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Early maternal-infant interactions in adolescent and young adult mothers

Penny, Judith MacKay, Ph.D.

The University of North Carolina at Greensboro, 1989

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EARLY MATERNAL-INFANT INTERACTIONS IN ADOLESCENT
AND YOUNG ADULT MOTHERS

by

Judith MacKay Penny

A Dissertation Submitted to
the Faculty of the Graduate School at
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of the Requirements for the Degree
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Approved by


Dissertation Adviser

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

Dissertation Adviser

J. Allen Watson

Committee Members

Janett Lutz
Nancy White
Anty J. Pelayo

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Date of Acceptance by Committee

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Children having children! Over a million American teenagers become pregnant every year and over half a million give birth. While ignored in the past, the problem has now become a "burning national concern." Teen parenting has been linked to various problems, including high rates of infant mortality and morbidity, social/economic risks to the family, and developmental risks to the child.

This research investigated differences between 100 adolescent women and 100 young adult women expecting their first child. The subjects were interviewed during their third trimester of pregnancy, followed through the births of their infants, and observed interacting with their infants at 3-5 weeks post-partum.

Based on the pre-partum data, a significant difference was found for knowledge about infants and infant care, with the young adult women possessing greater knowledge. The two groups did not differ on their perception of caretaking competence nor on their maternal-fetal attachment.

Differences between the two groups on their early maternal-infant interactions were explored. The young adult mothers had significantly more positive interactions than the adolescent mothers. The primary difference between the two groups was attributable to the lack of verbalization toward the infant on the part of the adolescent mothers.

The research also examined Eriksonian theory which suggests that the developmental task of resolving the ego identity crisis of adolescence interferes with parenting. Specifically, the adolescent mothers were compared to the young adult mothers in relation to predictors of maternal-infant interactions during the neonatal period. Predictor variables included SES, race, infant gender, social support, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, and ego identity. Ego identity did not prove to be a significant predictor for either group.

For the young adult group, higher SES and lower social support predicted more positive maternal behavior. For the adolescent group, social support was the only significant predictor of maternal behavior. The direction was the same as for the adult group. Possible explanations for this finding are presented along with recommendations for future research.

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CHAPTER I
INTRODUCTION

Background

Every 2 minutes a baby is born to an American teenager (Leary, 1986). Children having children! According to a Harris poll in late 1985, an "overwhelming majority" (84%) of American adults considered teen pregnancy a "serious national problem" (New York Times News Service, 1985). A recent news article described the problem thus:

Some people view teenage pregnancy as inevitable -- something that's always been a problem and always will be. Others describe it as an epidemic -- a problem out of control.

But teenage pregnancy in America more closely resembles a chronic illness. It just won't go away. (Ladd, 1988, p. G1)

Over a million American teenagers become pregnant every year and over half a million give birth. Teen pregnancy rates in the United States are the highest in the developed world -- twice as high as Canada, three times the Soviet Union, and 18 times the rate in Japan (Alan Guttmacher Institute, 1981; New York Times News Service, 1985). Teen pregnancy is considered a major cause of the high infant mortality rate in the United States (the U. S. is tied for last place among the 20 most industrialized nations), and particularly in the South (9 of 10 states with the highest infant death rates are in the South; Douthat, 1987). While ignored in the

past, the problem has now become a "burning national concern" (Teltsch, 1985).

The problems and issues are complex. To prevent teen pregnancy, our society must openly acknowledge teen sexual activity. Sex education, contraceptives, and health care must be easily accessible by teenagers. Such programs confront societal values and beliefs in sexual abstinence prior to marriage and further confront parental rights to control health care for their children. On the other hand, lack of prevention and the ensuing teen pregnancies are considered "a crucial element in the nation's cycle of poverty," with teenage mothers remaining single, leaving school, living on public assistance, and bearing more at-risk infants (New York Times News Service, 1985). Fifty percent of teen mothers never finish high school and 17% have a second child within a year. The lack of adequate prenatal care leads to a disproportionate number of at-risk babies born to teenagers. Moreover, the cycle created by a teen mother unable to finish school and get a job places the teenager and her baby under great stress thereby increasing the risks for physical, mental and emotional handicaps (Brozan, 1985).

Erikson (1963a, 1963b, 1968) hypothesized that adolescence is a period of "psychosocial moratorium" in which teens are free to explore various roles and societal values. Ideally, during this process, the adolescent develops a strong sense of personal and social self: a secure ego identity. This process is abruptly halted for the pregnant teen as she is thrust into a prematurely

permanent parenting role. Erikson's theory suggests that an individual arrested at this stage of development would not be able to satisfactorily assume the role of parent because she would not be able to focus on the needs of another person. Recent research supports the notion that pregnant teens have difficulty focusing on the needs of their child (Brodish & Miller, 1983; Copeland, 1979; Lenocker & Dougherty, 1976). Further, several studies have demonstrated differences in mother-infant interactions between adolescent and older mothers. Adolescents display less positive affect toward their infants (Levine, Coll, & Oh, 1985); provide less visual and audio-visual toys for the infant in the home (Roosa, Fitzgerald, & Carson, 1982); and exhibit less verbal interaction with their babies (Culp, Appelbaum, Osofsky, & Levy, 1988; Levine et al., 1985; Roosa et al., 1982; Zuckerman, Walker, Frank, Chase, & Hamburg, 1984).

Statement of the Problem

The above-noted differences between adolescents and older mothers could be the result of an inability to focus on the needs of the infant due to low ego identity, lack of knowledge about infants and their needs, and/or perception of ability to care for infants, etc. The research reported herein was designed to address this problem by identifying which of these variables significantly affect maternal-infant interactions in adolescents and older mothers.

For example, if the development of ego identity is indeed crucial for the emergence of positive parenting behaviors, then

those teenagers who have resolved the identity crisis or progressed farther toward resolution should demonstrate more positive maternal-infant interactions. Women in their twenties should be past this stage of development; therefore, resolution of this crisis should not be a factor in determining maternal-infant interactions.

Likewise, if knowledge about infants and infant care is important regardless of age, it would be a significant factor for each group. In addition to examining the relationship of the development of ego identity, knowledge about infancy, and other variables with maternal-infant interactions, some subsidiary issues were explored.

The specific research questions addressed are as follows:

1. What are the differences between adolescent (13-19 years of age) and young adult (20-29 years of age) primiparous mothers in terms of knowledge about infants and infant care, perception of caretaking competence, and maternal-fetal attachment?
2. What are the differences between adolescent (13-19 years of age) and young adult (20-29 years of age) primiparous mothers in terms of early maternal-infant interactions?
3. What variables predict more positive early maternal-infant interactions among adolescents and young adult primiparous mothers?

To investigate question #1, three independent variables were used: race of mother (Black, White), and socioeconomic status of mother were used as control variables; and age of mother (13-19 years, 20-29 years) was the variable of interest. Three dependent variables were analyzed: knowledge about infants and infant care, perception of caretaking competence, and maternal-fetal attachment.

To address question #2, the same three independent variables were used: race of mother (Black, White), and socioeconomic status of mother were used as control variables; and age of mother (13-19 years, 20-29 years) was the variable of interest. Two dependent variables were analyzed: total maternal score and total maternal-infant interaction score, measured by at-home observations of the mother and baby during the first month post-partum.

To evaluate question #3, eight independent variables were used to predict the two dependent variables of maternal and maternal-infant interaction. The eight independent variables were: infant gender (boy, girl), race of mother (Black, White), socioeconomic status of mother, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, social support, and ego identity.

Hypotheses

Six specific hypotheses were tested:

- Hypothesis #1: When the effects of race and SES are controlled, adolescents will know less about infants and infant care than will mothers in their twenties.
- Hypothesis #2: When the effects of race and SES are controlled, adolescents will have lower perceptions of their own caretaking competence than will mothers in their twenties.
- Hypothesis #3: When the effects of race and SES are controlled, adolescents will be less attached to their fetuses than will mothers in their twenties.

Hypothesis #4: When the effects of race and SES are controlled, adolescents will display less positive interactions with their infants than will mothers in their twenties.

Race and SES have been associated with maternal-infant interactions in the literature (Farran & Ramey, 1980; Kinard & Reinherz, 1984; Levine et al., 1985; Stengel, 1984). Since the possibility exists that maternal-infant interactions may be related to the variables of knowledge about infants, perception of caretaking competence, and maternal-fetal attachment, race and SES were used as control variables when testing these four hypotheses.

Hypothesis #5: Considering the eight variables of ego identity, infant gender, race of mother, SES of mother, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, and social support, ego identity will be a more important predictor of maternal-infant interactions for adolescent mothers than other variables and will not be a predictor for mothers in their twenties.

Hypothesis #6: Ego identity will be positively correlated with maternal-infant interactions for the adolescent mothers.

Relevance of Findings

The research findings have relevance in three areas. First, the data broaden our knowledge base about maternal-infant interactions and factors which influence those interactions. Given that maternal-infant interactions have long-term effects on the development of the child (Coates & Lewis, 1984; de Chateau, 1980; Martin, 1981), understanding variables which affect early

interactions can make a significant contribution to the field of child development.

Second, the findings provide data with which to evaluate Erikson's theory of psychosocial development. Research which helps clarify theoretical perspectives is vital to the continued growth within any field.

Finally, this research can have a major impact in the applied field. Enumeration of factors that can lead to positive maternal-infant interactions for any age mother is important. Because of the particular risks of adolescent parenting, the delineation of factors predictive of positive mother-infant interactions in adolescents is especially important.

Limitations of the Findings

The findings of this research are limited by several factors. First, the study was conducted in a small geographical area (Guilford and Forsyth counties of North Carolina), limiting the generalizability of the results. Second, subjects were a convenience sample of volunteers recruited primarily through childbirth classes, public schools, and clinics. Third, the variables were measured by paper-pencil tools. The results are limited by the validity of these instruments. Fourth, maternal-infant interactions were assessed by a specific observational code and procedure. The accuracy of the results depends on how well this code reflects the actual level of mother-infant interactions in the sample.

CHAPTER II
REVIEW OF RELATED RESEARCH

There is a massive amount of literature related to the research problem described in Chapter I. This literature will be reviewed here under two major subsections: Adolescent Parenting and Maternal-Infant Interactions.

Adolescent Parenting

Seven million teenage men and 5 million teenage women are sexually active. The average age of first intercourse is 16; by 19 years of age, 80% of males and 70% of females have had intercourse. Only one-third of these sexually-active adolescents consistently use contraception and often they choose less effective methods such as withdrawal. Almost half of those not using contraception assume they cannot become pregnant for erroneous reasons, i.e., they are too young, they have sex too infrequently, or it is the wrong time of the month. Over a million teenagers become pregnant every year. One in five pregnancies occur during the first month following first intercourse (Alan Guttmacher Institute, 1981; Goodwin, 1986; New York Times News Service, 1985).

Approximately 80% of teen pregnancies are unintended (Alan Guttmacher Institute, 1981). "It was an accident. . . I was scared to get birth control. . . I was afraid of what people would think," commented one 15-year-old who discovered she was pregnant on a visit

to a pediatrician (Heller, 1986). These pregnancies disproportionately occur among poverty children and lower school achievers (Leary, 1986): low-income teens with poor educational skills are 6 times more likely to become pregnant than higher-income teens (Heller, 1986). Further, 42-50% of pregnant teens from middle- and upper-income families choose to terminate the pregnancy while only 22% of pregnant teens from lower-income families do so (Clarke, 1986).

Fourteen percent of the children born in the United States are born to women under 20; that is, 1 child in every 7 is born to a teenage mother. To provide comparison, only 6% of live births are to women 35 and over and 17% are to women between 30 and 34 (Statistical Abstracts of the United States, 1986). Teen mothers indeed represent a sizable proportion of women giving birth each year. This proportion has remained fairly stable over the past 20 years (see Table 1). There has been a decrease in the birth rate for adolescents aged 15-19 but a concomitant increase in the birthrate for girls 10-14 years of age (Zuckerman et al., 1984).

Adolescents represent an even higher proportion (37%) of unmarried women giving birth (Statistical Abstracts of the United States, 1986). Again this trend has been present for the past 20 years (see Table 2). While in the past many adolescents released their infants for adoption, by 1981, 96% of unwed teen mothers were choosing to keep their infants. Literally all non-white mothers choose to keep their babies and 90% of white mothers choose to do so

Table 1
Percent of Live Births in the United States

	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
Under 20	14%	18%	16%	14%
20-24	33%	38%	34%	32%
25-29	26%	27%	31%	32%
30-34	16%	11%	15%	17%
35-39	8%	5%	4%	5%
40 and over	3%	1%	<1%	<1%

(Statistical Abstracts of the United States, 1986)

Table 2
Percent of Births to Unmarried Women in the United States

	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1982</u>
Under 15	2%	2%	1%	1%
15-19	39%	48%	40%	36%
20-24	30%	32%	36%	36%
25-29	14%	10%	15%	17%
30-34	8%	5%	6%	7%
35 and over	6%	3%	2%	3%

(Statistical Abstracts of the United States, 1986)

(Alan Guttmacher Institute, 1981). While the problem of children having children is a current national issue, the data presented demonstrate that it is a long-standing problem of great magnitude: half a million children are born to teenage mothers each year (Statistical Abstracts of the United States, 1986). Teen parenting has been linked to various problems, including high rates of infant mortality and morbidity, social/economic risks to the family, and developmental risks to the child.

Infant Mortality and Morbidity

Adolescent childbearing has been associated with numerous poor pregnancy outcomes. First, neonatal mortality tends to follow a U-shaped curve with teens and mothers over 45 having higher rates (Monkus & Bancalan, 1981). Zuckerman et al. (1984) reported a neonatal mortality rate of 22 per 1,000 live births for white women aged 20-24; in the 15-19 age range, the rate rose to 28 per 1,000 live births; and for adolescents under 15 years the rate almost doubled to 48 per 1,000 live births. The rates for non-whites followed the same pattern except that all rates were higher. Infant mortality up to age one is twice as high among adolescent mothers as that of mothers in their twenties and higher than mothers in the 40 or older age range (Alan Guttmacher Institute, 1981).

Maternal mortality, maternal complications of toxemia and anemia, and delivery complications have been reported to be higher among adolescent childbearers than among mothers aged 20-24 (Alan Guttmacher Institute, 1981; Clarke, 1986; Monkus & Bancalan, 1981).

A higher incidence of low-birth-weight and preterm infants among teenage mothers is often reported (Alan Guttmacher Institute, 1981; Monkus & Bancalan, 1981; Zuckerman et al., 1984). Higher rates of congenital malformations are also reported for teenage mothers (Clarke, 1986). However, age alone may not be the causative factor. Many pregnant adolescents are from lower socioeconomic status (SES), and as Roosa (1984) found, there is an interaction between SES and maternal age with regard to such variables as birthweight and fetal distress. To further complicate matters, pregnant adolescents often have poor nutritional habits (due to both their dietary patterns and poor financial status), have higher rates of venereal disease, weigh less themselves at conception, wait longer before seeking prenatal care, and have growing bodies competing with the fetus for nutrients (Monkus & Bancalan, 1981; Zuckerman et al., 1984). While age itself may not be the causal factor in high infant mortality and morbidity rates for adolescents, the whole lifestyle pattern surrounding adolescent pregnancy is not conducive to positive pregnancy outcomes.

Social/Economic Risks

In addition to medical risks, adolescent pregnancy has been associated with social/economic risks. Edelman and Pittman (1986) suggested that

Adolescent pregnancy is not a problem because births to teens are increasing. They are not. . . . Adolescent parenthood is a problem because it too often precedes the completion of education, the securing of employment, and the creation of a stable relationship within or

without the legal bond of marriage and makes the completion of these "transitional steps" more difficult . . . The problem is compounded because disproportionately, it affects teens for whom these transitional steps would have been difficult even without the added burdens of parenthood. (pp. 65-66)

Seventy-two percent of a sample of adolescent mothers indicated they wished they had waited longer to begin their families (Jarrett, 1982). Major reasons for their regret were economic status, termination of education, childrearing responsibilities and disruption of peer relationships.

One risk with far-reaching effects is the lowering of educational attainment reported among adolescent parents (Alan Guttmacher Institute, 1981; Height, 1986; Moore, Hofferth, & Wertheimer, 1979; Morrison, Samulon, & Zellman, 1981). Teenage mothers complete fewer years of schooling than their non-parent peers; the younger the mother at her first birth, the fewer years completed (Moore et al., 1979; Morrison et al., 1981). These educational deficits appear to have a greater effect on whites than blacks and on those with higher academic abilities who often lower or postpone their educational aspirations (Morrison et al., 1981).

As with infant mortality, a causal relationship has not been established between early childbearing and educational attainment. Higher SES teens are more likely to use contraception and higher academic achievers are more likely to abort a teen pregnancy. The pregnant teen is more likely to be lower SES, a lower academic achiever, and have lower educational and occupational expectations:

she may have discontinued school without the pregnancy (Chilman, 1980; Ireson, 1984; Morrison et al., 1981).

Lowered educational attainment is probably responsible for lowered financial status among adolescent mothers. Teen parents are more likely to hold low prestige jobs (Morrison et al., 1981), and more likely to be on welfare (Alan Guttmacher Institute, 1981; Moore et al., 1979; Morrison & Haggstrom, 1979). Two-thirds of families headed by teen mothers are living below the poverty level and 25% are receiving AFDC payments (Alan Guttmacher Institute, 1981). Half of the teen mothers interviewed by Cannon-Bonventre and Kahn (1979) stated their major concern was financial problems.

Many current teen mothers are choosing to remain single (Height, 1986; New York Times News Service, 1985), placing them under increased financial strain. Often, they do not seek help from and/or maintain contact with the fathers of their children (Height, 1986); according to a study by Smith, Mumford, and Hamner (1979), almost one-third of teens have discontinued contact with the father prior to birth. For example, one 16-year-old mother of a 9-month-old girl noted she "sees the father of her child every Friday, when he delivers a box of Pampers" (Heller, 1986, D1). Those who are married are more likely to experience marital problems than older mothers (Alan Guttmacher Institute, 1981; Morrison et al., 1981). Seventy-two percent of teenage marriages eventually dissolve (Moore et al., 1979).

Moreover, women who begin childbearing as adolescents have more children and have them closer together than women who postpone childbearing until their twenties (Chilman, 1980; Clarke, 1986; Morrison et al., 1981; Zuckerman et al., 1984). On the average, women in one national study who had their first child at age 17 or younger eventually bore 5 children, while women who were 20 or older at first birth had 3 children total (Moore et al., 1979).

