examined predictors of maternal commitment to an 8-session home visiting program. Specifically, three conceptually different sets of predictor were examined including sociodemographic factors, infant medical risk factors, and mothers’ states of mind regarding attachment. Level of commitment was assessed in three ways: objective (i.e., number of cancelled visits, number of “no-shows” with clear reason/explanation, number of “no-shows without clear reason/explanation), subjective (i.e., interventionists’ rating of commitment), and parental involvement in specific intervention activities (i.e., frequency of massage). In the sections below, implications of the findings between each predictor variable and commitment will be discussed.

Sociodemographic factors and commitment

The present results partially supported the hypothesis that higher sociodemographic risk would predict lower commitment to a home visiting program, regardless of group status. Of the three sociodemographic factors including maternal age, marital status, and socioeconomic risk index, only socioeconomic risk significantly predicted maternal commitment. These results support previous research findings that higher socioeconomic strain poses obstacles to commitment (e.g., Kuchler-O’Shea et al., 1999; Waanders et al., 2007). In the present study, socioeconomic risk predicted higher number of “no-shows” without clear reason/explanation, lower frequency of massage, and lower interventionists’ rating of commitment. This suggests that socioeconomic stress could create difficulties for parents in their ability to allocate time and energy to an intervention program. The finding that there was no significant association between socioeconomic risk and number of “no-shows” *with* clear reason/explanation supports this interpretation.
Past studies show similar findings regarding financial strain as an obstacle to commitment. In a study by Baxter and Kahn (1996), inner-city minority caregivers whose children were enrolled in an early intervention program reported primary concerns that are related to meeting basic survival needs such as feeding their children, having enough money to pay monthly bills, and having medical and dental care. Other studies also support that economic strain/financial stress is negatively related to commitment to intervention (Dunst et al., 2988; Waanders et al., 2007). Parents with economic difficulty may feel the need to put their effort into meeting their basic needs, and commitment to an early intervention may become secondary even if they are willing to participate. Economic strain is a continuous challenge for the implementation of early intervention that it creates barrier to parental commitment.

Additionally, it is important to consider mothers’ level of education, which was included in the socioeconomic risk index. Parents who have low level of education/knowledge may not perceive the need or importance of early intervention for the development of their infants. Future studies targeting socioeconomically stressed families could specifically focus on the effect of parental education/knowledge about the reasons parents have for committing to, or not committing to an early intervention program. It is important to underscore that the link between socioeconomic risk and commitment to an intervention was found regardless of group status. For some parents, economic strain may have been sufficiently overwhelming such that commitment to an intervention was not possible whether the program was focused on infant and infant-mother relationship, or only on mothers.

*Infant medical risk factors and commitment*

The present study found no significant “main effect” relation between infant medical risk factor and commitment, which is consistent with previous work that found no significant link
between the severity of child’s health/developmental problem and parental commitment to intervention (Dumas et al., 2007; Dunst et al., 2001; McKay et al., 2004). It may be that parental perception of a child problem, rather than the actual problem itself, may play a greater role in parental commitment to an intervention. For parents to commit to an intervention, they first need to become aware of the severity of their child’s problem (Reid et al., 2004; Smith et al., 2000). In the present sample, it may have been the case that premature birth was not, by itself, particularly stressful. In 2004, African Americans had the highest rate of preterm birth at 17.9% compared to 12.5% for all infants across race/ethnicity (March of Dimes, 2007). Additionally, low socioeconomic status may raise the risk of preterm birth even further (Messer, Vinikoor, Laraia, Kaufman, Eyster, Holzman, Culhane, Elo, Burke, O’Campo, 2008; O’Campo, Burke, Culhane, Elo, Eyster, Holzman, Messer, Kaufman, &Laraia, 2007). Given the high rates of premature birth in this population, it is possible that premature birth in the present sample of mothers was not viewed as particularly unusual or problematic, and thus low gestational age at birth did not especially motivate mothers to commit to the intervention. However, mothers’ group membership was found to moderate the link between infant medical risk and commitment. Specifically, lower gestational age at birth was associated with more cancelled visits among control group mothers, but not among intervention mothers. This moderated effect may have arisen because of the differential content of the two home visiting programs. The intervention group received a program that emphasized promotion of infant development and the parent-infant relationship, whereas the control group received a program that focused only on mothers needs. Although lower GA at birth likely creates more caregiving burdens, the effects of these burdens appeared to be manifested only among control group mothers, whose home visiting program focused only on their own needs, not the infants’. By contrast, intervention mothers
may have been more motivated to commit to a home visiting program that targeted not just their own needs, but also the needs of the infant.