Another major risk for teenage parents is isolation and loneliness (Cannon-Bonventre & Kahn, 1979). The teen mother who has dropped out of school no longer has peer contacts through school; she has responsibilities toward her child and therefore is not as available for social contacts as her non-parent peers. She also has problems linking with other new mothers who may be older. One adolescent mother expressed it quite well:

I saw my girlfriends, but it's different now. I feel I don't belong . . . I don't look like a mother or anything when I go out. And my girlfriends are getting ready for the senior prom. I can't talk to them about my feelings . . . We don't have anything in common. They have parties to talk about and that so-and-so has broken up with so-and-so . . . I am so far ahead of them. It just isn't the same anymore. I don't know, but I guess the trouble with my husband and me is that we're so young. We are older than our friends our same age; yet we aren't as old as most other couples who are having babies. And we're wondering what we may have missed. My husband said the other night, I'm a "boy-man" -- and he's right. I feel the same. (Mercer, 1976, pp. 44-48)

Developmental Risks

Children of adolescent mothers have been reported at greater risk physically, emotionally, behaviorally, and cognitively (Belmont, Cohen, Dryfoos, Stein, & Zayac, 1981; Broman, 1981; Miller, 1984; Zuckerman et al., 1984). One must bear in mind that maternal age is confounded with the effects of depressed social/economic conditions (as described in the previous section).

Children of adolescent mothers have lower IQ scores than children of older mothers; these effects have been observed through pre-school, grade school, and high school (Belmont et al., 1981; Broman, 1981; Zuckerman et al., 1984). Concomitantly, it is noted that these children demonstrate lower academic achievement in grade school (Broman, 1981), and lower educational aspirations as high school students (Zuckerman et al., 1984). Height (1986) suggested that adolescent mothers have been cut off from educational opportunities and job development skills and therefore not only do not provide for their children economically but also do not provide them with goals and skills so that the children can become self-sufficient.

In addition, children of teen mothers have higher frequencies of behavioral problems -- i.e., more distractible, aggressive, and compulsive during childhood (Chilman, 1980; Zuckerman et al., 1984). Teachers are more likely to rate their behavior as deviant in preschool and grade school (Broman, 1981). By grade school, these children are more likely to be living in foster or adoptive homes

than peers born to older mothers; those with their biological mothers are more often in a single-parent family (Broman, 1981).

Physically, children of young mothers have a higher incidence of cerebral palsy and severe anemia. They have less advanced gross motor development (Broman, 1981).

There is evidence of more physical abuse toward children of teen parents. Jarrett (1982) reported that 50% of her sample of adolescent mothers spanked or slapped their infants/toddlers at least once daily. Broman (1981) reported a higher rate of battered child syndrome at age 7 among children born to teen parents. Miller (1984) found a slightly higher rate of abuse and neglect among adolescent mothers. She attributed this to higher rates of physical neglect among teen mothers. Miller examined only mothers who were currently in their teens. Therefore, the mothers tended to have very young children, mostly infants; children abused by mothers in their twenties could have been born while their mother was a teen -- the data don't provide that information. Broman (1981), on the other hand, followed his sample of children born to adolescents from birth to 7 years and reported more physical abuse than children born to older mothers. In Broman's study, by child's age 7, most mothers were in their twenties. Moreover, in a case-control study, Leventhal, Egarter, and Murphy (1984) found a significant relationship between maternal age and child abuse. Abusive mothers tended to be about 2 years younger than controls; maternal age under 20 at delivery was positively associated with abuse. Similarly,

Benedict, White, and Cornely (1985) reported an age difference of 1 year between abusive mothers and matched non-abusive mothers. The abusive group contained a larger proportion of mothers between the ages of 17-19.

Miller (1984) reported that maltreatment by teen mothers tends to be more serious (i.e., fatal or life-threatening) than that by mothers in their twenties. She further noted that teen mothers are more likely to be lone abusers than older mothers. This fits with the data suggesting that teen mothers are generally single.

In addition to this direct evidence linking adolescent mothers with child abuse, there is much indirect evidence. Low birth weight is associated with child abuse (Gelles, 1980; Klein & Stern, 1971). Teen mothers have a higher incidence of low-birth-weight infants, placing them at risk for abuse. Gil (1970) noted certain stimulus qualities of battered children that may be related to abuse, including constant fussing and a strange, highly irritating cry. Teen mothers tend to view their infants as having more difficult temperaments (Zuckerman et al., 1984), and crying too much (Jarrett, 1982). Moreover, adolescent mothers have higher rates of preterm infants. Research by Frodi, Lamb, Leavitt, and Donovan (1978) suggests that adults find cries of preterm infants to be more irritating and aversive than cries of full-term infants.

Gelles' decade review of violence in the family (1980) linked low SES, financial stress, and stress of single parenthood as factors related to child abuse. The previous section on

social/economic risks reviewed the associations between all of these variables and adolescent parents, again placing them at high risk for abuse. Sack, Mason, and Higgins (1985) found abuse to be more prevalent (almost twice as high) among single-parent households compared to two-parent families. The stress of single parenthood, along with accompanying loneliness and frustration, as a precipitator of abusive behavior is demonstrated by one teen mother in this description of her response to these pressures:

I almost had a breakdown. I got real upset. I took a bunch of pills and started acting crazy. After I took the pills, I started beating on the kids starting with the oldest one. I just picked up a belt and started whipping them. I couldn't cope. Then my girlfriend come over and she stopped me. She called my mother and she came and took the kids. She suggested I go somewhere and get some help . . . The lady there really tried to help me. Sometimes I got stuck on words and she helped me with that. She helped me see that it was hard to raise kids alone. Things have been easier since I went there. What I really want is to find someone who will help out with raising my kids. (Cannon-Bonventre & Kahn, 1979, p. 18)

Theoretical Perspective

Erikson's theory of psychosocial development will be used as a framework from which to explain some of the problems inherent in adolescent childbearing. Erikson's theory focuses on the development of a healthy personality which is characterized by active mastery of the environment, unity of personality, and accurate perceptions of self and society. Erikson viewed development as the process of achieving ego identity, that is,

knowing and accepting one's self, and knowing and accepting one's societal norms, values, and attitudes. Erikson stressed the importance of the role of society in the developing child.

Erikson's theory is a stage theory with preset stages and an invariant sequence. His eight stages represent crises to be resolved at each age period and therefore are labelled by opposing concepts. His psychosocial stages relevant to this research are listed below, along with the societal influence which is most prominent at each stage:

<u>Age</u>	<u>Stage</u>	<u>Sphere of Influence</u>
12 - 18	Ego Identity vs. Identity Diffusion or Role Confusion	Peers, outgroup
20's	Intimacy vs. Isolation	Lovers, friends
30's-50's	Generativity vs. Self-Absorption or Stagnation	Household members, fellow workers

Adolescence, according to Erikson, was a period of searching for self-identity. It was a time of great physical growth and change. Teens had to sort out what of their past psychosocial self still "fit" with their emerging physical self. It was a period of great experimentation, of trying various roles -- knowing they don't yet have to "play for keeps." Adolescents experienced, in Erikson's terms, a "psychosocial moratorium":

. . . the sexually matured individual is more or less retarded in his psychosexual capacity for intimacy and in the psychosocial readiness for parenthood. This period can be viewed as a psychosocial moratorium . . . a delay of adult commitments . . . a period . . . characterized by a selective permissiveness on the part of society and of provocative playfulness on the part of youth. . . (Erikson, 1968, pp. 156-157)

Adolescence was also a period of striving for independence. In previous psychosocial stages, the major sphere of influence was the family. During adolescence, the important sphere of influence was the peer group. In the preceding stage, Industry versus Inferiority, children broadened their social base from family to school and neighborhood. Adolescents began to break their ties to family, often rebelling against family and family values.

Adolescents must have undergone this intense examination of self and developed a strong sense of personal and social self -- "who and what they are in the eyes of a wider circle of significant people as compared with what they themselves have come to feel they are" (Erikson, 1963a, p. 307). Only after developing a secure sense of self could a person "fuse his identity with that of others" (Erikson, 1963a, p. 263) -- that is, enter an intimate relationship with a member of the opposite sex (Erikson's sixth stage). Likewise, resolution of the Intimacy versus Isolation crisis preceded the stage of Generativity -- "establishing and guiding the next generation" (Erikson, 1963a, p. 267).

Adolescents who became parents prior to resolution of the ego identity crisis were forced to skip two stages without the

preliminary, and according to Erikson, essential psychosocial background. They were trapped between concerns of self and perceptions of self by peers, and concerns for the development of another human life. They were forced to try out the parent role "for keeps," — to end the "psychosocial moratorium" prematurely and thus, risk identity confusion (Erikson, 1963b, p. 13). They ended up in a "social 'pocket' from which there is no return" (Erikson, 1968, p. 158).

Research with adolescent mothers provides supporting evidence for Erikson's model. Lindsay (1985), in her teen-mother program, found Erikson a useful theory to examine the conflicts between parenting and being a teenager. Brodish and Miller (1983) examined self-concept in 30 pregnant teens between the ages of 14 and 19. The teens rated themselves on three scales: Appearance, Popularity and Success. The highest ratings were on the future success scale. The authors wondered if these pregnant girls were considering their unborn child:

As the adult commentators looking on, we wonder where in fact the infant fits into the picture, if at all. Certainly the concern and interest in the unborn child is not the conventional "binding-in" . . . It would seem that maternal developmental tasks are being deferred in order to achieve the more pressing developmental tasks of adolescence. (Brodish & Miller, 1983, p. 37)

Pre- and post-natal classes with adolescents have also provided support for Erikson's theory. In a postnatal class for teen mothers, Lenocker and Dougherty (1976) noted that the teens were extremely interested in a discussion of the conflicts between

motherhood and adolescence. Subjects such as infant care, hygiene, growth and development were of "sporadic interest" to the group. Interpersonal relations with men was also a topic of strong interest. They concluded "we learned that the needs and concerns of the girls were related more to adolescence than to motherhood" (p. 14). Copeland (1979) also reported adolescents rated prenatal class topics related to themselves (e.g., bodily changes during pregnancy; labor and delivery process) as more important than topics related to their infants (e.g., growth and development of baby; baby care).

Protinsky, Sporakowski, and Atkins (1982) found pregnant teens have lower ego-identity scores than non-pregnant teens. They noted that pregnancy complicates the process of ego identity formation. The pregnant teen must focus on ensuring a healthy pregnancy and baby and on becoming a mother. She may need to depend on adults in her social network at a time when she is striving for independence. Further, she is forced to give of herself when she has not developed a sense of psychosocial intimacy. Finally, these researchers point out that while peer relations are vital for the development of ego identity, pregnant teens tend to become isolated from their peers.

In conclusion, both theory and practice suggest that the developmental task of resolving the ego identity crisis of adolescence interferes with parenting. Erikson's theory requires

that this identity crisis be resolved satisfactorily before an individual can approach parenthood.

Current Remedial Efforts

According to Adler, Bates, and Merdinger (1985), neither federal, state, nor local governments have assumed a leadership role regarding problems of pregnant teens and adolescent parents. The Children's Defense Fund through its Adolescent Pregnancy Prevention Clearinghouse has attempted to provide some national leadership.

The fund has outlined three priorities in this regard:

CDF's first priority is to prevent the first pregnancy. Our second priority is to ensure teens who already had one child do not have a second child. The third priority is to make sure that those babies who are born to teen mothers get adequate prenatal care so that prematurity, low birthweight, and birth defects are not added to their babies' already stacked decks. (Pittman, 1985, p. 2)

These priorities focus on prevention of teen births, as do many programs at the local level (Adler et al., 1985). Strategies for addressing pregnancy prevention range from offering after-school care for middle-school (10-14-year-old) students (e.g., Lewis, 1986), to teaching family life/sex education in the schools (e.g., Schecter, 1986), to providing free contraception and confidential family planning (e.g., Moran, 1986). Recently, the National Urban League began a Male Responsibility Campaign, targeting the adolescent male (Pitt, 1986).

There are several problems inherent in these prevention strategies. First, as Schneider (1982) noted "if we focus mainly on

a sterile educational format, the results will not be much different than if no education was offered at all" (p. 289). Secondly, the accessible contraception and family planning approach fails because successful contraceptive use requires maturity and self discipline, often lacking in adolescents (Harris, 1986).

In addition to accurate knowledge about sex and availability of contraceptives, teens need incentives to use contraception -- that is, they need hope and positive life options so that they actively choose to delay childbearing (Pittman, 1985). Educational programs need to begin earlier with preteens and include such areas as self-esteem, decision-making, peer relations, and parental communications, in addition to the traditional topics of reproductive physiology, developmental changes of puberty, and contraception (Harris, 1986). Adolescents need to know what services are available, how to utilize these services, and what they might expect from agencies providing the services; furthermore, a personal contact is important (Canada, 1986). Individual counseling regarding pregnancy alternatives should be offered (Goodwin, 1986). Medical and other personnel in contact with adolescents need similar education (Harris, 1986) and additionally need education about the psychological and social maturational processes of adolescence (Johnson, 1986).

Another problem related to teen pregnancy prevention is the lack of coordination among health, school and social services (Canada, 1986). Even within single agencies coordination is often

difficult. Burt and Sonenstein (1985) examined 21 federally-funded programs for pregnant and parenting teens and found that coordination across departments was difficult in hospital settings; they recommend hospitals not be funded to provide such programs for this reason. One of the two essential ingredients they recommended for teen pregnancy and parenting programs was that interagency coordination be handled with great care.

Given that prevention often fails, a wide range of services need to be available for the pregnant and parenting teen. Comprehensive prenatal care is crucial (Goodwin, 1986; Pittman, 1985). Adolescent parents need opportunities for continuing their education and obtaining job training. In-school programs that provide child care and child development training (e.g., Lindsay, 1985; Schmidt, 1985) enhance the prospects for teens to complete their high school diploma. Since teens often have premature infants or infants with special needs requiring the mother to remain at home, homebound school programs are an option (e.g., Levenson, Hale, Hollier, & Tirado, 1978). Operating under the premise that "no one can begin to seriously grapple with issues such as healthy parenting, continuing education and job training, unless they have a safe, warm clean environment" (Matin, 1986, p. 53), the Sisterhood of Black Single Mothers opened Kainga House, a long-term residence for teen mothers with one child. Here, teens receive training in various areas including self-sufficiency, personal development, child development, and home management.

Parenting teens often feel alienated from their peers, the group of primary importance to an adolescent. Programs can help these teens by fostering peer support through activities such as group meetings and peer referrals (e.g., Levenson et al., 1978).

Teen parents tend to underutilize available community resources (Levenson, Hale, Tirado, & Hollier, 1979). Helping parents identify needed resources and role playing interactions with community agency personnel in addition to providing transportation can help alleviate this problem (e.g., Levenson et al., 1978).

Finally, as Erikson's theory would predict, Levenson et al. (1978) cited completion of the teen parent's own psychological development as the first need to be addressed in their program:

Since the teenage mother is still growing and maturing herself she may not yet have developed her own identity, a sense of self-worth and independence -- all of which directly affect her perceptions of motherhood and the way she functions as a parent. She must have opportunities to complete these specific tasks of adolescence so that she can move toward assuming the responsibilities of parenthood.
(p. 13)

While the services available for adolescent parents should be multifaceted and comprehensive, it appears that teens must complete the developmental tasks of adolescence before they are ready to begin the tasks of parenthood.

Maternal-Infant Interactions

I am taking it for granted that today we are all agreed in the empirical fact that within 12 months the infant has developed a strong libidinal tie to a mother-figure and that our differences lie in how this has come about. (Bowlby, 1958, p. 350)

This statement introduced Bowlby's treatise on "The nature of the child's tie to his mother," which in turn initiated two decades of interest and research into the area of mother-infant interactions. Led at first by psychologists such as Ainsworth (Ainsworth & Bell, 1972; Bell & Ainsworth, 1972), the flurry of research activities was joined by the medical profession in the early seventies and given impetus among the general public by the publication of Klaus and Kennell's (1976) book, Maternal-Infant Bonding. The notion of a bond established between mother and infant in the early post-partum period became a popular research topic (Ali & Lowry, 1981; Anisfield & Lipper, 1983; Barnett, Leiderman, Grobstein, & Klaus, 1970; Carter-Jessop, 1981; de Chateau, 1976, 1980; Kennell et al., 1974; Klaus & Kennell, 1970, 1976, 1982; Klaus et al., 1972; Reiser, 1981; Robson, 1967). Recently, however, the issue of a "sensitive period" for the development of a maternal-infant bond has been debated (Goldberg, 1983; Kennell & Klaus, 1984; Myers, 1984a, 1984b). Critics of bonding studies (on the basis of methodology, statistical analyses, and misinterpretation of findings) have conceded that "no one . . . [is] suggesting early contact is trivial and should be abandoned" (Myers, 1984a, p. 286). On the other hand, proponents of bonding during early post-partum hours have conceded that "the human is highly adaptable, and there are many fail-safe routes to attachment" (Klaus & Kennell, 1982, p. 55). Early mother-infant

interactions appear to be important but not essential for the development of attachment.

Since much of the research on maternal-infant interactions has arisen from Bowlby's (1958, 1969) theoretical framework, a brief review of his theory of attachment will be presented. From Freud's psychoanalytic viewpoint, the attachment between mother and infant provided a prototype for all love relationships. The attachment developed because of the mother's efforts to fulfill the infant's needs, especially oral/sucking needs. Bowlby (1969) objected to this view of attachment being dependent on the mother. He felt that the child played an active role in the development of attachment. Bowlby's theory arose from the influences of evolutionary theory and Piagetian theory on his psychoanalytic background. Bowlby hypothesized that five component, instinctual responses of the infant produced proximity to the mother (or attachment figure) through either direct or indirect means. The responses of sucking, following (first with eye movements and later, by crawling), and clinging are responses seen in lower animals and are related to survival. These responses directly lead to proximity to the mother. The responses of crying and smiling are unique to humans and serve as "social releasers" -- that is, they elicit maternal behavior in the mother which in turn leads to proximity. Bowlby felt that the two most important responses of the infant were following and clinging. He had noted in his clinical practice that the lack of eye contact was related to autism and that the mother's refusal to

allow clinging resulted in emotional disorders in the child. Fraiberg's (1974) work with blind infants supports the importance of eye contact. She noted that blind infants are at risk regarding the development of attachment because of lack of eye contact. Parents have trouble detecting the responsiveness of the infant and have to be taught to "read" other signals, such as hand movements. Blind infants also don't elicit maternal behavior with their smiling, since they cannot smile in response to the human face as sighted infants do. Robson (1967), too, pointed out the importance of eye contact between parents and infants, as did Klaus and Kennell (1976, 1982) and Greenberg and Morris (1974).

Bowlby felt that proximity to the mother led to the child's being able to identify parts of the mother, assign these parts to a single mother, assign object permanence to the mother, and distinguish the mother from strangers. Once this was accomplished, attachment behaviors such as separation distress were observed. Ainsworth (1979) has extended Bowlby's theory by delineating specific behaviors of mothers which interact with the infant's behaviors to produce attachment. In particular, mothers who are more sensitive to infant cues/signals, more cooperative with their infants, and more accessible to the infant produce infants with more secure attachment. This system of attachment is an interactional one in which both mother and infant are actively involved.

Attachment, in this view, is not the goal in and of itself. Attachment serves three basic purposes for infants. First, an

infant's survival depends on prolonged caretaking by an adult. The infant needs to "hook" the adult into providing for its needs -- attachment is a method for "hooking" the adult and ensuring the provision of basic needs for the infant. Secondly, attachment serves communicational needs of the infant. The infant and caregiver develop elaborate nonverbal communication. Third, attachment serves to facilitate exploration; the infant uses the attachment figure as a secure base from which to explore the environment.

Viewed in this context, the attachment relationship during infancy could have a significant impact on the child's future development. According to Sroufe (1979), attachment, which "has its roots in early interaction, . . . lays the foundation for subsequent development" (p. 837). Indeed, some research has found significant relationships between maternal-infant attachment at 1 year and later development (Arend, Gove, & Sroufe, 1979; Lieberman, 1977; Matas, Arend, & Sroufe, 1978; and Waters, Wippman, & Sroufe, 1979). Research relating earlier maternal-infant interactions to later development has yielded mixed results with Coates and Lewis (1984), de Chateau (1980), and Martin (1981) reporting significant relationships and Bakeman and Brown (1980) finding no significant relationships.

Attachment develops within a reciprocal mother-infant interactional system. Numerous maternal variables (e.g., age, perceptions of birth experience, early maternal-infant separation,

social stress, support system, self-concept and personality traits, knowledge about children, child-rearing attitudes, maternal illness, SES, education, culture) as well as infant variables (e.g., sex of infant, infant state, cuddliness, temperament, illness, prematurity) influence this system. Nine such variables have been selected for this investigation. Recent research relating these variables to maternal-infant interactions is presented below.

Age of Mother

Adolescent mothers have been reported to spend less time with their infants, exhibit less verbal interaction, see their infants as having more difficult temperaments, have unrealistic developmental expectations, and demonstrate less adaptive child-rearing practices (Zuckerman et al., 1984). Jarrett (1982) noted that half of the 86 teen mothers she interviewed felt it was good for infants to "cry it out" because they usually were crying for attention; another third claimed they would check to ensure the baby was all right but were worried about spoiling the baby; only 20% of the sample stated they would pick the baby up, citing reasons reflecting the need for touching, holding, or affection.

Mozingo (1981) observed three groups of primigravida adolescent mothers (13-15, 16-17, and 18-19 years) in the hospital and one month later. She found an age trend in the hospital and a significant difference at one month. The older adolescents (18-19 years) demonstrated the most adaptive behaviors with their infants, followed by the middle adolescents (16-17 years).

Mercer (1980), using observations and semi-structured interviews, extensively followed a small group of adolescent subjects for one year. She noted "few spontaneous verbalizations over the year characterized a willingness to place the baby's needs before their own desires, although observation verified they were doing so" (p. 19). The most frequent refusal to put the infant's needs first was to either hold or feed the infant at night. The adolescents did exhibit "responsive cuing behaviors," that is, the mother synchronizing her behavior to the infant's behavior or needs. They also consistently exhibited unresponsive behaviors. Mercer's work suggests that adolescents possess the skills to exhibit the sensitive mothering Ainsworth deemed important for attachment but do not always choose to use those skills.

A number of studies have compared adolescent mothers to older mothers. Jones, Green, and Kraus (1980) noted that adolescent mothers held their infants less and were less sensitive in responding to them than were older mothers. Levine et al. (1985) found mothers in their twenties showed more positive affect toward their infants in face-to-face interactions, and when placed in a teaching task, verbalized more, demonstrated tasks more, and displayed more positive affect. Further, infants of the older mothers vocalized twice as much as infants of the adolescent mothers. Likewise Roosa et al. (1982) reported that adolescent mothers verbalized less to their infants, responded contingently to distress less often, and maintained eye contact less while talking

to their infant, than did older mothers. In addition, adolescent mothers provided less audio-visual toys for their infants; infants of older mothers were more than twice as likely to have a mobile in their crib.

Landy, Clark, Schubert, and Jillings (1983) did extensive in-home observations on teenage mothers and mothers in their twenties. They found only three significant differences in frequencies of mother-infant behaviors. The older mothers looked at their infant's faces more, engaged in more mutual face-to-face interaction, and smiled more at their babies. The adolescent mothers spent more time caretaking and their infants spent twice as much time in their cribs. During social interaction episodes, there were only two significant differences. Older mothers looked more at their infants's face and teen mothers showed more affection. Landy et al. assigned all observation intervals to one of four dyadic states:

- (1) coacting state,
- (2) mother-alone state,
- (3) infant-alone state, and
- (4) quiet state.

They found no significant differences in the amount of time spent in each state for adolescent and older mother-infant pairs. There were also no significant differences in the transitional probabilities from state to state between the two groups. The authors concluded that adolescent mother-infant interactions are more similar than dissimilar to older mother-infant interactions.

These findings must be interpreted with caution. First, the samples sizes are small and may be unrepresentative: Levine et al.

(1985) compared 15 adolescents to 15 older mothers; Landy et al. (1983) used 13 teens versus 12 older mothers; Mercer (1980) did extensive data collection but with only 12 subjects. Further, small samples offer low statistical power and may account for Landy et al.'s (1983) lack of effects. Secondly, often multiple comparisons are made but only the few differences found reported (Levine et al., 1985; Roosa et al., 1982). Finally, many of the reported age effects may in fact be due to other factors which happen to be related to age of mother. In the Roosa et al. (1982) study, the three behaviors which significantly discriminated adolescent and older mothers were correlated with mother's education and family income. When Levine et al. (1985) controlled for ego development, child care support, and education, the age effect disappeared for some variables. Kinard and Reinherz (1984) found that many effects were not really due to age, but were due to education; additionally, other effects disappeared when mother's education and marital status were controlled.

Infant Gender

There is a large amount of literature supporting differences in maternal-infant interactions due to infant gender. These differences reflect the interactional nature of the mother-infant relationship.

In general, mothers interact more with female than male infants (Mozingo, 1981). They also are more likely to abuse males than females (Gelles, 1980; Gil, 1970).

Mothers provide more physical stimulation to female than male infants (Sawin, 1981). At birth, boys are larger, heavier, and have more muscle mass than girls (Willemsen, 1979, p. 65). Newborn boys have greater muscle strength than girls (Jacklin, Snow & Maccoby, 1981). These physical differences affect mothers' perceptions of the fragility of their infants -- boys appear stronger and girls more fragile. The perceptions, in turn, affect maternal behavior. Mothers hold newborn girls closer, look at them more while feeding, and cuddle them more than newborn boys (Sawin, 1981). High school senior girls will report a crying female infant quicker than a crying male infant (Condry, Condry, & Pogatshnik, 1983). These findings suggest that mothers may exhibit more protective behavior toward female than male infants.

Mothers talk to female infants more than male infants and this pattern is continued into the toddler period with both mothers and teachers verbalizing more to girls than boys (Fagot, 1974, 1981). Further, mothers are more likely to verbalize to a third person in front of a female infant than a male infant (Sawin, 1981). Mothers may verbalize more to and around female infants because they are more responsive to auditory stimuli than male infants. Lewis (1969) demonstrated that female infants prefer to look at human faces over objects; males show an equal preference for faces and objects. Perhaps, female infants look at their mothers more and elicit maternal verbalizations more and then reinforce their mothers by responding to those verbalizations.

Given the previously-cited literature suggesting teenage mothers verbalize less to their infants and the just-mentioned literature suggesting mothers verbalize less to male than female infants, male infants of adolescent mothers may be particularly at risk for developmental delays. Further, the literature shows that fathers tend to play more with their sons, especially in late infancy and thus may mediate the differential effects seen with mothers (Lamb, 1981). Since many adolescent mothers are single, their sons lack this additional resource.

Race and Socioeconomic Status

The effects of race and socioeconomic status (SES) are often difficult to separate, especially with regard to adolescent pregnancy where the highest proportion of births are to low-SES Blacks. Another problem encountered with research in this area is that a variety of measures are used to assess socioeconomic status. Education, occupation, and family income may be used separately or in varying combinations. Further, different outcome measures are utilized across studies.

Higher maternal education has been positively associated with maternal-infant interactions. Kinard and Reinherz (1984) reported that maternal education had a greater effect than maternal age on a variety of outcome measures. Likewise, Levine et al. (1985) noted that higher maternal education was associated with higher frequencies of infant vocalizations and higher percentages of contingent responding to infant behavior.

While Farran and Ramey (1980) found no social class differences in amount of maternal-infant interaction at 6 months, they did find differences at 20 months. They attributed these differences to the higher cognitive skills of the higher SES infants.

Stengel (1984) controlled for cognitive status of the infant and still noted SES differences. A large sample of mother-infant pairs were observed in bathing and dressing situations. Total interaction scores were computed for both maternal and infant interactions. With infant cognitive/language development and maternal verbal intelligence used as covariates, significant differences appeared for SES on maternal interaction behavior but not on the infant behavior. Middle SES mothers displayed more positive interactions than low SES mothers. Race also proved to be a significant factor with White mothers exhibiting more positive interactions than Black or Indian mothers; White infants exhibited more positive behaviors than Black infants.

The data suggest that higher educational level, higher SES, and White race are all associated with more positive maternal-infant interactions. Unfortunately adolescent mothers are generally lower-income, Black women who have dropped out of high school.

Social Support

Social support for a mother can be provided by family members, particularly a spouse, or friends and neighbors, especially those who offer child care support. Several studies have demonstrated the

positive impact of spousal support on maternal-infant interactions. Kinard and Reinherz (1984) found that children from early adolescent mothers in single-parent families had higher mean scores for attention problems as preschoolers than children of early adolescent mothers in two-parent families or children of older mothers. The two-parent family seemed to mediate the negative effect of adolescent parenting. Similarly, single mothers had more negative perceptions of their high-risk infants' temperaments and provided less stimulating home environments than married mothers (Allen, Affleck, McGrade, & McQueeney, 1984).

Lamb (1981) has suggested that fathers play an indirect role in mothers' sensitivity to infants by providing emotional support to mothers. In fact, Sawin and Parke (1979) observed that mothers smile more and explore their newborns more when the father is present than when the mothers and infants are alone.

Friends can also have a positive effect on mothers. Mothers who reported higher levels of child care support demonstrated greater positive affect toward their infants, more mutual gaze with the infants, and higher percentages of contingent responding to infant behaviors; additionally, the infants of these mothers smiled more frequently. Brodish, McBride, and Bays (1987) found that mothers with lower scores on the Friend APGAR had significantly more educational and referral needs 1-2 weeks postpartum than mothers with higher scores.

Again, a trend is noticed which does not favor adolescent maternal-infant interactions. Social support is associated with more positive interactions but adolescent mothers often remain single and lose contact with their peers.

Knowledge About Infants and Perception of Caretaking Competence

Some information is available about the level of child development knowledge among teenage mothers; however, little research relates this knowledge to maternal-infant interactions. The same is true for perception of caretaking competence.

Adolescent mothers expect too much, too soon from their infants; for example 49% of Jarrett's (1982) sample expected that an infant would be able to sit without support before they reached 6 months of age. Some of the mothers physically punished their infants for not meeting such expectations.

Teenage mothers had significantly less knowledge of child development than older mothers but reported equal levels of confidence in the parental role (Roosa & Vaughan, 1984). Mercer (1980) noted that teenage mothers were concerned about whether they exhibited appropriate responses toward their infant during the early months but appeared to gain confidence in parenting by 8-9 months.

Perception of caretaking competence has been positively correlated with freedom from childrearing anxiety (Myers-Walls, 1979). On the other hand, knowledge about infants was negatively associated with reported joys of parenthood (Myers-Walls, 1979).

Adolescents seem to have both lower knowledge of children and lower perceptions of their own caretaking competence. The lowered perceptions of caretaking competence may lead to greater anxiety in the maternal role which, in turn, may negatively affect their mother-infant interactions. On the other hand, their lesser knowledge may enhance their enjoyment of their infant and positively affect their mother-infant interactions.

Maternal-Fetal Attachment

A body of literature documenting the development of the maternal-infant relationship prior to birth is beginning to emerge. Rubin (1975) identified four major tasks for the pregnant woman during the course of her pregnancy:

1. seeking safe passage for herself and her child through pregnancy, labor, and delivery;
2. ensuring the acceptance of the child she bears by significant persons in her family;
3. binding-in to her unborn child; and
4. learning to give of herself. (p. 145)

"Binding-in" is Rubin's term for bonding, which she hypothesized escalates dramatically in the second trimester with quickening. By birth, Rubin asserted, there is

. . . already a sense of knowing the child . . .
a sense of shared experiences, shared history,
and shared time on an intimate and exclusive
plane. (p. 149)

Through semi-structured interviews with couples in the third trimester, Stainton (1985) reported that it "became quickly apparent that parents do form a relationship with their unborn baby during

pregnancy and construct for themselves, as a couple, a perception of the infant as a separate other" (p. 322). When MacFarlane (1975) asked mothers, "When did you first fall in love with your baby?", almost half (41%) responded "during pregnancy."

A small sample of pregnant women were instructed in a three-part attachment intervention during their third trimester (Carter-Jessop, 1981). The intervention included daily checking of the fetal position and feeling for the different parts of the baby, keeping a diary of the fetus' response to the mother's behavior, and daily abdominal massage. Carter-Jessop observed striking differences between the intervention mothers and control mothers. The intervention mothers exhibited almost twice as much positive maternal-infant interaction behaviors (e.g., eye contact, en face position, encompassing, smiling, etc.) 2-4 days after delivery. She concluded that not only is maternal-fetal attachment present but that it can be enhanced.

Ego Development

There is scant evidence regarding the relationship of ego development and maternal-infant interactions. Levine et al. (1985) reported that adolescent mothers received lower ego development scores, as measured by Loevinger's Sentence Completion Test, than older mothers. Higher ego development scores were related to more positive affect in face-to-face maternal-infant interactions, more mutual gaze between mother and infant, greater percentage of contingent responses to infant, and more smiling by the infant.

Maternal-infant interactions occur within a complex, reciprocal system with numerous maternal and infant variables affecting the system. The major focus of this research project was to test Erikson's theoretical position regarding lack of psychosocial preparedness for parenting before the resolution of the ego identity crisis. To be able to evaluate the relative importance of ego development in this maternal-infant interactional system, several other variables, as reviewed above, were selected for inclusion along with ego development.

CHAPTER III

METHODS

A group of pregnant adolescents and a group of pregnant women in their twenties were interviewed during their third trimester to assess socioeconomic status, social support, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, and ego identity. After the births of their infants, these same women were observed interacting with their babies during a feeding situation at home. The variables assessed during pregnancy were used along with the variables of race of mother and sex of infant to predict maternal-infant interactions.

Subjects

Subjects for this study were volunteer females aged 13-29 who were expecting their first child. All subjects were in the third trimester of their pregnancy. One hundred subjects were 19 years of age or younger (the adolescent group), and the other 100 subjects were 20-29 years of age (the adult group).

All subjects signed an informed consent (see Appendix A). For those volunteers who were single and under age 18, parental permission was also obtained (see Appendix A).

Subjects were recruited from childbirth education classes at Moses H. Cone Memorial Hospital and Wesley Long Community Hospital; both hospitals are located in Greensboro, North Carolina. In

addition, the Guilford County (North Carolina) Family Planning/Maternity Clinic and other Health Department programs, local obstetricians' offices, public schools in Greensboro and Winston-Salem, N. C., and adolescent pregnancy programs in the North Carolina Triad area were used to recruit subjects. See Table 3 for frequencies of subjects recruited from the various sources.

The two groups of subjects differed on a number of demographic variables. The average age of the adolescent sample was 16.9 years and of the adult sample was 24.3 years. The adolescent sample was primarily Black (76% Black, 24% White), while the adult sample was primarily White (67% White, 33% Black). Most of the adolescents were single (87%); the majority of the adults were married (61%). The adult group had an average educational level of 13.7 years and 70% were presently employed. The adolescent group's average educational level was 9.9 years and only 15% were employed. With regard to socio-economic status (see section on Hollingshead's Four-Factor Index of Social Economic Status), the two groups were fairly comparable with the adults slanted toward the higher end of the range and the adolescents skewed toward the lower end of the scale. The majority of both groups fell in the low-middle to high-middle ranges: 86% of the adults and 71% of the adolescents. The remaining adults were classified as "high SES" while the remaining adolescents were in the "low SES" category. See Table 4 for demographic information on the two groups.

Table 3
Recruitment Sources for Each Group

Recruitment Source	Adolescent Sample n=100	Adult Sample n=100
Hospital Childbirth Classes	1	48
Family Planning/Maternity Clinic (Health Department)	60	31
WIC/Other Health Department Sources	4	-
Private Obstetricians	9	6
Public Schools	19	-
Other ^a	7	15

^aGreensboro Crisis Pregnancy Center, Good Beginnings for Teens, referrals from other subjects, coworkers, friends.

Table 4
Demographic Descriptors of Sample

	Adolescent Sample n=100	Adult Sample n=100
<u>Age:</u>		
13-15 years	20	-
16-17 years	34	-
18-19 years	46	-
20-22 years	-	33
23-25 years	-	29
25-29 years	-	38
Average Age	16.9	24.3
<u>Race:</u>		
Black	76	33
White	24	67
<u>Marital Status:</u>		
Single	87	36
Married	13	61
Separated/Divorced	-	3
<u>Education:</u>		
Less than 9th grade	25	-
9th - 11th grade	53	7
High School Diploma/GED	20	38
Some College	2	27
College Degree	-	23
Graduate Education	-	5
Average Educational Level	9.9	13.7

Table 4
Demographic Descriptors of Sample
(Continued)

	Adolescent Sample n=100	Adult Sample n=100
<u>Employment Status:</u>		
Presently Employed	15	70
Not Employed	85	30
<u>Socio-economic Status (SES):</u>		
Low	27	2
Low-Middle	51	18
Middle	14	36
High-Middle	6	32
High	2	12
Average SES Score	25.8	39.3

Comparison of Sample to Population

When using a convenience sample, one must be concerned with the representativeness of the sample. Sample characteristics were compared with the most available (1987) birth data for the entire population of Guilford County. As can be seen in Table 5, the adult sample recruited for this study is an accurate reflection of the population of Black and White first-time mothers in their twenties in Guilford County. Table 6 displays the comparisons for the adolescent sample. With the teen sample, younger teens were purposely recruited so that the sample could later be divided into younger and older teens, if desired. This is reflected in the comparison with the population data. The percentage of 13-15-year-olds in the sample is twice that for the population. This accounts for the higher proportions of Blacks and single women in the sample than the population; younger teens tend to be single and Black. Even with this higher proportion of younger teens in the sample, the sample is still a fairly accurate reflection of the population of Black and White first-time adolescent mothers in Guilford County.