*Parent’s state of mind regarding attachment and commitment*

There was support for the hypothesis that autonomous parents would show greater commitment to the home visiting program than non-autonomous parents. Moreover, this overall effect of parental attachment status was moderated by group status, and this was found specifically for one of the commitment variables, interventionists’ rating of commitment. As predicted, autonomous parents received higher interventionists’ rating of commitment compared to non-autonomous mothers, but this was only seen in the intervention group and not in the control group. Additionally, there was a trend for the main effect of attachment status for number of cancelled visits without clear reason/explanation, and frequency of massage, which implies that autonomous parents had lower number of cancelled visits without clear reason/explanation, and higher frequency of massage compared to non-autonomous parents. Although the results of the associations between attachment and number of cancelled visits without clear reason/explanation and frequency of massage were non-significant, these findings approached significance and the associations were in the predicted direction. It also should be noted that these two commitment variables were significantly correlated with interventionists’ rating of commitment, which was significantly predicted by the attachment status X group interaction.

The present finding regarding attachment status and commitment supports previous research (e.g., Heinicke et al., 2006, 2008; Korfmacher et al., 2008). It is likely that higher commitment seen in mothers with secure-autonomous attachment is attributed to high value they place in attachment relationships. The moderating effect of group status on the association between mothers’ attachment representations and commitment to intervention underscores this
finding because the intervention specifically aimed to promote infant development and the parent-infant relationship. Autonomous parents in the intervention group were more encouraged to commit to the intervention because of the content of the program that was congruent with their value and need.

Contrary to the differences found between autonomous vs. non-autonomous mothers, the present study found no significant relation between organized vs. disorganized attachment classification and maternal commitment to home visiting. Although a relatively small number of people receive a disorganized classification, it is important to examine due to studies’ different findings regarding the association between this attachment classification and commitment. The present result is similar to the findings by Heinicke et al., (2006, 2008), which found that autonomous mothers regardless of disorganized/unresolved classification were more involved in early intervention compared to non-autonomous mothers. Secondary classification of secure-autonomous attachment could override the relationship between disorganized attachment status and low commitment (Heinicke et al., 2006, 2008). To date, only one study reported a significant relation between organized vs. disorganized attachment classification and commitment to an intervention that disorganized attachment was related to lower commitment (Korfmacher et al., 1997). It is possible that organized vs. disorganized distinction with respect to committing to an intervention may be less important than whether mothers are autonomous or not. More studies are necessary to fully understand the attachment-commitment link.

Socioeconomic risk index, attachment status, and commitment

In addition to the analyses between the three predictor variables and commitment, the present study further examined the relative contributions of socioeconomic risk index and attachment status (autonomous vs. non-autonomous) to parental commitment to home visiting. It
was found that socioeconomic risk was the only significant predictor of three commitment variables: total number of “no-shows” without clear reason/explanation, frequency of massage, and interventionists’ rating of commitment. The attachment status X group interaction effect approached significance at $p = .06$ for interventionists’ rating of commitment. The result underscores the over-riding impact of socioeconomic risk on commitment to intervention, which may be particularly relevant in the present sample, which consisted of African-Americans who were living in low-socioeconomic environments. The finding suggests the importance of considering socioeconomics in studies of parental engagement in early intervention and suggests that future intervention programs take into account obstacles to parents’ commitment to early intervention associated with socioeconomic risk. Nevertheless, it is important to highlight that the present intervention was fairly flexible in matching the parents’ convenience of time and location because it was a home visiting program.