Instruments

Several instruments were used in this study. Each instrument and relevant information about the instrument is presented separately below.

Family/Friend APGAR. The Family/Friend APGAR, developed by Smilkstein (1978) and his associates (Good, Smilkstein, Good, Shaffer, & Arons, 1979; Smilkstein, Ashworth, & Montano, 1982) was

Table 5
 Comparison of Adult Sample With Population of Black and
 White First-Time Mothers in Their Twenties
 in Guilford County in 1987

	Adult Sample		1987 Population	
	n	%	n	%
<u>Race:</u>				
Black	33	33%	324	29%
White	67	67%	803	71%
<u>Marital Status:</u>				
Single	38	38%	276	24%
Married	62	62%	851	76%
<u>Age:</u>				
20-21	33	33%	377	33%
22-24	17	17%	238	21%
25-29	50	50%	532	46%

Note. Data obtained from the North Carolina Division of Health Services 1987 "Baby Book" section on Guilford County Resident Births.

Table 6
 Comparison of Adolescent Sample With Population of Black
 and White First-Time Adolescent Mothers in
 Guilford County in 1987

	Adolescent Sample		1987 Population	
	n	%	n	%
<u>Race:</u>				
Black	76	76%	251	61%
White	24	24%	160	39%
<u>Marital Status:</u>				
Single	87	87%	302	73%
Married	13	13%	109	27%
<u>Age:</u>				
13-15	20	20%	40	10%
16-17	34	34%	136	33%
18-19	46	46%	240	57%

Note. Data obtained from the North Carolina Division of Health Services 1987 "Baby Book" section on Guilford County Resident Births.

used to measure social support (see Appendix B). This short instrument was designed to be a brief screening questionnaire for family practice physicians. The Family APGAR was designed around five areas of family function: Aadaptation, Partnership, Growth, Affection, and Resolve. Each area is rated 0, 1, or 2, based on respondents replies to each of five statements. This yields possible scores ranging from 0 to 10 with 7-10 indicative of highly functional family, 4-6 indicating moderately dysfunctional family, and 0-3 suggesting severely dysfunctional family. Smilkstein (1978) utilized the APGAR acronym "since it is felt that the familiarity that physicians have with the APGAR evaluation of the newborn will encourage them to remember a similar format that scores the functional status of a family" (p. 1234).

Good et al. (1979) established construct validity for the Family APGAR by correlating the instrument with a similar measure, the Pless-Satterwhite Family Function Index ($r = .80$) and with psychotherapists' estimates of family function ($r = .64$). Additionally, two groups administered the instrument demonstrated expected differences: married graduate students had significantly higher scores than community mental health clinic patients. When the Friend APGAR was added, Smilkstein et al. (1982) gave both the Family and Friend APGAR to a large group of college students. The fact that the students scored significantly higher on the Friend scale than the Family scale suggests construct validity since adolescents typically are more peer-oriented than family-oriented.

Smilkstein et al. (1982) reported test-retest reliability of .83. Further, they demonstrated high internal consistency within a large college student sample (Cronbach's alpha reliability estimate of .80). With another large, college-student sample, they noted improved psychometric qualities by increasing the response format from three choices to five choices. Cronbach's alpha increased from .80 to .86. Item-total correlations ranged from .50 to .65 for the three-choice format; with the five-choice format, the item-total correlations were consistently higher, ranging from .62 to .74. The authors recommend the three-response scale for general clinical use because it is simpler; however, they recommend the five-response scale for research purposes because of the higher reliability.

The Family APGAR has shown predictive validity (Hilliard, Gjerde, & Parker, 1986). Patients given the instrument on their first visit to a family medical clinic were followed for 18 months. Nonsymptomatic patients had significantly higher scores than symptomatic patients. The Family APGAR accurately predicted 68% of symptomatic and 62% of nonsymptomatic patients.

Brodish, McBride, and Bays (1987) used both the Family and Friend scales and found the combined instrument to be a significant predictor of mothers needing referral for help with their infant after hospital discharge.

Because of the better psychometric properties, the five-point scale was used for both the Family and Friend APGAR in this study. Scores can range from 0 to 20 on each scale. The two scores were

combined for a single measure of social support; higher scores indicate greater support.

Knowledge About Infants and Infant Care. Myers-Walls (1977, 1979) developed a 25-item, true-false measure of parent's knowledge about infants and infant care (see Appendix C). The scale was constructed with 55 items using a five-area framework: (1) physical care of the child; (2) health care of the child; (3) cognitive-intellectual development of the child; (4) social-emotional development of the child; and (5) other home and family responsibilities related to parenting. Items not demonstrating good psychometric properties were eliminated and the test was thus reduced to 25 items.

Myers-Walls (1979) claimed high face validity and construct validity because the instrument was constructed around the five-area framework. Additionally, she thought construct validity was enhanced by the positive correlation between women's educational levels and their scores on this instrument ($r = .39$).

Respondents are given 1 point for each correct item (see scoring key in Appendix C). Scores can range from 0 to 25 on this instrument, with higher scores indicating greater knowledge.

Perception of Caretaking Competence. This 15-item instrument was developed by Myers-Walls (1977, 1979) to measure parent's perceptions of their own competence to care for their infant (see Appendix D). The instrument lists 15 caretaking tasks to be rated on a scale from 1 to 10 "according to how well you think you can do

that task." The 15 items cover the same five areas as the knowledge instrument above: (1) physical care of the child; (2) health care of the child; (3) cognitive-intellectual development of the child; (4) social-emotional development of the child; and (5) other home and family responsibilities related to parenting.

Again, Myers-Walls claimed high face and construct validity for the instrument because of its construction around the five-areas as a framework. The high Cronbach's alpha (.876), a measure of internal consistency, would also support the validity of the instrument. The original instrument, containing 51 items, was reduced to two 15-item equivalent forms. Spearman-Brown reliability between the two forms was good (.774). Form 1 was used in this study.

Each of the 15 items is rated on a scale from 1 ("very incapable") to 10 ("very capable"), therefore scores can range from 15 to 150. Higher scores reflect perception of higher caretaking competence.

Maternal-Fetal Attachment Scale. Designed to measure different aspects of the maternal-fetal relationship, this scale (see Appendix E) is composed of 24 items with five subscales: (1) differentiation of self from the fetus; (2) interaction with the fetus; (3) attributing characteristics and intentions to the fetus; (4) giving of self; and (5) role taking. Cranley (1979) established content validity with a review by a panel of experts and by demonstrating high internal consistency for the total scale

(Cronbach's alpha = .85). Internal consistency for the subscales was lower, ranging from .52 to .73. Specifically, (1) for differentiation of self from the fetus, alpha = .62; (2) for interaction with the fetus, alpha = .68; (3) for attributing characteristics and intentions to the fetus, alpha = .67; (4) for giving of self, alpha = .52; and (5) for role taking, alpha = .73. Construct validity was suggested by the positive correlation Cranley found between social support and maternal-fetal attachment scores ($r = .51$) and the negative association between perceived stress and maternal-fetal attachment scores ($r = -.41$). Further, this instrument was adapted for use with fathers (Weaver & Cranley, 1983) and the resultant Paternal-Fetal Attachment Scale demonstrated a Cronbach's reliability coefficient of .80.

Each of the 24 items is rated on a scale from 1 ("Definitely No") to 5 ("Definitely Yes"). All items are worded in a positive direction, except item #22. Scoring consists of reversing item #22 and then adding responses to each individual item. Scores can range from 24 to 120, with higher scores representing higher maternal-fetal attachment.

Hollingshead's Four-Factor Index of Social Economic Status (SES). In 1975, Hollingshead revised his famous Two-Factor Index of Social Status to address criticism leveled because it was dated (the original was developed in 1958) and non-responsive to current trends in family situations. The revised Four-Factor Index allows estimates of social status of an unmarried individual, a single head

of household (either gender), or a two-parent family. The occupational categories have been updated based on the 1970 Census data. The four factors considered are educational level, occupation, marital status, and gender. However, gender is not used in the calculations. Education and occupation are scored, then weighted and summed to produce a single SES index. Marital status determines whose information is utilized in the calculations; for example, in a dual-wage-earner family, SES would be calculated for both spouses separately and then the average score used for the family.

Educational level is scored based on the number of years of schooling:

<u>Score</u>	<u>Level of School Completed</u>
1	Less than 7th grade
2	Junior high (9th grade)
3	Partial high school (10th or 11th grade)
4	High school graduate
5	Partial college (at least one year) or specialized training
6	College or university graduate
7	Graduate professional training (graduate degree)

Occupations are placed into the following nine categories:

<u>Score</u>	<u>Occupational Category</u>
1	Farm Laborers/Menial Service Workers
2	Unskilled Workers

<u>Score</u>	<u>Occupational Category</u>
3	Machine Operators/Semiskilled Workers
4	Smaller Business Owners/Skilled Manual Workers/Craftsmen/Tenant Farmers
5	Clerical & Sales Workers/Small Farm & Business Owners
6	Technicians/Semiprofessionals/Small Business Owners
7	Smaller Business Owners/Farm Owners/Managers/Minor Professionals
8	Administrators/Lesser Professionals/Proprietors of Medium-Sized Businesses
9	Higher Executives/Proprietors of Large Businesses/Major Professionals

Hollingshead's formula was used to compute an SES score in the following manner:

$$\text{SES} = (\text{Educational Score} \times 3) + (\text{Occupation Score} \times 5)$$

Scores can range from a low of 8 to a high of 66. Higher scores reflect higher socioeconomic status.

Gottfried (1985) recommended the use of Hollingshead's Four-Factor Index for developmental research because it demonstrated high reliability and because it showed consistently higher correlations with developmental status of young children than did either the Revised Duncan Socioeconomic Index or the Siegal Prestige Scale. Further, the latter two scales are limited to occupations of head of household and do not consider the contribution of a working mother as does the Hollingshead.

Ego Identity Scale. Rasmussen (1964) developed the Ego Identity Scale (see Appendix F) based on Erikson's concept of ego development. The scale contains 72 items which are statements reflecting Erikson's psychosocial stages. Subjects respond to each statement by either agreeing or disagreeing. Approximately half the items are worded in a positive direction and the other half phrased in a negative direction. A total ego identity score is obtained in addition to a score for each of the first six psychosocial stages. Total scores can range from 0 to 72, with higher scores suggestive of greater ego identity. Subscale scores can range from 0 to 12.

Rasmussen claimed high content validity on his original pool of 144 questions. First, the items were specifically written to fit Erikson's psychosocial stages. Secondly, unanimous agreement was reached by two psychologists that all items fit into the designated psychosocial stage. Item analysis was utilized to reduce the original 144 items to the final 72 items. Spearman-Brown reliability estimate on the final form was .85.

Rasmussen (1964) established construct validity in his study of Navy recruits. Recruits selected by their peers as demonstrating higher inter- and intra-personal effectiveness scored significantly higher on the ego identity scale than did recruits rated as low on inter- and intra-personal effectiveness. Tzuriel and Klein (1977), using a shortened version, found that 9-10th graders scored significantly lower than 11-12th graders; further, they noted an increase in scores at each of the four high school grade levels.

Rasmussen's scale has been utilized by many researchers. Bauer and Snyder (1972) used the instrument in an investigation of the relationship between ego identity and motivation; they supported Eriksonian theory by showing that college students with higher levels of achievement motivation had greater ego identity scores. Anderson and Fleming (1986) found that late adolescents' home-leaving strategies (i.e., economic independence, separate residence, personal control, and emotional attachment to parents) were highly predictive of ego identity scores. As mentioned in Chapter II, Protinsky et al. (1982) used Rasmussen's instrument with pregnant and non-pregnant teens. They reported that nonpregnant adolescents had higher ego identity scores than pregnant adolescents.

Since Rasmussen's instrument was originally validated on a large sample of Navy recruits, some of the items are worded exclusively for males. Because the sample for this study was all female, 11 items were re-worded with inclusive language. Appendix F lists these original items and the reworded versions used for this study.

Additionally, to obtain more precision in the measurement of ego identity, the scoring of each item was expanded from a two-point scale (agree, disagree) to a six-point scale (strongly agree, agree, mildly agree, mildly disagree, disagree, strongly disagree). Therefore, subscale scores can range from 12 to 72 and the total score can range from 72 to 432. As with the original scoring, higher scores indicate higher levels of ego development.

Nursing Child Assessment Feeding Scale. The Nursing Child Assessment Feeding Scale is an observational scale consisting of 76 behavioral items. The scale, developed by Barnard (1978), is divided into four parent subscales and two child subscales:

Parent Subscales

1. Sensitivity to Cues (16 items)
2. Response to Distress (11 items)
3. Social-Emotional Growth Fostering (14 items)
4. Cognitive Growth Fostering (9 items)

Child Subscales

1. Clarity of Cues (15 items)
2. Responsiveness to Parent (11 items)

All items are scored in binary fashion — yes or no. The number of yeses for each subscale is totaled and used as the subscale score. Additionally, a parent total is obtained by adding the scores of the four parent subscales, a child score is tallied from the two child subscales. Finally, a total parent-infant interaction score is obtained by summing all 76 items. Total parent scores can range from 0 to 50; total parent-infant interaction scores can range from 0 to 76. Higher scores indicate more positive interactions.

The reliability of the instrument has been assessed through measures of internal consistency (i.e., Cronbach's alpha) on the total scores and subscales (Barnard, 1986). Parent subscale alphas ranged from .60 to .69 with the total parent score alpha being .83. The child subscale alphas were lower at .56 and .58 with the total child alpha being .73. The fact that observers can be easily

trained to administer the scale with inter-observer agreement of 85% or higher suggests the scale is reliable.

With regard to validity, the scale demonstrates face validity. Construct validity is suggested by positive correlations between the feeding scale and another measure of maternal-infant interaction, the Nursing Child Assessment Teaching Scale (a separate measure of interaction during a teaching situation), and between the feeding scale and the Home (Caldwell and Bradley's Home Observation for Measurement of the Environment) (Ruff, 1987). Predictive validity was demonstrated with high correlations between the feeding scale at 3 and 10 months with the infant's later cognitive level and the infant's attachment to mother (Ruff, 1987).

The NCAST scales have been widely used in maternal-infant interaction research. Barnard, Bee and Hammond (1984) used an earlier version of the feeding scale to assess maternal interactions in full-term and preterm infants. Ruff (1987) used the feeding scale to assess early interactions of Black adolescents and their infants. In a similar investigation, Aten (1988) utilized the teaching scale to observe adolescents' interactions with their infants at 6 months and yearly until the infants were 5 years old.

The Nursing Child Assessment Feeding Scale can be found in Appendix G.

Interviewers

The interviews were conducted by the experimenter, two graduate students, and two former social workers trained by the experimenter, all female. These interviewers were not used as post-partum maternal-infant observers to avoid any bias in the observations, since they had much information about the subject's age, socioeconomic status, responses to the various questionnaires, etc. A training session was provided for all interviewers by the researcher. See Appendix H for the Instructions for Interviewers.

Observers

Ten trained female observers were employed to conduct the post-partum observations. Each of the observers had been previously trained by the Nursing Child Assessment Satellite Training program and had previous experience conducting observations with the NCAST Feeding Scale. The observers were parent educators, maternal-infant nurses, speech pathologists, and pediatric therapists.

Observer Training

The observers participated in a "refresher session" on the NCAST Feeding Scale, conducted by Pam Chappell, an NCAST-certified trainer and a staff member at the Developmental Evaluation Center. Observers practiced on two video-taped feeding sessions and all observers achieved reliability of .90 or above for both tapes. Instructions for contacting subjects and conducting the observation sessions were provided by the experimenter. See Appendix I for a copy of the Instructions for Observers.

Observer Reliability

Reliability checks (i.e., two observers recording the feeding session) were made periodically throughout the study. About 10% of the observations (16 of 147) had a reliability checker present.

Observer reliability was calculated using the formula:

$$\frac{\text{Number of Agreements}}{\text{Number of Agreements} + \text{Disagreements}}$$

Reliability for the total scale for all observers combined was .91.

Reliability for each subscale for all observers combined was as follows:

<u>Subscale</u>	<u>Reliability</u>
Sensitivity to Cues	.93
Response to Distress	.95
Social-Emotional Growth Fostering	.92
Cognitive Growth Fostering	.85
Clarity of Cues	.95
Responsiveness to Parent	.85

Procedure

This research project was conducted in conjunction with Carol Womble, a masters' student in the School of Nursing. Part of the data collected during the pre-partum interviews of the teen sample were used for her thesis. As co-researchers, we shared the task of recruiting subjects. Before signing consent forms, every subject talked with one of the two researchers.

The researchers visited childbirth classes, health department clinics, public schools, and adolescent pregnancy programs to

personally recruit subjects. Information about the study and the subjects' involvement was explained orally and in writing.

A second recruitment method involved placing flyers in some locations (doctors' offices, clinics, housing projects); interested subjects completed a card attached to the flyer and returned it by mail or in a box. These subjects were contacted by phone and details of the study explained.

To enhance recruitment efforts, the researchers offered subjects willing to participate in the study a chance to win various prizes donated by local businesses. See sample flyers in Appendix J for a listing of prizes offered. A drawing was held at the end of the recruitment period and all prizes distributed to the winners.

All subjects who volunteered signed a written informed consent form (see Appendix A). If the subject was under 18 years of age and not married, written informed consent was also obtained from one of her parents or legal guardian.

Once a subject was recruited and informed consent obtained, her name, address, and phone number was given to one of the interviewers. Interview location and time was arranged by the individual interviewer and subject. In general, interviews took place in the subjects' homes. Interviewers maintained a record of all phone contacts and all visits to each individual subject (see Appendix H for Home Interview Form).

Upon arrival for the interview, the interviewer explained that she would be asking some questions of the subject and that sometimes

she would ask the subject to complete some checklists. During the interview, demographic information and information about the pregnancy was obtained orally. Additionally, information about the subjects' experience with young children and their perceptions of infant capabilities was gathered orally. [This data were used for Carol Womble's thesis.]