In addition to offering flexibility in time and location, future intervention programs could focus on building strong partnerships between parents and interventionists. In earlier work, parents identified interventionist’s personality and trustworthiness, and relation/alliance with interventionist as incentives for commitment to an intervention (Gross et al., 2001; Kazdin et al., 1997; Unger et al., 2001). It is important to conceptualize parental engagement to an intervention as a mutual development of a relationship between the parents and interventionists (Korfmacher et al., 2008). It is, however, also important to recognize that strengthening relationships between parents and interventionists may be harder for non-autonomous parents, who have more difficulty forming supportive relationships as found in previous studies (Korfmacher et al, 1998; Collins & Feeney, 2004; Green et al., 2007). Alternatively, different types of intervention could be developed that target parents of different attachment classification, which may encourage all
parents to be committed to an intervention regardless of their attachment status. For example, Heinicke, Dudley, and Hellemann (2009) found that non-autonomous mothers attended more group program compared to autonomous mothers while non-autonomous mothers were rated lower for the average work rating in the individual home visiting sessions compared to autonomous mothers. The structure of intervention program might influence commitment level differently depending on maternal attachment classification.

Limitations and future directions

There were some limitations to the present study. First, the sample was limited to African-Americans living in low-socioeconomic environment, and the present finding of relations between socioeconomic factors and commitment may not generalize to other populations of differing ethnicity and economic status. Second, the present study only analyzed autonomous vs. non-autonomous attachment classifications. Comparisons involving dismissing and preoccupied adults as separate subgroups were not possible because of the small number of parents with preoccupied (E) classification. Consequently, the present findings more likely reflect differences between autonomous vs. dismissing attachment classifications. Third, there was no inter-rater reliability for the interventionists’ rating of commitment; nevertheless, this measure was significantly correlated with the other commitment measures that had high reliability.

Finally, another limitation of the present study was that the sample included only the families who fully participated in the intervention for 4-months. Using only the fully participated families was required because interventionists’ ratings of commitment were obtained at the end of intervention sequence. Future studies could collect interventionists’ rating throughout the
intervention sequence, and examine possible changes in the ratings over time. Indeed, different patterns of commitment over time may relate to different intervention outcomes.

As the present findings indicate, parental commitment to early intervention is multiply determined. The benefits of early intervention largely depend on the commitment of the participants to the intervention goals and to the processes implemented to achieve these goals. The present study underscores that in addition to the content of the early intervention program, it is important to look closely at the factors that predict parental commitment to intervention, and the approaches to engage parents. Parents may feel more encouraged to commit to intervention by developing a supportive relationship between parents and interventionist, or delivering the intervention in a group session rather than an individual home visit. It is crucial to understand how intervention programs can be tailored to improve levels of commitment, particularly among individuals, such as parents with high socioeconomic status and insecure attachment, for whom obstacles to commitment are many.
References


engagement in home visitation services. *Family Relations, 52*, 271-278.


intervention benefits and obstacles as predictors of maternal engagement in a preventive

O’Campo, P., Burke, J. G., Culhane, J., Elo, I. T., Eyster, J., Holzman, L. C., Kaufman, J. S.,
Black and White women in eight geographic areas in the United States. *American

Involvement in Early Head Start home visiting services: Demographic predictors and


Table 1. Infant medical and maternal sociodemographic information at post-intervention.

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=65)</th>
<th>Control (N=73)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infant Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth weight (mean)</td>
<td>1455.17 (512.83)</td>
<td>1396.77 (593.85)</td>
</tr>
<tr>
<td>Gestational age at birth (mean)</td>
<td>30.63 (3.24)</td>
<td>29.96 (3.56)</td>
</tr>
<tr>
<td>Length of hospital stay (mean days)</td>
<td>36.37 (26.02)</td>
<td>41.46 (31.42)</td>
</tr>
<tr>
<td>Gender (% female)</td>
<td>57%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Maternal Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>High school diploma</td>
<td>37%</td>
<td>27%</td>
</tr>
<tr>
<td>Some college</td>
<td>34%</td>
<td>38%</td>
</tr>
<tr>
<td>Bachelor’s/Master’s degree</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Yearly Family Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; $10,000</td>
<td>30%</td>
<td>32%</td>
</tr>
<tr>
<td>$10,000 - $19,999</td>
<td>17%</td>
<td>19%</td>
</tr>
<tr>
<td>$20,000 - $29,999</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>$30,000 - $39,999</td>
<td>8%</td>
<td>13%</td>
</tr>
<tr>
<td>$40,000 - $49,999</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>$50,000 - $59,999</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>$60,000 or more</td>
<td>18%</td>
<td>13%</td>
</tr>
<tr>
<td>State/federal assistance (% receiving)</td>
<td>77%</td>
<td>71%</td>
</tr>
<tr>
<td>Living below poverty threshold (%)</td>
<td>48%</td>
<td>51%</td>
</tr>
<tr>
<td>Age (mean years)</td>
<td>26.34 (5.96)</td>
<td>28.14 (7.03)</td>
</tr>
<tr>
<td>Married/living with partner (%)</td>
<td>43%</td>
<td>45%</td>
</tr>
<tr>
<td>Primiparous (%)</td>
<td>49%</td>
<td>48%</td>
</tr>
</tbody>
</table>