The following instruments were administered at predefined points during the interview (see Home Interview Schedule in Appendix K):

1. Family/Friend APGAR
2. Knowledge About Infants and Infant Care
3. Perception of Caretaking Competence
4. Maternal-Fetal Attachment Scale
5. Ego Identity Scale

The Family/Friend APGAR was always administered first; it was short and therefore was a good lead-in instrument. The Ego Identity Scale was the most personal instrument and therefore was always administered last, providing time for the subject to ease into more personal issues. These two instruments appeared the least related among the five instruments and therefore least likely to influence others by the order of administration. However, the three instruments about infants could influence one another, depending on the order given. Therefore, the six possible orders of these three instruments were counterbalanced within the two groups of subjects. See Table 7 for frequencies of subjects receiving each order.

Before the interviewer presented the Family/Friend APGAR, the first instrument to be filled out by the subject, she asked the

Table 7
Order of Administration of Instruments

Instrument Order	Adolescent Sample n=100	Adult Sample n=100
#1: K-P-A	16	16
#2: K-A-P	17	16
#3: P-A-K	18	17
#4: P-K-A	17	17
#5: A-K-P	17	17
#6: A-P-K	15	17

Note. K = Knowledge About Infants and Infant Care
P = Perception of Caretaking Competence
A = Maternal-Fetal Attachment

subject if she preferred to read and complete the instrument herself or for the interviewer to read it with her. This allowed those subjects who have difficulty reading to ask for assistance in a non-threatening way. (See Instructions for Interviewers in Appendix H). Those subjects requesting assistance with the Family/Friend APGAR were read all instruments unless they later indicated they wished to respond to other instruments by themselves. Thirteen subjects (8 adolescents, 5 adults) asked the interviewers to read the instruments with them.

When all information had been obtained, the interviewer thanked the subject for her time and gave her a packet with a babysitter magnet board, booklets, coupons, etc. (provided by Mead-Johnson) and a second packet of booklets and coupons (provided by Baby Diaper Service) in appreciation for her participation. The subject was also given a card to take to the hospital. The card reminded her to contact one of the researchers when her baby was born (see Appendix L). Finally, the interviewer reminded the subject that a trained observer would come to watch her baby during a feeding time 3-4 weeks after she returned home from the hospital.

The researchers maintained contact with the hospital mother-baby units and reviewed birth certificates filed with Guilford County Health Department to identify subjects after giving birth. From the hospital records and/or birth certificates, the researchers collected information about the labor/delivery and health of the baby (see Appendix M). Any subject whose infant received a 5-minute

APGAR less than 7¹ and/or whose infant was in the Neonatal Intensive Care Unit (Special Care Nursery) was excluded from the maternal-infant observation phase. In addition, if either mother or infant were rehospitalized during the first 3 weeks post-partum, the subject was excluded. Furthermore, some subjects requested to drop out of the study at the observation phase and other subjects could not be contacted at this phase. See Table 8 for exclusion reasons and frequencies for each group.

Observers were provided with information about subjects' names, addresses, phone numbers, and delivery dates. They contacted each subject and arranged a time for the home observation when the infant was 3 to 5 weeks of age. The observer explained that she needed to observe during a feeding time and asked the mother to recommend the best time to come. The observer requested that the subject try to postpone feeding until she arrived, if possible. The observer maintained a record of her phone contacts and visits to each subject (see Appendix I).

Upon arrival in the subject's home, the observer introduced herself to the mother. She then made a determination about the baby's feeding time and decided whether to conduct the feeding scale first followed by a few questions about the labor/delivery and new baby or vice versa (see Appendix G for the questions and Appendix I for observer instructions).

¹5-minute APGAR scores will be used because they demonstrate more predictive validity. Scores less than 7 are indicative of mild to severe asphyxia, generally requiring resuscitation.

Table 8
Observation Phase Subject Exclusion

Exclusion Reason	Adolescent Sample n=100	Adult Sample n=100
Infant Stillborn	1	1
Infant in Special Care Nursery or 5-minute APGAR less than 7	4	3
Mother or Infant Rehospitalized	2	—
Subject Requested Exclusion	1	4
Unable to Contact Subject	24	12
	—	—
Total Excluded	32	20

When ready for the feeding scale, the observer explained that she could respond to questions after the observation period, but during the observation, she must remain silent. The observer then located herself in a comfortable place with a clear view of the mother and baby. The observer waited for the mother to signal that the feeding period had begun and then started the observation. The observation continued until the mother signalled that the feeding was over.

When both the feeding scale and labor/delivery questions were completed, the observer thanked the mother for her participation, answered any questions, and presented her with a gift pack. The gift pack contained numerous brochures about infant nutrition, infant development, information about parenting programs available in the geographic area, etc. Each packet also contained information about infant safety and included electrical outlet covers. Breastfeeding mothers received sample Pampers and breast pads in their packets, in addition to information about breastfeeding. Bottlefeeding mothers received a can of Enfamil with iron and a pitcher especially designed for measuring formula. Materials for the gift packs were provided by Mead Johnson, La Leche League International, and local agencies.

Upon completion of the research phase of the home visit, interviewers responded to subjects' questions. When appropriate, the interviewers provided referral information to the subjects.

Statistical Analyses

Statistical analyses are presented separately for each research question. Research question #1 has three hypotheses, each asking the same question with regard to a different dependent measure. Each hypothesis was tested with an analysis of covariance. The independent variable for all three hypotheses was age group (adolescents, adults). Covariates were race and SES. Dependent measures for each of the hypotheses were: for hypothesis #1, scores on the knowledge about infants and infant care test; for hypothesis #2, scores on the perception of caretaking competence instrument; and for hypothesis #3, scores on the maternal-fetal attachment scale.

Research question #2 has one hypothesis, tested with analyses of covariance. The independent variable was age group (adolescent, adult) with race and SES as covariates. Dependent measures were total maternal interaction scores and the total maternal-infant interaction scores.

Multiple regression was utilized for research question #3. Overall maternal-infant interaction scores, as well as the total maternal scores, were regressed onto eight variables for each of the two age groups: race of mother, SES, infant gender, Family/Friend APGAR scores, knowledge about infants and infant care scores, perception of caretaking competence scores, maternal-fetal attachment scores, and ego identity scores. Correlations among the variables were also examined.

CHAPTER IV

RESULTS

This research project was designed to investigate differences between pregnant adolescents and their older counterparts and to identify factors related to maternal-infant interactions in these two groups. The study focused on three specific research questions, listed below with their respective hypotheses:

1. What are the differences between adolescent (13-19 years of age) and young adult (20-29 years of age) primiparous mothers in terms of knowledge about infants and infant care, perception of caretaking competence, and maternal-fetal attachment?
 - H₁: When the effects of race and SES are controlled, adolescents will know less about infants and infant care than will mothers in their twenties.
 - H₂: When the effects of race and SES are controlled, adolescents will have lower perceptions of their own caretaking competence than will mothers in their twenties.
 - H₃: When the effects of race and SES are controlled, adolescents will be less attached to their fetuses than will mothers in their twenties.
2. What are the differences between adolescent (13-19 years of age) and young adult (20-29 years of age) primiparous mothers in terms of early maternal-infant interactions?
 - H₄: When the effects of race and SES are controlled, adolescents will display less positive interactions with their infants than will mothers in their twenties.
3. What variables predict more positive early maternal-infant interactions among adolescents and young adult primiparous mothers?

- H₅: Considering the eight variables of ego identity, infant gender, race of mother, SES of mother, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, and social support, ego identity will be a more important predictor of maternal-infant interactions for adolescent mothers than other variables and will not be a predictor for mothers in their twenties.
- H₆: Ego identity will be positively correlated with maternal-infant interactions for the adolescent mothers.

To address these questions, a group of 100 pregnant adolescents and 100 pregnant adults (aged 20-29) were interviewed during their third trimester. These same women were followed through the births of their infants, and then observed interacting with their infants at 3-4 weeks postpartum.

The results will be presented in three sections. First, some descriptive data about the pregnancies of these women will be outlined. The second section will contain descriptive data about the births of the infants. Finally, each hypothesis and respective statistical analyses will be presented.

Pregnancy Variables

During the third trimester interview, the subjects were asked a number of questions about their pregnancy. Descriptive analyses indicate a number of variables on which the two groups were similar, as well as variables on which the two groups differed.

All subjects were primiparas, but a few subjects had experienced prior pregnancy losses (all miscarriages or abortions prior to the third trimester). The two groups had similar numbers

of prior losses: 12 for the adolescent group, 17 for the adult group (see Table 9).

With regard to self-reported health status prior to pregnancy, the two groups were similar. Seventy-five percent of the adults and 69% of the adolescents reported their health prior to pregnancy to be either "very good" or "excellent" (see Table 10).

The adults rated the health of their babies and themselves during pregnancy slightly higher than the teens. During the pregnancy, 77% of the adults and 65% of the adolescents reported their health as "very good" or "excellent". Ninety-five percent of the adult group rated their babies to be in "very good" to "excellent" health in utero while 83% of adolescents rated their babies at this level (see Table 10).

The adults and adolescents had almost identical risk status self-ratings: about 80% of each group reported they felt their pregnancies to be "very low risk" or "low risk." Similarly, 72% of each group stated that the pregnancy had caused either "no stress at all" or "slight stress" (see Table 11).

Differences between the groups were apparent on several variables. The adult group reported less difficulty with their pregnancies: three-fourths said that compared to most mothers-to-be they experienced "no difficulty" or "less than average difficulty." For the teen group, about one-half placed their pregnancies in one of those categories (see Table 11).

Table 9
Prior Pregnancy Histories For Each Group

	Adolescent Sample n=100	Adult Sample n=100
No Prior Pregnancies	88	83
One Prior Pregnancy (aborted/miscarried)	11	13
Two Prior Pregnancies (aborted/miscarried)	1	4

Table 10
Self-Reported Health Status of Each Group

	Adolescent Sample n=100	Adult Sample n=100
<u>Health Before Pregnancy:</u>		
Excellent	25	33
Very Good	34	42
Average	32	23
Fair	8	1
Poor	0	1
<u>Health During Pregnancy:</u>		
Excellent	16	29
Very Good	49	48
Average	24	12
Fair	7	7
Poor	3	4
<u>Health of the Baby:</u>		
Excellent	50	49
Very Good	33	46
Average	12	5
Fair	4	0
Poor	0	0

Table 11
Pregnancy Progress, Risk Status, and Stress
For Each Group

	Adolescent Sample n=100	Adult Sample n=100
<u>Way Pregnancy Progressed:</u>		
No Difficulty	35	54
Less Than Average Difficulty	17	21
Average Difficulty	37	17
More Than Average Difficulty	8	8
Great Deal of Difficulty	3	0
 <u>Risk:</u>		
Very Low Risk	28	48
Low Risk	51	32
Moderate Risk	10	15
High Risk	10	5
Very High Risk	1	0
 <u>Stress Caused By Pregnancy:</u>		
No Stress At All	20	22
Slight Stress	52	50
Moderate Stress	17	23
Great Deal of Stress	11	5

The question about whether the pregnancy was planned produced striking differences between the adults and adolescents with over half (54%) of the adults stating their pregnancy was planned compared to only 11% of the adolescents (see Table 12). About two-thirds of the adults had selected a pediatrician by the time of the interview while less than half (41%) of the adolescents had done so (see Table 12).

All subjects, except one adolescent, were receiving prenatal care by the time of the interview (this particular adolescent did not receive prenatal care before giving birth). However, there was a large difference in the average time that prenatal care began for the two groups. On the average, the adolescent group began prenatal care at 14 weeks (during the second trimester); the adult group, on the average, began prenatal care at 8 weeks (in the first trimester).

During the interview subjects were asked how they were planning to feed their baby. With the adults, breastfeeding was the clear preference (58%) over bottlefeeding (34%). The adolescents expressed the opposite preference with 74% planning to bottlefeed compared to 18% who were planning to breastfeed (see Table 12).

The subjects were administered the social support measure (Family/Friend APGAR) and the ego identity instrument during the interview. The two groups reported similar levels of support from family (22.4 for adults and 21.6 for the adolescents) and friends (21.1 for adults and 20.5 for adolescents). The total support

Table 12
Selected Pregnancy Variables For Each Group

	Adolescent Sample n=100	Adult Sample n=100
<u>Pregnancy Planned?</u>		
Yes	11	54
No	89	46
<u>Selected Pediatrician?</u>		
Yes	41	65
No	58	35
<u>Planning to Feed?</u>		
Breast	18	58
Bottle	74	34
Both	1	5
Undecided	7	3

measure was only slightly higher for the adults (43.5 compared to 42.1 for the adolescents). On the ego identity measure, the adults scored higher than the teens on all subscales and on the total score.

Birth Information

All but one adult delivered at one of the four area hospitals (this adult was traveling out of town and delivered early). Table 13 contains a listing of the numbers of subjects in each group who delivered at each hospital.

Female infants predominated in both groups: the adults gave birth to 54 females and 45 males; the adolescents birthed 53 females and 47 males. The adult group had a slightly higher C-section rate (29%) than the adolescents (19%) and a higher use of forceps/vacuum extraction (17% for adults, 7% for adolescents).

Three measures indicative of the health of an infant were obtained for all subjects. The two groups did not differ on two of the measures. APGAR scores at 1 minute and 5 minutes were virtually identical for the adolescents and adults (adolescents: 8.2 at 1 minute, 9.0 at 5 minutes; adults: 8.1 at 1 minute, 9.0 at 5 minutes). However, the adult group's infants weighed significantly more at birth (7.7 pounds) compared to the adolescent group's infants (7.1 pounds) [$t(df=195) = 3.3, p = .001$].

Table 13

Number of Deliveries at Each Hospital For Each Group

	Adolescent Sample n=100	Adult Sample n=99 ^a
Cone Hospital	60	79
Wesley Long Hospital	1	12
High Point Memorial	26	5
Forsyth Hospital	13	2
Other	0	1

^aOne adult subject moved out of the area prior to delivery and no hospital data could be obtained.

Hypothesis One

H₁: When the effects of race and SES are controlled, adolescents will know less about infants and infant care than will mothers in their twenties.

The knowledge measure contained 25 true-false items. Both groups performed moderately well with the adult group demonstrating slightly higher scores: the adults averaged 20 items correct (80%) and the adolescents averaged 17 items correct (68%). Means and standard deviations for each group on the total knowledge score and for each of the five areas of the instrument are presented in Table 14. Percentage correct for each group on individual items can be found in Appendix N.

The adult group averaged about 4 or 5 items correct in each subarea, while the adolescent group averaged 3-4 items correct. Both groups scored highest in the areas of physical care and cognitive/intellectual development. The greatest differences between the two groups were in the areas of health care and other home/family responsibilities.

To test the hypothesis, an analysis of covariance was performed on the total knowledge score with race and SES score used as covariates (see Table 15). Significant group differences were found after the effects of the covariates were controlled. The adults scored significantly higher ($p = .0017$) than the adolescents (adjusted means were 19.3 and 17.8 for the adults and adolescents, respectively). It should be noted that the adjusted means are only

Table 14
Means and Standard Deviations on the Knowledge
Instrument For Each Group

	Adolescent Group (n=100)		Adult Group (n=100)	
	Mean	SD	Mean	SD
Total Score	17.2	3.0	19.9	2.5
<u>Subareas:</u> ^a				
Physical Care Items	3.7	0.9	4.2	0.9
Health Care Items	3.1	1.1	3.9	0.9
Cognitive/Intellectual Development Items	3.7	1.0	4.2	0.8
Social/Emotional Development Items	3.5	0.8	3.6	0.7
Other Home/Family Items	3.1	1.1	4.0	0.9

^aEach of the sub-areas contains 5 items.

Table 15
 Analysis of Covariance on Total Knowledge Scores
 Using Race and SES as Covariates

Source	df	SS	MS	F	p
<u>Covariates:</u>					
Race	1	55.99	55.99	7.99	.0052
SES	1	63.27	63.27	9.03	.0030
Group	1	70.69	70.69	10.09	.0017
Error	196	1372.66	7.00		
Total	199	1913.68			

one point different, probably being statistically significant due to a large sample size. The R^2 for this model is 28%.

Hypothesis Two

H₂: When the effects of race and SES are controlled, adolescents will have lower perceptions of their own caretaking competence than will mothers in their twenties.

The instrument used to measure perception of caretaking competence contained 15 caretaking tasks. The subjects rated each task on a scale from 1 to 10. Possible scores could range from 15 to 150. Both groups scored moderately high on this instrument. The adults average score was 118.8 compared with an average score of 120.9 for the adolescents. To give some perspective to these scores, a score of 120 corresponds to an average rating of 8 on the 15 tasks. Means and standard deviations for each group on the total perception of caretaking competence score and for each of the five areas of the instrument are presented in Table 16. Mean ratings for each individual item for each group can be seen in Appendix N.

Both groups rated themselves highest in the areas of physical care and social/emotional development. The greatest difference occurred in the area of social/emotional development with the adolescents rating themselves higher than the adults.

To test the hypothesis, an analysis of covariance was performed on the total score with race and SES score used as covariates (see Table 17). No significant group differences were found after the effects of the covariates were controlled. Adjusted means were 120.3 and 119.3 for the adults and adolescents, respectively.

Table 16
Means and Standard Deviations on the Perception of
Caretaking Competence For Each Group

	Adolescent Group (n=100)		Adult Group (n=100)	
	Mean	SD	Mean	SD
Total Score	120.9	17.6	118.8	17.0
<u>Subareas:</u> ^a				
Physical Care Items	25.5	4.5	25.9	4.1
Health Care Items	22.6	4.7	22.8	4.9
Cognitive/Intellectual Development Items	24.2	4.3	23.5	4.2
Social/Emotional Development Items	25.4	4.6	23.9	3.9
Other Home/Family Items	23.2	4.9	22.6	5.1

^aEach of the sub-areas contains 3 items.

Table 17
 Analysis of Covariance on Total Perception of Caretaking
 Competence Scores Using Race and SES as Covariates

Source	df	SS	MS	F	p
<u>Covariates:</u>					
Race	1	766.43	766.43	2.59	.1092
SES	1	170.92	170.92	0.58	.4482
Group	1	35.47	35.47	0.12	.7296
Error	196	58018.97	296.02		
Total	199	59459.88			

Hypothesis Three

H₃: When the effects of race and SES are controlled, adolescents will be less attached to their fetuses than will mothers in their twenties.

The maternal-fetal attachment measure consists of 24 items, rated from 1 to 5; scores can range from 24 to 120. Both groups scored moderately high. The adults averaged 100.3 and the adolescents averaged 96.7. These scores represent an average rating of about 4.0 across all items. Means and standard deviations for each group on the total score and for each of the five subscales of the instrument are presented in Table 18. Average scores for each group on the individual items are listed in Appendix N.