*Note.* Numbers in parentheses are standard deviations.
Table 2. Intercorrelations among predictor variables.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Maternal age</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td>-0.05</td>
<td>0.10</td>
<td>0.02</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>2. Marital status</td>
<td>0.10</td>
<td>--</td>
<td>-0.41***</td>
<td>-0.50***</td>
<td>-0.05</td>
<td>0.10</td>
<td>-0.03</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>3. Socioeconomic risk index</td>
<td>-0.14</td>
<td>-0.04</td>
<td>--</td>
<td>-0.04</td>
<td>0.13</td>
<td>-0.10</td>
<td>-0.09</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>4. Length of stay in NICU</td>
<td>0.05</td>
<td>0.02</td>
<td>0.15</td>
<td>0.11</td>
<td>0.15</td>
<td>0.03</td>
<td>0.15</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>5. Birth weight</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.09</td>
<td>0.09</td>
<td>0.10</td>
<td>0.03</td>
<td>-0.09</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>6. GA at birth</td>
<td>0.03</td>
<td>0.02</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.03</td>
<td>-0.10</td>
<td>-0.01</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>7. AAI status (autonomous vs. non-autonomous)</td>
<td>-0.23*</td>
<td>-0.21*</td>
<td>0.28*</td>
<td>0.28*</td>
<td>0.15</td>
<td>0.03</td>
<td>-0.07</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>8. AAI status (disorganized vs. autonomous)</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.05</td>
<td>-0.05</td>
<td>0.07</td>
<td>-0.10</td>
<td>-0.01</td>
<td></td>
<td>-0.10</td>
</tr>
<tr>
<td>9. Group</td>
<td>0.77***</td>
<td>0.87***</td>
<td>0.79***</td>
<td>0.77***</td>
<td>0.87***</td>
<td>0.79***</td>
<td>0.87***</td>
<td></td>
<td>0.14</td>
</tr>
</tbody>
</table>

Note. Maternal status was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner. AAI status was dummy coded as 1 = autonomous, and 2 = non-autonomous. Group was dummy coded as 1 = intervention, and 2 = control.

* p < .05; *** p < .001

Phi coefficient (see Table 3 for the AAI status X marital status breakdown).
Table 3. The percentage of marital status at each AAI classification.

<table>
<thead>
<tr>
<th>Adult Attachment Classification</th>
<th>Marital Status</th>
<th>Autonomous (N = 77)</th>
<th>Non-autonomous (N = 49)</th>
<th>Total (N = 77)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Married/living with partner]</td>
<td>52%</td>
<td>31%</td>
<td>48%</td>
<td></td>
</tr>
<tr>
<td>[Single/not living with partner]</td>
<td>48%</td>
<td>69%</td>
<td>52%</td>
<td></td>
</tr>
</tbody>
</table>

Note. $\Phi = -0.21, p < 0.05$. Marital status was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner. AAI status was dummy coded as 1 = autonomous, and 2 = non-autonomous.
Table 4. Intercorrelations among commitment variables.