The adults and adolescents rated themselves highest on the subscales of roletaking and differentiation of self from fetus. The two groups differed the most on the subscales of interaction with fetus and attributing characteristics to the fetus.

To test the hypothesis, an analysis of covariance was performed on the total attachment score with race and SES score used as covariates (see Table 19). Significant group differences were found. The adults scored significantly higher ($p = .0099$) than the adolescents (adjusted means were 100.5 and 96.5 for the adults and adolescents, respectively). It should be noted that the adjusted means are only four points apart (could result from a 1-point rating difference on four items) and that the R^2 for this model is only 4%. This statistically significant difference between the groups is probably an artifact of a large sample size.

Table 18
Means and Standard Deviations on the Maternal-Fetal
Attachment Scale For Each Group

	Adolescent Group (n=100)		Adult Group (n=100)	
	Mean ^a	SD	Mean ^a	SD
Total Score	96.7 (4.0)	9.0	100.3 (4.2)	8.4
<u>Subscales:</u>				
Interaction With Fetus (5 items)	17.2 (3.4)	3.3	18.3 (3.7)	3.5
Giving of Self (5 items)	20.6 (4.1)	2.3	20.9 (4.2)	2.1
Differentiation of Self From Fetus (4 items)	17.7 (4.4)	2.2	18.5 (4.6)	1.8
Roletaking (4 items)	18.5 (4.6)	1.7	18.7 (4.7)	1.5
Attributing Characteristics to the Fetus (6 items)	22.7 (3.8)	3.4	23.9 (4.0)	3.6

^aThe top number is the group mean of the summed scores. The number in parenthesis is the group mean of the item ratings.

Table 19
 Analysis of Covariance on Total Maternal-Fetal
 Attachment Using Race and SES as Covariates

Source	df	SS	MS	F	p
<u>Covariates:</u>					
Race	1	16.25	16.25	0.21	.6448
SES	1	1.66	1.66	0.02	.8828
Group	1	517.87	517.87	6.79	.0099
Error	196	14941.10	76.23		
Total	199	15603.92			

Hypothesis Four

H₄: When the effects of race and SES are controlled, adolescents will display less positive interactions with their infants than will mothers in their twenties.

The Nursing Child Assessment Feeding Scale, used to measure maternal-infant interactions, contains 76 items, coded as "occur" or "not occur". Total interaction scores can range from 0 to 76. The instrument is divided into six subscales. Four of the subscales measure maternal behavior, and two subscales measure infant behavior. The four maternal subscales can be summed for a total maternal score. Likewise, the two infant subscales can be summed for a total infant score.

The observation data reported here includes 80 adult subjects and 68 adolescent subjects (see Table 8 in Chapter III for exclusion reasons for each group of subjects). The subjects were observed when their infant was 3-5 weeks old. The average age of infants in the adult group was 29 days and in the adolescent group, 31 days.

This hypothesis is concerned with the maternal behavior toward the child. However, to ensure that any differences in maternal behavior were not due to differences in infant behavior, the infant scales were examined first. On the total infant scores and the two subscales, t-tests revealed no significant differences between the two groups. Means and standard deviations for each group on the total infant score and the two infant subscales are presented in Table 20.

Table 20
Means and Standard Deviations of the Infant Scores on the
Feeding Scale For Each Group

	Adolescent Group (n=68)		Adult Group (n=80)	
	Mean	SD	Mean	SD
Total Infant Score (26 items)	17.9	3.9	18.7	3.2
<u>Infant Subscales:</u>				
Clarity of Cues (15 items)	11.7	2.3	12.1	1.7
Responsivity to Parent (11 items)	6.2	2.2	6.6	2.0

Assured that infant behavior was similar for both groups, differences in maternal behavior were investigated next. Means and standard deviations for each group on the total interaction score, the total maternal score, and the four maternal subscales are presented in Table 21. Percentages of "occur" for each item for each group are presented in Appendix N.

The two groups had almost identical scores on the response to distress subscale. This subscale is probably not an accurate indicator of maternal behavior in this area due to the scoring procedure for this subscale. If the infant did not exhibit distress, the mother was given credit (i.e., scored as "occur") for all 11 items on this subscale.

The adults demonstrated higher scores than the adolescents on the other three maternal subscales with the greatest difference appearing on the cognitive growth fostering subscale. This subscale is composed primarily of items which require the mother to verbalize to the infant, suggesting that the major difference between the two groups is one of verbalization to the infant. To further investigate this, the 50 maternal items were divided into those requiring verbalization and those that do not. Among the 35 items not requiring verbalization, on average, 84% of the adolescents and 88% of the adults received an "occur" rating. However, among the 15 items requiring verbalization to the infant, on average, 80% of the adults but only 61% of the adolescents were given credit for the item. Unsolicited comments from the observers further substantiate

Table 21
Means and Standard Deviations of the Total Interaction Scores
and Maternal Scores on the Feeding Scale For Each Group

	Adolescent Group (n=68)		Adult Group (n=80)	
	Mean	SD	Mean	SD
Total Interaction (76 items)	56.2	9.9	62.0	7.8
Total Maternal (50 items)	38.4	7.7	43.4	5.7
<u>Maternal Subscales:</u>				
Sensitivity to Cues (16 items)	13.6	2.2	14.5	1.7
Response to Distress (11 items)	9.6	1.8	10.0	1.4
Social-Emotional Growth Fostering (14 items)	10.2	2.8	11.8	2.1
Cognitive Growth Fostering (9 items)	5.0	2.4	7.0	2.0

this lack of verbalization among the adolescent mothers. The observers sometimes wrote comments on the back of the observation form. These comments ranged from positive remarks about the maternal-infant interaction (such as "this couple appeared to be waltzing"), to notes about the lack of verbalization toward the infant (e.g., "this mother NEVER once talked to her baby"). Of the 19 comments regarding the nonverbal behavior of the mother, 14 of the comments were about adolescents compared to only 5 about adults.

To test the hypothesis, analyses of covariance was performed on the total maternal score and the total interaction score with race and SES used as covariates (see Tables 22 and 23). Significant group differences on the total maternal score were found after the effects of the covariates were controlled. The adults scored significantly higher ($p = .0303$) than the adolescents (adjusted means were 42.5 and 39.4 for the adults and adolescents, respectively). The R^2 for this model was 16%.

With regard to the total interaction score, a combination of the maternal and infant scores, no difference between the two groups was present once race and SES were controlled.

An alternate method of examining these maternal-infant interactions is to view the interactions in terms of a normal range. The NCAST researchers have set a cutoff point of 52 (approximately 70% of the items) for selecting parent-infant pairs with normal versus non-normal interactions. Table 24 displays the number and percent of adolescents and adults whose interactions with their

Table 22
 Analysis of Covariance on Total Maternal Scores
 Using Race and SES as Covariates

Source	df	SS	MS	F	p
<u>Covariates:</u>					
Race	1	1.76	1.76	0.04	.8408
SES	1	221.49	221.49	5.10	.0254
Group	1	207.62	207.62	4.78	.0303
Error	144	6248.48	43.39		
Total	147	7434.18			

Table 23
 Analysis of Covariance on Total Interaction Scores
 Using Race and SES as Covariates

Source	df	SS	MS	F	p
<u>Covariates:</u>					
Race	1	2.18	2.18	0.03	.8661
SES	1	427.06	427.06	5.60	.0193
Group	1	219.94	219.94	2.88	.0916
Error	144	10978.26	76.24		
Total	147	12724.30			

Table 24
 Frequency and Percentage of Mother-Infant Pairs in Each
 Group Above and Below Cutoff Point
 for Normal Interactions

	Adolescent Group (n=68)		Adult Group (n=80)	
	N	%	N	%
Above Cutoff	48	71%	73	91%
Below Cutoff	20	29%	7	9%

infants were above or below this cutoff. A chi-square analysis revealed that the adolescent group had significantly more mother-infant pairs below the cutoff point than the adult group ($p = .001$).

Hypothesis Five

H₅: Considering the eight variables of ego identity, infant gender, race of mother, SES of mother, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, and social support, ego identity will be a more important predictor of maternal-infant interactions for adolescent mothers than other variables and will not be a predictor for mothers in their twenties.

To examine hypothesis #5, analyses were performed separately for the two groups of subjects. These analyses are presented separately below.

Adolescent Group. The first step in the analyses was to insure that the independent and dependent variables were distributed normally. In the case of race and infant gender, proportions between 50/50 and 20/80 were desired and found. For the other six variables, plots of the distributions for the adolescent group appeared normal or a close approximation of a normal distribution.

The next step was to explore the relationships among the independent variables to insure that no multicollinearity existed which might interfere with the regression equation. As can be seen in Table 25, no multicollinearity problem exists. In fact, correlations among the variables are quite low. Only 5 correlations are above .30. The Social Support measure (Family/Friend APGAR) is moderately correlated with Perception of Caretaking Competence

Table 25
Correlations Among Independent Variables
For Adolescent Group

	INFG	SES	SS	KNOW	PERC	ATT	EGO
RACE	-.06	-.03	-.09	-.27	.10	.03	-.05
INFG		.05	-.15	.08	-.13	.06	-.10
SES			.00	.21	-.03	.02	.19
SS				-.08	.38	.38	.32
KNOW					-.20	-.06	.40
PERC						.34	.13
ATT							.25

Note: RACE = Race of Subject
 INFG = Infant Gender
 SES = Socio-economic Status
 SS = Social Support (Family/Friend APGAR)
 KNOW = Knowledge About Infants and Infant Care
 PERC = Perception of Caretaking Competence
 ATT = Maternal-Fetal Attachment
 EGO = Ego Identity

($r = .38$), Maternal-Fetal Attachment ($r = .38$), and with Ego Identity ($r = .32$). Knowledge About Infants and Infant Care is moderately correlated with Ego Identity ($r = .40$). Finally, Perception of Caretaking Competence is moderately correlated with Maternal-Fetal Attachment ($r = .34$).

The relationships between the independent variables and the two dependent measures (total maternal score and total interaction score) were examined first with correlations (see Table 26) and finally with multiple regressions (see Tables 27 and 28). For this adolescent group, correlations of the independent variables with the dependent measures were low. None of the correlations was above .30. The highest correlation was Infant Gender with Total Interaction ($r = .25$). Since Infant Gender was coded as "1" for Male and "2" for Female, this correlation suggests that the maternal-infant interactions for adolescents are more positive with female infants than with male infants. Although the correlations are low, one might note that the correlations between the Social Support measure and the two dependent variables are negative ones, suggesting greater social support is related to less positive interactions.

Two regression equations were estimated, one for each of the dependent variables. First, a regression was performed with Total Maternal Score as the dependent variable (see Table 27). The R^2 for this equation was 14%. Only one of the independent variables,

Table 26
Correlations of Independent Variables With Dependent
Variables For Adolescent Group

	Total Maternal	Total Interaction
Race of Subject	.03	.03
Infant Gender	.16	.25
Socio-Economic Status (SES)	.05	.05
Social Support (Family/Friend APGAR)	-.22	-.23
Knowledge About Infants and Infant Care	.18	.12
Perception of Caretaking Competence	.03	.05
Maternal-Fetal Attachment	.07	.15
Ego Identity	.12	.04

Table 27
 Regression With Total Maternal Score as Dependent
 Variable For Adolescent Group

Variable	Standardized Parameter	t	p
Race of Subject	-.01	-.07	.9449
Socio-Economic Status (SES)	-.05	-.43	.6702
Infant Gender	.11	.88	.3849
Social Support (Family/Friend APGAR)	-.32	-2.14	.0369
Knowledge About Infants and Infant Care	.15	.93	.3551
Perception of Caretaking Competence	.17	1.17	.2458
Maternal-Fetal Attachment	.12	.88	.3844
Ego Identity	.08	.55	.5869

Table 28
 Regression With Total Interaction Score as Dependent
 Variable For Adolescent Group

Variable	Standardized Parameter	t	p
Race of Subject	-.04	-.29	.7746
Socio-Economic Status (SES)	-.05	-.42	.6740
Infant Gender	.20	1.61	.1129
Social Support (Family/Friend APGAR)	-.35	-2.36	.0218
Knowledge About Infants and Infant Care	.14	.86	.3910
Perception of Caretaking Competence	.20	1.46	.1493
Maternal-Fetal Attachment	.21	1.58	.1185
Ego Identity	-.01	-.09	.9310

social support, was a significant predictor of Total Maternal Score. Higher social support predicted lower maternal scores.

The second regression employed the Total Maternal-Infant Interaction Score as the dependent variable (see Table 28). This equation produced an R^2 of 19%. Again, only one independent variable, social support, was a significant predictor of the Total Interaction.

Adult Group. Again, distribution of variables was examined first. Appropriate proportions and normal (or near-normal) distributions were found for all variables.

Correlations among the independent variables demonstrated that no multicollinearity problem existed (see Table 29). As with the adolescent group, correlations among the variables were quite low. Only 5 correlations were above .30. SES (Hollingshead's Socio-Economic Status) was moderately correlated with Race ($r = -.43$), Knowledge About Infants and Infant Care ($r = .33$), and with Ego Identity ($r = .49$). The Social Support measure (Family/Friend APGAR) was moderately correlated with Ego Identity ($r = .36$). Finally, Knowledge About Infants and Infant Care was moderately correlated with Ego Identity ($r = .40$). All correlations demonstrate positive relationships between variables except for Race and SES. In this case, Race was coded as "1" for White and "2" for Black; the negative correlation suggests that SES is higher for Whites than for Blacks.

Table 29
Correlations Among Independent Variables
For Adult Group

	INFG	SES	SS	KNOW	PERC	ATT	EGO
RACE	.15	-.43	-.05	-.23	.17	.05	-.16
INFG		-.20	-.05	-.13	.01	-.15	.05
SES			.15	.33	-.13	-.06	.49
SS				.08	.06	.25	.36
KNOW					-.11	.00	.40
PERC						.18	.15
ATT							.12

Note: RACE = Race of Subject
 INFG = Infant Gender
 SES = Socio-economic Status
 SS = Social Support (Family/Friend APGAR)
 KNOW = Knowledge About Infants and Infant Care
 PERC = Perception of Caretaking Competence
 ATT = Maternal-Fetal Attachment
 EGO = Ego Identity

Next, the relationships between the independent variables and the two dependent measures were examined with correlations (see Table 30) and then with multiple regressions (see Tables 31 and 32). The correlations of the independent variables with the dependent measures were low. Only two correlations were above .30. SES was correlated .36 with each of the interaction measures. Higher SES was associated with more positive interaction scores. Although the correlations are low, again the correlations between the Social Support measure and the two dependent variables are negative ones, suggesting greater social support is related to less positive interactions. A similar relationship is seen between Perception of Caretaking Competence and the two dependent measures.

Two regression equations were estimated, one for each of the dependent variables. First, a regression was performed with Total Maternal Score as the dependent variable (see Table 31). The R^2 for this equation was 23%. Two of the independent variables were significant predictors of Total Maternal Score: SES ($p = .0364$) and Social Support ($p = .0380$). Higher Socio-Economic Status predicted more positive maternal interactions while lower levels of Social Support predicted more positive maternal interactions.

The second regression employed the Total Maternal-Infant Interaction Score as the dependent variable (see Table 32). This equation produced an R^2 of 21%. The same two independent variables were significant predictors of the Total Interaction, with the same direction of the effects.

Table 30
 Correlations of Independent Variables With Dependent
 Variables For Adult Group

	Total Maternal	Total Interaction
Race of Subject	-.20	-.19
Infant Gender	.05	.05
Socio-Economic Status (SES)	.36	.36
Social Support (Family/Friend APGAR)	-.10	-.11
Knowledge About Infants and Infant Care	.14	.09
Perception of Caretaking Competence	-.19	-.15
Maternal-Fetal Attachment	.05	.01
Ego Identity	.22	.22

Table 31
 Regression With Total Maternal Score as Dependent
 Variable For Adult Group

Variable	Standardized Parameter	t	p
Race of Subject	-.04	-.31	.7581
Socio-Economic Status (SES)	.31	2.13	.0364
Infant Gender	.15	1.36	.1792
Social Support (Family/Friend APGAR)	-.25	-1.12	.0380
Knowledge About Infants and Infant Care	.00	.04	.9673
Perception of Caretaking Competence	-.16	-1.31	.1959
Maternal-Fetal Attachment	.15	1.35	.1824
Ego Identity	.18	1.22	.2267

Table 32
 Regression With Total Interaction Score as Dependent
 Variable For Adult Group

Variable	Standardized Parameter	t	p
Race of Subject	-.05	-.43	.6676
Socio-Economic Status (SES)	.32	1.20	.0308
Infant Gender	.14	1.23	.2244
Social Support (Family/Friend APGAR)	-.24	-2.06	.0429
Knowledge About Infants and Infant Care	-.05	-.44	.6624
Perception of Caretaking Competence	-.11	-.91	.3653
Maternal-Fetal Attachment	.07	.66	.5081
Ego Identity	.19	1.29	.2022

Hypothesis Six

H₆: Ego identity will be positively correlated with maternal-infant interactions for the adolescent mothers.

This hypothesis was tested with Pearson's correlations between total ego identity score and total maternal score, and between total ego identity score and total interaction score. These two correlations for the adolescent mothers were extremely low: .12 and .04, respectively, reflecting no association.

CHAPTER V
DISCUSSION

The research described herein was designed to investigate the level of knowledge about infants and infant care, perceptions of caretaking competence, and maternal-fetal attachment possessed by 200 women expecting their first child. The level of early maternal-infant interactions was also examined among these women. The assessment of these variables in a "normal" primiparous population is of interest for descriptive purposes and to have a benchmark from which to judge "abnormal" populations of primiparous mothers. One-half of the sample presented herein was a "normal" population of middle-class women in their twenties while the other half was an "abnormal" population, adolescent women.

In addition to assessing the adolescent women in light of the "normal" population (the adult women in the sample), the research explored variables which predict early maternal-infant interactions for these two samples of women. Adolescent parenting has been linked to various risks. These include:

1. High rates of infant mortality and morbidity (Alan Guttmacher Institute, 1981; Clarke, 1986; Monkus & Bancalan, 1981; Zuckerman et al., 1984);

2. Social-economic risks to the family (Alan Guttmacher Institute, 1981; Chilman, 1980; Clarke, 1986; Height, 1986; Moore et al., 1979; Morrison et al., 1981); and
3. Developmental risks to the child (Belmont et al, 1981; Broman, 1981; Chilman, 1980; Height, 1986; Leventhal et al., 1984; Miller, 1984; Zuckerman et al., 1984).