<table>
<thead>
<tr>
<th>1. Total number of cancelled visits</th>
<th>2. Total number of &quot;no-shows&quot; for clear/legitimate reason</th>
<th>3. Total number of &quot;no-shows&quot; without clear reason/explanation</th>
<th>4. Frequency of massage</th>
<th>5. Interventionists' rating of commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>-</td>
<td>***</td>
<td>-0.38***</td>
<td>-0.26*</td>
</tr>
<tr>
<td>**<em>-0.33</em></td>
<td>--</td>
<td>-0.31*</td>
<td>-0.19</td>
<td>-0.21</td>
</tr>
<tr>
<td><em><strong>-0.38</strong></em></td>
<td>-0.31*</td>
<td>--</td>
<td>-0.05</td>
<td>0.11</td>
</tr>
<tr>
<td>-0.26*</td>
<td>-0.19</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>0.13</td>
<td>-0.21</td>
<td>0.11</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
### Table 5. Correlations among sociodemographic factors and commitment variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total number of cancelled visits</th>
<th>Total number of &quot;no-shows&quot; for clear/legitimate reason</th>
<th>Total number of &quot;no-shows&quot; without clear reason/explanation</th>
<th>Frequency of interventions</th>
<th>Interventionists' rating of commitment</th>
<th>Maternal age</th>
<th>Marital status</th>
<th>Socioeconomic risk index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age</td>
<td>-0.15</td>
<td>-0.24</td>
<td>0.02</td>
<td>-0.16</td>
<td>0.17*</td>
<td>-0.20</td>
<td>-0.06</td>
<td>-0.05</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.25</td>
<td>0.00</td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.02</td>
<td>0.10</td>
<td>-0.20</td>
<td>0.02</td>
</tr>
<tr>
<td>Socioeconomic risk index</td>
<td>-0.18</td>
<td>0.27</td>
<td>-0.33**</td>
<td>0.16</td>
<td>-0.21</td>
<td>-0.06</td>
<td>-0.09</td>
<td>0.05</td>
</tr>
<tr>
<td>Maternal age</td>
<td>-0.26</td>
<td>0.20</td>
<td>-0.17</td>
<td>0.16</td>
<td>-0.19</td>
<td>-0.20</td>
<td>-0.13</td>
<td>0.06</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.24</td>
<td>0.22</td>
<td>-0.33**</td>
<td>0.16</td>
<td>-0.24</td>
<td>-0.07</td>
<td>-0.18</td>
<td>0.08</td>
</tr>
<tr>
<td>Socioeconomic risk index</td>
<td>-0.18</td>
<td>0.27</td>
<td>-0.33**</td>
<td>0.16</td>
<td>-0.21</td>
<td>-0.06</td>
<td>-0.09</td>
<td>0.05</td>
</tr>
</tbody>
</table>

*Note. Marital status was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner.

*p < .05; **p < .01; ***p < .001
Table 6. Stepwise multiple regression analysis predicting total number of "no-shows" without clear reason/explanation by sociodemographic factors.

<table>
<thead>
<tr>
<th>Variables entered</th>
<th>B</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic risk index</td>
<td>0.02</td>
<td>-3.19</td>
<td>0.002</td>
</tr>
<tr>
<td>Maternal age</td>
<td>0.16</td>
<td>-1.30</td>
<td>0.191</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.03</td>
<td>-1.56</td>
<td>0.112</td>
</tr>
</tbody>
</table>

Note. $R^2 = 0.08$. Maternal age and marital status were not significant predictors in this model.

Marital status was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner.

Excluded variables:
- Maternal age was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner.

Variables entered:
- Socioeconomic risk index
- Maternal age
- Marital status

Table 6. Stepwise multiple regression analysis predicts the total number of "no-shows" without clear reason/explanation by sociodemographic factors.
Table 7. Stepwise multiple regression analysis predicting frequency of massage by sociodemographic factors.

<table>
<thead>
<tr>
<th>Variables entered</th>
<th>B</th>
<th>beta</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic risk index</td>
<td>-13.88</td>
<td>-1.33</td>
<td>-2.72</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Maternal age</td>
<td>0.927</td>
<td>-0.39</td>
<td>-6.07</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Maternal age</td>
<td>0.927</td>
<td>-0.39</td>
<td>-6.07</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Note: $R^2 = 0.11$. Maternal age and marital status were not significant predictors in this model.
### Table 8. Stepwise multiple regression examining sociodemographic predictors of interventionists’ rating of commitment.

<table>
<thead>
<tr>
<th>Variables entered</th>
<th>p-value</th>
<th>t-value</th>
<th>b</th>
<th>Beta</th>
<th>( R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic risk index</td>
<td>.000</td>
<td>-.44</td>
<td>-.378</td>
<td>-.33</td>
<td>.11</td>
</tr>
</tbody>
</table>

**Note:** Maternal age and marital status were not significant predictors in this model. Marital status was dummy coded as 1 = single/not living with partner, and 2 = married/living with partner.