Given these risks and given that maternal-infant interactions are related to later development of the child (Coates & Lewis, 1984; de Chateau, 1980; Martin, 1981), the delineation of factors related to early maternal-infant interactions in adolescents can make a significant contribution to the theoretical and applied areas of child development.

Summary of Findings

The demographic data and the descriptive data about the pregnancy present quite different pictures of the adolescent and young adult groups. The average young adult in the sample was 24 years old, white and married. She had at least some college education and was currently employed. She planned her pregnancy, obtained early prenatal care, selected her pediatrician prior to delivery, and was planning to breastfeed her baby. She perceived little difficulty with her pregnancy and claimed the pregnancy had caused little or no stress.

The average adolescent in the sample was a 17-year-old who was black and single. She had less than a high school education and

did not work. She did not plan her pregnancy, waited until her second trimester to begin prenatal care, and had not selected a pediatrician. She was planning to bottlefeed her baby. She viewed her pregnancy as being more difficult than did the average adult, but like the adult, she felt the pregnancy had caused little or no stress.

Research Question One

The first research question addressed the issue of identifying differences between the adolescent and young adult primiparous women in terms of their knowledge about infants and infant care, their perceptions of their own caretaking competence, and their maternal-fetal attachment. Three specific hypotheses were tested with analyses of covariance:

- H₁: When the effects of race and SES are controlled, adolescents will know less about infants and infant care than will mothers in their twenties.
- H₂: When the effects of race and SES are controlled, adolescents will have lower perceptions of their own caretaking competence than will mothers in their twenties.
- H₃: When the effects of race and SES are controlled, adolescents will be less attached to their fetuses than will mothers in their twenties.

Hypothesis One. Hypothesis #1 was accepted. The adults correctly answered 80% of the questions on the knowledge instrument compared to 68% for the adolescents. Race and SES both had a significant influence on the knowledge scores and when the knowledge scores were adjusted for their effects, the differences between the groups diminished greatly. The adjusted percentage correct for each

group became 76% (adults) and 72% (adolescents). Basically, the adults answered one more question correctly than the adolescents. While statistically significant, probably due to the large sample size, one must question the real importance of such a small difference.

From a theoretical perspective, the difference seen here between the adolescent and adult groups cannot be explained by their age difference because the age group difference almost completely disappears when race and SES are used as covariates. The difference in knowledge between the two groups is attributable primarily to race and SES.

The SES variable contains an educational component which is probably the primary factor. That is, mother's educational level is related to her knowledge about infants and infant care and since the adult mothers have a higher educational level than the adolescent mothers, they have higher knowledge scores. This explanation gains some credence from the correlation between mother's educational level and knowledge score which was .48 for the sample. Moreover, Kinard and Reinherz (1984), in a study of adult and adolescent mothers, noted that maternal education was a better predictor of a number of maternal-infant interaction measures than was maternal age.

While from a theoretical standpoint one can say that differences were not due to age group but to race, SES or educational level, one must also consider the real world. In the

real world, a pregnant adolescent is generally black, lower SES, and with a lower educational level than a primiparous young adult who is generally white, slightly higher SES and has a higher educational level. From the viewpoint of the real world, the differences between pregnant adolescents and adults are more fairly represented by the unadjusted data which demonstrated a larger gap between the knowledge of the two groups. This difference has been documented by other researchers as well. Roosa and Vaughan (1984) found adolescent mothers to have significantly less knowledge of child development than other mothers. Jarrett (1982) and Womble (1988) both reported that adolescent mothers' expectations regarding infant development were not accurate.

Hypothesis Two. The second hypothesis was rejected. No difference was seen in perception of caretaking competence between the two groups prior to or after controlling for race and SES. This finding supports the previous work of Roosa and Vaughan (1984) who also found equal levels of confidence in the parental role among adolescent and adult women.

Hypothesis Three. Hypothesis #3 was rejected. The adults had higher mean attachment scores than the adolescents. Race and SES were not significantly related to attachment and therefore did not alter the difference between the groups. However, the statistically significant difference must be viewed with caution. The large sample size probably accounted for the statistical significance of such a small difference. The groups had only a 4-point difference

on a scale that ranges from 24 to 120. The statistical model including race, SES and age group effects only accounted for 4% of the variance. In other words, there is a statistical difference but not a real difference.

Research Question Two

The second research question inquired about the differences between the adolescent and young adult primiparous mothers in terms of early maternal-infant interactions. One hypothesis was tested with analysis of covariance:

H₄: When the effects of race and SES are controlled, adolescents will display less positive interactions with their infants than will mothers in their twenties.

This hypothesis was accepted. There was a significant difference between the adolescent and adult subjects on the total maternal score. The adult mothers demonstrated more positive interactions with their infants than did the adolescent mothers. SES was significantly related to the interaction scores but only slightly altered the difference between the groups. Most of the difference between the two groups was attributable to differences in verbalization to the infant. The adults verbalized more to their infants, than did the adolescents.

These findings support previous research demonstrating older mothers interact more positively with their infants than adolescent mothers (Jones et al., 1980; Levine et al., 1985; Roosa et al., 1982). Culp et al. (1988), Levine et al., and Roosa et al. also noted that adolescent mothers verbalized less to their infants than

older mothers. However, Landy et al. (1983) failed to find any difference in verbalization between adolescent and adult mothers. In fact, Landy et al. failed to find many differences between these groups period. However, their small sample size (13 teens versus 12 older mothers) may have reduced their power to find any differences.

A possible explanation for the adolescents' lack of verbalization toward their infants might be their self-consciousness in the observation situation. However, one would expect this would equally affect the adult subjects.

Another explanation might be that the adolescents do not perceive their infants as capable of processing verbal information. Why should they talk to an infant who cannot hear much less comprehend in any fashion? This explanation is supported by Womble's (1988) data (the thesis done in collaboration with this dissertation). Womble found that adolescents do not expect their infant to be aware of their surroundings until over 6 months of age. According to the adolescents, an infant is not able to hear voices clearly until over 3 months of age. Our observations were conducted when the infant was 3-5 weeks of age, a time when the adolescents felt the infant could not hear voices clearly and weren't aware of their surroundings.

Research Question Three

The third research question considers the relative importance of several variables in the prediction of early maternal-infant

interactions among adolescent and young adult primiparous mothers.

Two hypotheses were tested:

H₅: Considering the eight variables of ego identity, infant gender, race of mother, SES of mother, knowledge about infants and infant care, perception of caretaking competence, maternal-fetal attachment, and social support, ego identity will be a more important predictor of maternal-infant interactions for adolescent mothers than other variables and will not be a predictor for mothers in their twenties.

H₆: Ego identity will be positively correlated with maternal-infant interactions for the adolescent mothers.

Hypothesis #5 was tested with separate multiple regressions for the adolescent and adult groups. Hypothesis #6 was tested with a correlation for the adolescent group.

Hypothesis Five. Hypothesis #5 was rejected. Although ego identity was not a significant predictor for the adult group, it was not a significant predictor for the adolescent group either.

In predicting maternal-infant interactions for the adult group, SES was one of the two significant factors for both the total maternal score and the total interaction score. Higher SES mothers interacted more positively with their infants. Given that SES is partly composed of mother's education, this finding could be a reflection of higher educational level being related to more positive interactions. Stengel (1984) also found SES positively associated with maternal-infant interactions. Additionally, Kinard and Reinherz (1984) and Levine et al. (1985) reported maternal education to be positively related to maternal-infant interactions.

Social support was the other significant factor for the adult mothers and the only significant factor for the adolescents. However, the relationship was a negative one; that is, mothers with greater social support demonstrated less positive interactions with their infants. This finding is opposed to that reported in previous literature (Allen et al., 1984; Kinard & Reinherz, 1984; Sawin & Parke, 1979). However, there is some current literature which has found no association between social support and maternal-infant interactions. Unger and Wandersman (1988) reported that family support was not related to adolescent mothers' responsiveness to their infants at 8 months. Likewise, Zarling, Hirsch, and Landry (1988) failed to find any significant correlations between levels of positive social support and maternal sensitivity at 6 months.

Perhaps mothers with less social support turn to the infant to fill that void, tending then to interact more positively with them. Another explanation might be that mothers with high social support receive "too much" support in that they may receive much unsolicited advice, even conflicting advice, from various sources. This abundance of advice and support may cause an increase in maternal anxiety regarding interactions with the infant. This increased anxiety may interfere with positive interactions with the infant.

Maybe women with high social support prenatally assume they will receive more help with the baby than they actually do. This

may lead to frustration which interferes with positive maternal-infant interactions.

For adolescents, high social support may mean that the maternal grandmother assumes the primary caretaker role with the infant. These adolescents might interact less positively with their infants because they are unaccustomed to the maternal role.

Another possibility is that the measure of social support used in this research is a general measure of support from family and friends and not specific to the pregnancy. Perhaps support specific to the pregnancy would be positively related to the interactions. Perhaps support from the father in particular may be positively related as reported by Unger and Wandersman (1988).

Hypothesis Six. Hypothesis #6 was rejected. The correlations between ego identity and both total maternal score and total interaction score were so low that one must conclude there is no relationship between ego identity and maternal-infant interaction for this sample of adolescents. This finding is not supported by Levine et al. (1985) who did find a positive association between ego development and maternal-infant interactions.

Conclusions

While the demographic picture of the pregnant adolescent and pregnant young adult is quite different, the two groups of women were similar in terms of perception of their own caretaking competence and maternal-fetal attachment. The differences in their

knowledge about infants and infant care can probably be attributed to differences in maternal educational level.

The most significant finding of this research is the difference in early maternal-infant interactions, particularly the difference in verbalization between the adolescent and young adult mothers. The adolescents are far less verbal with their infants than the young adult mothers at this early stage, possibly placing their infants at risk for developmental delay.

The interactions of young adult mothers with their infants was explained by social support and SES. Social support was the only explanatory factor for adolescents' interactions with their infants. The finding that higher levels of social support were related to less positive maternal-infant interactions for both groups was surprising. Possible explanations were offered but further research needs to explore this finding.

Limitations

This study was limited by several factors. First, the sample was one of convenience from a small geographical region. While the sample was a fairly accurate representation of the population, the findings may only be generalizable to this geographic area. Second, the findings were limited by the validity of the measures used. All of the pre-partum instruments were paper and pencil tools, basically requiring self-report on the part of the subject. The validity of the instruments depends on the tool itself and the accuracy of the subject's report. Finally, the maternal-infant observations were

assessed by a specific observational code and procedure. Only one sample of behavior was obtained from each subject. The accuracy of the results depend on how well this code reflects the actual level of mother-infant interactions and how representative the one sample of behavior is of each mother-infant pair's interactions.

Recommendations for Future Research

Given that the adolescents demonstrated less positive interactions with their infants than the young adult mothers, it would be worth pursuing this line of research. I would recommend that first followup work be done to see if this pattern of less verbal/less positive interaction continues into later maternal-infant interactions. I would also explore whether these early interaction patterns are predictive of later interaction patterns or predictive of infant development. The fact that the adolescents display less positive interactions is only of significance if related to development of the infant.

Additionally, I would explore other variables to determine what factors are related to early interactions in adolescent mothers. Adolescents' expectations of infant behavior/competencies, their relationship with the child's father, or their relationship with their own mother (maternal grandmother) might be variables of importance in their interactions with their infants.

Perhaps, the prenatal variables explored in this research do not affect early interactions but may have an impact on later interactions. I would followup with measures of later maternal-

infant interactions and explore the relationship of these prenatal variables with those interactions.

Finally, measures such as those obtained prenatally in this research may change drastically after the birth of the infant and these changes in values may be more important in predicting interactions than the prenatal values. It would be worth re-assessing these prenatal variables after birth and then examining their relationships to early interactions.

BIBLIOGRAPHY

- Adler, E. S., Bates, M., & Merdinger, J. M. (1985). Educational policies and programs for teenage parents and pregnant teenagers. Family Relations, 34, 183-187.
- Ainsworth, M. D. S. (1979). Infant-mother attachment. American Psychologist, 34, 932-937.
- Ainsworth, M. D. S., & Bell, S. M. (1972). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. Child Development, 41, 49-67.
- Alan Guttmacher Institute. (1981). Teenage pregnancy: The problem that hasn't gone away. New York: Author.
- Ali, Z., & Lowry, M. (1981). Early maternal-child contact: Effects on later behavior. Developmental Medicine and Child Neurology, 23, 337-345.
- Allen, D. A., Affleck, G., McGrade, B. J., & McQueeney, M. (1984). Effects of single-parent status on mothers and their high-risk infants. Infant Behavior and Development, 7, 347-359.
- Anderson, S. A., & Fleming, W. M. (1986). Late adolescents' home-leaving strategies: Predicting ego identity and college adjustment. Adolescence, 21, 454-459.
- Anisfield, E., & Lipper, E. (1983). Early contact, social support, and mother-infant bonding. Pediatrics, 72, 79-83.
- Arend, R., Gove, F. L., & Sroufe, L. A. (1979). Continuity of individual adaptation from infancy to kindergarten: A predictive study of ego-resiliency and curiosity in preschoolers. Child Development, 50, 950-959.
- Aten, M. J. (1988). Teenage mother-infant interactions: A challenge for early intervention. NCAST National News, 4, 1-25.
- Bakeman, R., & Brown, J. V. (1980). Early interaction: Consequences for social and mental development at three years. Child Development, 51, 437-447.

- Barnard, K. (1978). Nursing Child Assessment Feeding Scale.
Seattle: Nursing Child Assessment Satellite Training Project.
- Barnard, K. E. (1986). Measurements and meaning of parent-child interaction. In F. J. Morrison, C. Lord, & D. P. Keating [Eds.], Applied Developmental Psychology, Volume III. New York: Academic Press.
- Barnard, K. E., Bee, H. L., & Hammond, M. A. (1984). Developmental changes in maternal interactions with term and preterm infants. Infant Behavior and Development, 7, 101-113.
- Barnett, C. R., Leiderman, P. H., Grobstein, R., & Klaus, M. (1970). Neonatal separation: The maternal side of interactional deprivation. Pediatrics, 45, 197-205.
- Bauer, R., & Snyder, R. (1972). Ego identity and motivation: An empirical study of achievement and affiliation in Erikson's theory. Psychological Reports, 30, 951-955.
- Bell, S. M., & Ainsworth, M. D. S. (1972). Infant crying and maternal responsiveness. Child Development, 43, 1171-1190.
- Belmont, L., Cohen, P., Dryfoos, J., Stein, Z., & Zayac, S. (1981). Maternal age and children's intelligence. In K. G. Scott, T. Field, & E. G. Robertson [Eds.], Teenage parents and their offspring. New York: Grune & Stratton.
- Benedict, M. I., White, R. B., & Cornely, D. A. (1985). Maternal perinatal risk factors and child abuse. Child Abuse and Neglect, 9, 217-224.
- Bowlby, J. (1958). The nature of the child's tie to his mother. International Journal of Psychoanalysis, 39, 350-373.
- Bowlby, J. (1969). Attachment and loss: Volume I Attachment. New York: Basic Books.
- Brodish, M. S., McBride, B., & Bays, S. (1987). Which mothers of newborns are most in need of home health follow-up. Home Health Care Nurse, 5, 16-25.
- Brodish, M. S., & Miller, C. (April, 1983). Self-anchoring self concept of pregnant adolescents. Paper presented at the Fourth Annual Research Symposium, School of Nursing, University of North Carolina at Greensboro.

- Broman, S. H. (1981). Longterm development of children born to teenagers. In K. G. Scott, T. Field, & E. G. Robertson [Eds.], Teenage parents and their offspring. New York: Grune & Stratton.
- Brozan, N. (March 2, 1985). Complex problems of teen-age pregnancy. The New York Times: Style.
- Burt, M. R., & Sonenstein, F. L. (1985). Planning programs for pregnant teenagers. Public Welfare, 43, 28-36.
- Canada, M. J. (1986). Adolescent pregnancy: Networking and the interdisciplinary approach. Journal of Community Health, 11, 58-62.
- Cannon-Bonventre, K., & Kahn, J. (1979). Interviews with adolescent parents: Looking at their needs. Children Today, 8, 17-19.
- Carter-Jessop, L. (1981). Promoting maternal attachment through prenatal intervention. MCN: The American Journal of Maternal Child Nursing, 6, 107-112.
- Chilman, C. S. (1980). Social and psychological research concerning adolescent child-bearing: 1970:1980. Journal of Marriage and the Family, 42, 793-804.
- Clarke, M. I. (1986). Black teenage pregnancy: An obstetrician's viewpoint. Journal of Community Health, 11, 23-30.
- Coates, D. L., & Lewis, M. (1984). Early mother-infant interaction and infant cognitive status as predictors of school performance and cognitive behavior in six-year-olds. Child Development, 55, 1219-1230.
- Condry, S. M., Condry, J. C., Jr., & Pogatshnik, L. W. (1983). Sex differences: A study of the ear of the beholder. Sex Roles, 9, 697-704.
- Copeland, D. Z. (1979). Unwed adolescent primigravidas identify subject matter for prenatal classes. Journal of Obstetric, Gynecologic, and Neonatal (JOGN) Nursing, 8, 248-253.
- Cranley, M. S. (1979). The impact of perceived stress and social support on maternal-fetal attachment in the third trimester. Unpublished doctoral dissertation, University of Wisconsin-Madison.

- Culp, R. E., Appelbaum, M. I., Osofsky, J. D., & Levy, J. A. (1988). Adolescent and older mothers: Comparison between prenatal maternal variables and newborn interaction measures. Infant Behavior and Development, 11, 353-362.
- de Chateau, P. (1976). The influences of early contact on maternal and infant behavior in primiparae. Birth and Family Journal, 3, 149-155.
- de Chateau, P. (1980). Early post-partum contact and later attitudes. International Journal of Behavior Development, 3, 273-286.
- Douthat, S. (March 1, 1987). Poverty, teen births factors in South's high infant deaths. Greensboro News & Record, A4.
- Edelman, M. W., & Pittman, K. J. (1986). Adolescent pregnancy: Black and white. Journal of Community Health, 11, 63-69.
- Erikson, E. H. (1963a). Childhood and society. New York: W. W. Norton & Co., Inc.
- Erikson, E. H. (1963b). Youth: Fidelity and diversity. In E. H. Erikson (Ed.), The Challenge of Youth (pp. 1-28). New York: Basic Books.
- Erikson, E. H. (1968). Identity: Youth and crisis. New York: Norton.
- Fagot, B. I. (1974). Sex differences in toddlers' behavior and parental reaction. Developmental Psychology, 10, 554-558.
- Fagot, B. I. (1981). Male and female teachers: Do they treat boys and girls differently. Sex Roles, 7, 263-271.
- Farran, D. C., & Ramey, C. T. (1980). Social class differences in dyadic involvement during infancy. Child Development, 51, 254-257.
- Fraiberg, S. (1974). Blind infants and their mothers: An examination of the sign system. In M. Lewis and L. A. Rosenblum, The effect of the infant on its caregiver (pp. 215-232). New York: John Wiley & Sons.
- Frodi, A. M., Lamb, M. E., Leavitt, A. & Donovan, W. L. (1978). Fathers' and mothers' responses to infant smiles and cries. Infant Behavior and Development, 1, 187-198.