Excluded variables:
- Maternal age
- Maternal status

<table>
<thead>
<tr>
<th>Variables entered</th>
<th>d-value</th>
<th>t-value</th>
<th>Beta</th>
<th>q</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal status</td>
<td>906</td>
<td>69</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic risk index</td>
<td>300</td>
<td>-3.88</td>
<td>-.33</td>
<td>.44</td>
</tr>
</tbody>
</table>

Table 8. Stepwise multiple regression examining sociodemographic predictors of interventionists’ rating of commitment.
Table 9. Correlations between gestational age at birth and commitment variables.

<table>
<thead>
<tr>
<th>Commitment Reasons</th>
<th>Frequency of Interventions</th>
<th>Total Number of Cancelled Visits</th>
<th>Total Number of &quot;No-shows&quot; Without Clear Reason</th>
<th>Total Number of &quot;No-shows&quot; For Clear/Legitimate Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational Age (GA) at Birth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. There was no significant correlation between gestational age at birth and commitment variables.
Table 10. Multiple regression analysis assessing the moderating effect of group status on the relation between gestational age (GA) at birth and total number of cancelled visits.

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor</th>
<th>Beta</th>
<th>t-value</th>
<th>p-value</th>
<th>R² change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Group</td>
<td>-.046</td>
<td>-2.56</td>
<td>.012</td>
<td>-.06</td>
</tr>
<tr>
<td></td>
<td>GA at birth</td>
<td>-.22</td>
<td>-1.71</td>
<td>.090</td>
<td>-.15</td>
</tr>
<tr>
<td></td>
<td>Group by GA at birth</td>
<td>-.21</td>
<td>-2.56</td>
<td>.012</td>
<td>-.046</td>
</tr>
<tr>
<td></td>
<td><strong>Note.</strong> R² = .067 for Block 3. All variables were centered prior to being entered in the model.**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Group was dummy coded as 1 = intervention, and 2 = control.

Birth and total number of cancelled visits.

Table 10. Multiple regression analysis assessing the moderating effect of group status on the relation between gestational age (GA) at birth and total number of cancelled visits.
Table 11. Multiple regression analysis predicting interventionists' ratings of commitment from adult attachment status (autonomous vs. non-autonomous, group status, and their interaction).

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Beta</th>
<th>t-value</th>
<th>p-value</th>
<th>R² change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>.24</td>
<td>.09</td>
<td>.95</td>
<td>.347</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 2</th>
<th>Beta</th>
<th>t-value</th>
<th>p-value</th>
<th>R² change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>.15</td>
<td>-.65</td>
<td>.536</td>
<td>.012</td>
</tr>
<tr>
<td>Adult attachment</td>
<td>.06</td>
<td>-.23</td>
<td>.016</td>
<td>.039</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 3</th>
<th>Beta</th>
<th>t-value</th>
<th>p-value</th>
<th>R² change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>.24</td>
<td>.21</td>
<td>.06</td>
<td>.097</td>
</tr>
<tr>
<td>Adult attachment</td>
<td>.09</td>
<td>-.21</td>
<td>.021</td>
<td>.039</td>
</tr>
<tr>
<td>Group by adult attachment</td>
<td>.17</td>
<td>.14</td>
<td>.068</td>
<td>.046</td>
</tr>
</tbody>
</table>

Note. R² = .097 for Block 3. All variables were centered prior to being entered in the model. Group was dummy coded as 1 = intervention, and 2 = control. AAI status was dummy coded as 1 = autonomous, and 2 = non-autonomous.
Table 12. Mean commitment variables by adult attachment status (autonomous vs. non-autonomous mothers).

<table>
<thead>
<tr>
<th></th>
<th>Autonomous</th>
<th>Non-autonomous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of cancelled visits</td>
<td>1.30 (1.58)</td>
<td>1.71 (1.58)</td>
</tr>
<tr>
<td>Total number of &quot;no-shows&quot; for clear/legitimate reason</td>
<td>.23 (.53)</td>
<td>.15 (.36)</td>
</tr>
<tr>
<td>Total number of &quot;no-shows&quot; without clear reason/explanation</td>
<td>.29 (.63)</td>
<td>.56 (1.07)</td>
</tr>
<tr>
<td>Frequency of massage</td>
<td>69.71 (44.35)</td>
<td>49.60 (38.64)</td>
</tr>
<tr>
<td>Interventionists' rating of commitment</td>
<td>5.94 (1.31)</td>
<td>5.26 (1.44)</td>
</tr>
</tbody>
</table>

Note. Numbers in parentheses are standard deviations.

There was a non-significant trend of the effect of AAI status (p < .10).

Autonomous mothers had significantly higher Interventionists' rating of commitment than non-autonomous mothers.
Table 13. Final multiple regression analysis predicting total number of "no-shows" without clear reason/explanation, including all previously significant predictors of commitment to intervention.

<table>
<thead>
<tr>
<th>Model</th>
<th>Group</th>
<th>Socioeconomic risk index</th>
<th>Adult attachment</th>
<th>Group by adult attachment</th>
<th>R^2 change</th>
<th>R^2 value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Group</td>
<td>0.05</td>
<td>0.82</td>
<td>0.14</td>
<td>0.23</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic risk index</td>
<td>1.01</td>
<td>0.20</td>
<td>0.24</td>
<td>0.24</td>
<td>0.07</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Adult attachment</td>
<td>2.72</td>
<td>0.13</td>
<td>0.14</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Group</td>
<td>2.02</td>
<td>0.03</td>
<td>0.15</td>
<td>0.15</td>
<td>0.03</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic risk index</td>
<td>1.00</td>
<td>0.10</td>
<td>0.14</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Adult attachment</td>
<td>2.64</td>
<td>0.25</td>
<td>0.14</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Group</td>
<td>0.04</td>
<td>0.16</td>
<td>0.14</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Socioeconomic risk index</td>
<td>2.23</td>
<td>0.10</td>
<td>0.14</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Adult attachment</td>
<td>2.64</td>
<td>0.25</td>
<td>0.14</td>
<td>0.14</td>
<td>0.03</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Note: R^2 = 0.088 for Block 4. All variables except socioeconomic risk index were centered prior to being entered in the model. Group was dummy coded as 1 = intervention, and 2 = control. AAI was dummy coded as 1 = autonomous, and 2 = non-autonomous.
Table 14. Final multiple regression analysis predicting frequency of massage, including all previously significant predictors of commitment to intervention.

<table>
<thead>
<tr>
<th>Model 4</th>
<th>Group by adult attachment</th>
<th>Socioeconomic risk index</th>
<th>Group</th>
<th>Socioeconomic risk index</th>
<th>Group</th>
<th>Adult attachment</th>
<th>Socioeconomic risk index</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.48</td>
<td>-1.27</td>
<td>2.33</td>
<td>1.8</td>
<td>-1.46</td>
<td>2.30</td>
<td>-1.44</td>
<td>2.08</td>
<td>1.46</td>
</tr>
<tr>
<td>3.48</td>
<td>-1.27</td>
<td>2.33</td>
<td>1.8</td>
<td>-1.46</td>
<td>2.30</td>
<td>-1.44</td>
<td>2.08</td>
<td>1.46</td>
</tr>
</tbody>
</table>

Note. $R^2 = .168$ for Block 4. All variables except socioeconomic risk index were centered prior to being entered in the model.

AAI was dummy coded as 1 = autonomous, and 2 = non-autonomous.
Group was dummy coded as 1 = intervention, and 2 = control.

Group by adult attachment was dummy coded as 1 = intervention, and 2 = control.

AAI was dummy coded as 1 = autonomous, and 2 = non-autonomous.
Table 15. Final multiple regression analysis predicting interventionists' ratings of commitment, including all previously significant predictors of commitment to intervention.

<table>
<thead>
<tr>
<th>Model</th>
<th>Group</th>
<th>Socioeconomic risk index</th>
<th>Adult attachment</th>
<th>Group by adult attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.90</td>
<td>1.7</td>
<td>0.32</td>
<td>0.12</td>
</tr>
<tr>
<td>2</td>
<td>0.66</td>
<td>0.39</td>
<td>0.32</td>
<td>-0.33</td>
</tr>
<tr>
<td>3</td>
<td>0.60</td>
<td>0.29</td>
<td>0.28</td>
<td>-0.15</td>
</tr>
<tr>
<td>4</td>
<td>0.60</td>
<td>0.26</td>
<td>0.28</td>
<td>-0.15</td>
</tr>
</tbody>
</table>

Note. R² = .168 for Block 4. All variables except socioeconomic risk index were centered prior to being entered in the model.

Group was dummy coded as 1 = intervention, and 2 = control.
AAI was dummy coded as 1 = autonomous, and 2 = non-autonomous.