- Gelles, R. J. (1980). Violence in the family: A review of research in the seventies. Journal of Marriage and the Family, 42, 873-885.
- Gil, D. G. (1970). Violence against children: Physical child abuse in the United States. Cambridge, MA: Harvard University Press.
- Goldberg, S. (1983). Parent-infant bonding: Another look. Child Development, 54, 1355-1382.
- Good, M. J. D., Smilkstein, G., Good, B. J., Shaffer, T., & Arons, T. (1979). The Family APGAR index: A study of construct validity. The Journal of Family Practice, 8, 577-582.
- Goodwin, N. J. (1986). Editorial: Unplanned adolescent pregnancy: Challenge for the 1980's. Journal of Community Health, 11, 6-9.
- Gottfried, A. W. (1985). Measures of socioeconomic status in child development research: Data and recommendations. Merrill-Palmer Quarterly, 31, 85-92.
- Greenberg, M., & Morris, N. (1974). Engrossment: The newborn's impact upon the father. American Journal of Orthopsychiatry, 44, 520-531.
- Harris, S. (1986). Services and educational approaches to adolescent pregnancy. Journal of Community Health, 11, 31-34.
- Height, D. I. (1986). Changing the pattern of children having children. Journal of Community Health, 11, 41-44.
- Heller, J. (November 16, 1986). Teenage pregnancy: Crisis in state, nation. Greensboro News & Record, D1, D10.
- Hilliard, R., Gjerde, C., & Parker, L. (1986). Validity of two psychological screening measures in family practice: Personal Inventory and Family APGAR. The Journal of Family Practice, 23, 345-349.
- Hollingshead, A. B. (1975). Four-factor index of social status. Unpublished manuscript, Yale University, Department of Sociology, New Haven.
- Ireson, C. J. (1984). Adolescent pregnancy and sex roles. Sex Roles, 11, 189-201.

- Jacklin, C. N., Snow, M. E., & Maccoby, E. E. (1981). Tactile sensitivity and muscle strength in newborn boys and girls. Infant Behavior and Development, 4, 261-268.
- Jarrett, G. E. (1982). Childrearing patterns of young mothers: Expectations, knowledge, and practices. MCN, the American Journal of Maternal Child Nursing, 7, 119-124.
- Johnson, R. L. (1986). Preventing adolescent pregnancy: Meeting the comprehensive range of needs. Journal of Community Health, 11, 35-40.
- Jones, F. A., Green, V., & Krauss, D. R. (1980). Maternal responsiveness of primiparous mothers during the postpartum period: Age differences. Pediatrics, 65, 579-584.
- Kennell, J. H., Jerauld, R., Wolfe, H., Chester, D., Kreger, N., McAlpine, W., Steffa, M., & Klaus, M. H. (1974). Maternal behavior one year after early and extended post partum contact. Developmental Medicine and Child Neurology, 16, 172-179.
- Kennell, J. H., & Klaus, M. H. (1984). Mother-infant bonding: Weighing the evidence. Developmental Review, 4, 275-282.
- Kinard, E. M., & Reinherz, H. (1984). Behavioral and emotional functioning in children of adolescent mothers. American Journal of Orthopsychiatry, 54, 578-594.
- Klaus, M. H., Jerauld, R., Kregers, C., McAlpine, W., Steffa, M., & Kennell, J. H. (1972). Maternal attachment: Importance of the first postpartum days. New England Journal of Medicine, 286, 460-463.
- Klaus, M. H., & Kennell, J. H. (1970). Mothers separated from their newborn infants. Pediatrics Clinics of North America, 17, 1015-1035.
- Klaus, M. H., & Kennell, J. H. (1976). Maternal-infant bonding. St. Louis: C. V. Mosby Co.
- Klaus, M. H., & Kennell, J. H. (1982). Parent-infant bonding. St. Louis: C. V. Mosby Co.
- Klein, M. & Stern, L. (1971). Low birthweight and the battered child syndrome. American Journal of Diseases of Children, 122, 15.
- Ladd, S. (November 20, 1988). Teens . . . and moms. Greensboro News & Record, G1.

- Lamb, M. E. (1981). The development of father-infant relationships. In M. E. Lamb (Ed.), The role of the father in child development (pp. 459-488). New York: John Wiley & Sons.
- Landy, S., Clark, C., Schubert, J., & Jillings, C. (1983). Mother-infant interactions of teen-age mothers as measured at six months in a natural setting. Journal of Psychology, 115, 245-258.
- Leary, W. E. (December 10, 1986). Report says contraceptive use could reverse teen pregnancy. Greensboro News & Record, A1, A8.
- Lenocker, J. M., & Dougherty, M. C. (1976). Adolescent mothers' social and health-related interests: Report of a project for rural, black mothers. Journal of Obstetric, Gynecologic, and Neonatal (JOGN) Nursing, 5, 9-15.
- Levenson, P., Hale, J., Hollier, M., & Tirado, C. (1978). Serving teenage mothers and their high-risk infants. Children Today, 7, 11-15, 36.
- Levenson, P., Hale, J., Tirado, C., & Hollier, M. (1979). A comprehensive interactional model for health education delivery to teenage mothers. Journal of School Health, 49, 393-396.
- Leventhal, J. M., Egarter, S. A., & Murphy, J. M. (1984). Reassessment of the relationships of perinatal risk factors and child abuse. American Journal of Diseases of Children, 138, 1034-1039.
- Levine, L., Coll, C. T. G., & Oh, W. (1985). Determinants of mother-infant interaction in adolescent mothers. Pediatrics, 75, 23-29.
- Lewis, G. (November 16, 1986). Groups plan to keep youths out of trouble. Greensboro News & Record, D1, D10.
- Lewis, M. (1969). Infant's responses to facial stimuli during the first year of life. Developmental Psychology, 1, 75-86.
- Lieberman, A. F. (1977). Preschoolers' competence with a peer: Relations with attachment and peer experience. Child Development, 48, 1277-1287.
- Lindsay, J. (November, 1985). Infants and toddlers of school-age parents: A special culture with special needs. Paper presented at the Annual Conference of the National Association for the Education of Young Children, New Orleans.

- MacFarlane, A. (1975). Olfaction in the development of social preferences in the human neonate. In Parent-infant interaction: CIBA Foundation Symposium 33 (pp. 103-117). Amsterdam: Elsevier.
- Martin, J. A. (1981). A longitudinal study of the consequences of early mother-infant interactions: A microanalytic approach. Monographs of the Society for Research in Child Development, 46, 1-58.
- Matin, K. (1986). Adolescent pregnancy: The perspective of the Sisterhood of Black Single Mothers. Journal of Community Health, 11, 49-53.
- Matas, L., Arend, R. A., & Sroufe, L. A. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. Child Development, 49, 547-556.
- Mercer, R. (1976). Becoming a mother at 16. MCN, The American Journal of Maternal Child Nursing, 1, 45-52.
- Mercer, R. T. (1980). Teenage motherhood: The first year. Part I. The teenage mother's views and responses. Part II. How the infants fared. Journal of Obstetric, Gynecologic, and Neonatal (JOGN) Nursing, 9, 16-27.
- Mercer, R. T. (1981). A theoretical framework for studying factors that impact on the maternal role. Nursing Research, 30, 73-77.
- Miller, S. H. (1984). The relationship between adolescent childbearing and child maltreatment. Child Welfare, 63, 553-557.
- Monkus, E., & Bancalan, E. (1981). Neonatal outcome. In K. G. Scott, T. Field, & E. G. Robertson [Eds.], Teenage parents and their offspring. New York: Grune & Stratton.
- Moore, K. A., Hofferth, S. L., & Wertheimer, R. (1979). Teenage motherhood: Its social and economic costs. Children Today, 8, 12-16.
- Moran, A. F. (1986). The politics of adolescent pregnancy: A view of New York State. Journal of Community Health, 11, 19-22.

- Morrison, P. A., & Haggstrom, G. W. (1979). Consequences of parenthood in later adolescence: Findings from the national longitudinal study of high school seniors (Report No. 1714). Santa Monica, CA.: Rand Corporation.
- Morrison, P. A., Samulon, M. K., & Zellman, G. L. (July, 1981). Teenage parenthood: A review of risks and consequences (Report No. 1714). Santa Monica, CA.: Rand Corporation.
- Mozingo, J. N. (1981). Influence of early maternal-infant contact on attachment behaviors of teenage mothers. Unpublished doctoral dissertation, Walden University, Naples, FL (University Microfilms No. LD-00491).
- Myers, B. J. (1984a). Mother-infant bonding: Rejoinder to Kennell and Klaus. Developmental Review, 4, 282-288.
- Myers, B. J. (1984b). Mother-infant bonding: The status of this critical-period hypothesis. Developmental Review, 4, 240-272.
- Myers-Walls, J. A. (1977). Transition to parenthood: The role of anticipatory socialization. Unpublished master's thesis, Purdue University.
- Myers-Walls, J. A. (1979). A role theory approach to the ease of transition into parenthood. Unpublished doctoral dissertation, Purdue University.
- New York Times News Service. (November 7, 1985). Teen births called big problem: Poll shows parents favor sex education. Greensboro News & Record, A7.
- Pitt, E. (1986). Targeting the adolescent male. Journal of Community Health, 11, 45-48.
- Pittman, K. (1985). Preventing children having children. Washington, D. C.: Children's Defense Fund.
- Protinsky, H., Sporakowski, M., & Atkins, P. (1982). Identity formation: Pregnant and nonpregnant adolescents. Adolescence, 17, 73-80.
- Rasmussen, J. E. (1964). Relationship of ego identity to psychosocial effectiveness. Psychological Reports, 15, 815-825.
- Reiser, S. L. (1981). A tool to facilitate mother-infant attachment. JOGN Nursing, 10, 294-297.

- Robson, K. (1967). The role of eye-to-eye contact in maternal-infant attachment. Journal of Child Psychology and Psychiatry, 8, 13-25.
- Roosa, M. W. (1984). Maternal age, social class, and the obstetric performance of teenagers. Journal of Youth and Adolescence, 13, 365-374.
- Roosa, M. W., Fitzgerald, H. E., & Carson, N. A. (1982). Teenage and older mothers and their infants: A descriptive comparison. Adolescence, 17, 1-17.
- Roosa, M. W., & Vaughan, L. (1984). A comparison of teenage and older mothers with preschool age children. Family Relations, 33, 259-265.
- Rubin, R. (1975). Maternal tasks in pregnancy. Maternal-Child Nursing Journal, 4, 143-153.
- Ruff, C. C. (1987). How well do adolescents mother? The Journal of Maternal Child Nursing, 12, 249-253.
- Sack, W. H., Mason, R., & Higgins, J. E. (1985). The single-parent family and abusive child punishment. American Journal of Orthopsychiatry, 55, 252-259.
- Sawin, D. B. (1981). Fathers' interactions with infants. In B. Weissbourd & J. S. Musick (Eds.), Infants: Their social environments (pp. 147-167). Washington, D. C.: National Association for the Education of Young Children.
- Sawin, D. B., & Parke, R. D. (1979). Fathers' affectionate stimulation and caregiving behaviors with newborn infants. The Family Coordinator, 28, 509-513.
- Schechter, S. (1986). The New York City School system's family life education program. Journal of Community Health, 11, 54-57.
- Schmidt, A. V. (1985). Teenage mothers: School-based child care puts diploma in reach. Children Today, 14, 16-18.
- Schneider, S. (1982). Helping adolescents deal with pregnancy: A psychiatric approach. Adolescence, 17, 285-292.
- Smilkstein, G. (1978). The Family APGAR: A proposal for a family test and its use by physicians. The Journal of Family Practice, 6, 1231-1239.

- Smilkstein, G., Ashworth, C., & Montano, D. (1982). Validity and reliability of the Family APGAR as a test of family function. The Journal of Family Practice, 15, 303-311.
- Smith, P. B., Mumford, D. M., & Hamner, E. (1979). Child-rearing attitudes of single teenage mothers. American Journal of Nursing, 79, 2115-2116.
- Sroufe, L. A. (1979). The coherence of individual development: Early care, attachment, and subsequent developmental issues. American Psychologist, 34, 834-841.
- Stainton, M. C. (1985). The fetus: A growing member of the family. Family Relations, 34, 321-326.
- Statistical Abstracts of the United States, 106th Edition. (1986). U.S. Department of Commerce, Bureau of the Census.
- Stengel, T. J. (1984). Social-class and ethnic-group membership as predictors of mother-infant interaction when infant language and cognitive development and mother verbal intelligence are considered. Unpublished master's thesis, University of North Carolina at Greensboro.
- Teltsch, K. (July 14, 1985). Concern growing in U.S. over teenage pregnancies. Greensboro News & Record (New York Times News Service), F16.
- Thomas, R. M. (1979). Comparing theories of child development. Belmont, CA.: Wadsworth Publishing Co., Inc.
- Tzuriel, D. & Klein, M. M. (1977). Ego identity: Effects of ethnocentrism, ethnic identification, and cognitive complexity in Israeli, Oriental, and Western ethnic groups. Psychological Reports, 40, 1099-1110.
- Unger, D. G., & Wandersman, L. P. (1988). The relation of family and partner support to the adjustment of adolescent mothers. Child Development, 59, 1056-1060.
- Waters, E., Wippman, J., & Sroufe, L. A. (1979). Attachment, positive affect, and competence in the peer group: Two studies in construct validation. Child Development, 50, 821-829.
- Weaver, R. H., & Cranley, M. S. (1983). An exploration of paternal-fetal attachment behavior. Nursing Research, 32, 68-72.

- Willemsen, E. (1979). Understanding infancy. San Francisco: W. H. Freeman & Co.
- Womble, C. D. (1988). Developmental expectations of infant competencies in adolescent primiparas. Unpublished master's thesis, University of North Carolina at Greensboro, NC.
- Zarling, C. L., Hirsch, B. J., & Landry, S. (1988). Maternal social networks and mother-infant interactions in full-term and very low birthweight, preterm infants. Child Development, 59, 178-185.
- Zuckerman, B. S., Walker, D. K., Frank, D. A., Chase, C., & Hamburg, B. (1984). Adolescent pregnancy: Biobehavioral determinants of outcome. Journal of Pediatrics, 105, 857-863.

APPENDIX A
INFORMED CONSENT LETTER AND FORM

This letter is to introduce myself, Judy Penny, and to invite you to participate in a study of first-time mothers and their babies.

I am a student at UNC-Greensboro working toward a Ph.D. degree in child development and family relations. Through my experience as a childbirth educator and a mother, I have been interested in mothers and their babies for a long time.

This study is being conducted with Dr. Jim Watson, a professor in child development at UNCG, and Carol Womble, a graduate student in the School of Nursing. It has been approved by a Human Subjects Review Committee at UNCG.

If you choose to participate in this study, I (or a trained research assistant) will visit you at home, school, or at the clinic for about an hour. During this time, we will ask you some questions about your family and your pregnancy. We will also ask you to complete some short checklists about babies and being a parent. There will be one questionnaire that asks about your personal feelings. After your baby is born, a trained research assistant will visit you and your baby at home to observe how newborns interact with their mothers. I would also like your permission to review your hospital chart to obtain information about your labor and the health of your baby.

Each woman in the study will be given an individual code number. After all the information is collected the names will be destroyed so there will be no way to identify any person.

If you decide to participate in the study, please complete the attached consent form. If you are under 18 and not married, we must also have your parent's permission for you to participate in this study. You will be contacted by telephone to arrange the first visit. You are, of course, always free to change your mind and leave the study at any time. In appreciation for your participation, a small gift packet will be given to you after each visit.

If you need to contact me at any time, you may do so through the Child Development/Family Relations Department at UNCG (334-5307) or at my home (379-8749).

Thank you for your time,

Judith M. Penny

James Allen Watson

Carol Womble

CONSENT TO PARTICIPATE

I, _____, agree to participate in the study about first-time mothers and their babies.

I have read the letter of explanation and talked with Judy Penny or Carol Womble. I understand Judy Penny or a trained research assistant will visit me at home or at the clinic while I am pregnant and ask me questions about my pregnancy, my family, my personal feelings, and about babies and being a parent. A trained research assistant will also visit me at home after my baby is born to ask questions about my labor and delivery and to observe how my baby interacts with me.

I give permission for Judy Penny or Carol Womble to review my hospital chart and/or my baby's birth certificate for information about my labor and my baby's health. No information other than information about my labor and my baby's health will be obtained.

I realize all information will be confidential and that after all the information is collected, only a code number will be used to identify me -- my name will be removed from the records. I also realize that after one year, all the questionnaires and observation forms will be destroyed.

I will receive two gift packets for my participation in this study. I know I can drop out of the study whenever I want to. If I drop out, I can still receive the gift packets.

(Date)

(Signature of Participant)

Address: _____

Due Date: _____

Phone: _____

(home)

(work)

Check here if you want a summary of the results of this study: _____

Check one of the following statements:

- _____ 1. I am 18 years of age or older
 _____ 2. I am under 18 years of age and I am married
 _____ 3. I am under 18 years of age and I am not married

If you checked #3, you must sign the statement on the back of this form.

I am under 18 and not married. I understand my parent(s) must be contacted to obtain their permission for me to participate in this study.

(Date)

(Signature of Participant)

I give my permission for my daughter, _____,
to participate in this study as described on the front of this
sheet.

(Date)

(Signature of Parent)

APPENDIX B

PRE-PARTUM INSTRUMENT: FAMILY/FRIEND APGAR

PLEASE NOTE:

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

These consist of pages:

144-145, Appendix B

147-149, Appendix C

151-153, Appendix D

155-156, Appendix E

158-168, Appendix F

170-172, Appendix G

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APPENDIX C
PRE-PARTUM INSTRUMENT: KNOWLEDGE ABOUT INFANTS
AND INFANT CARE

APPENDIX D
PRE-PARTUM INSTRUMENT: PERCEPTION OF
CARETAKING COMPETENCE

APPENDIX E

PRE-PARTUM INSTRUMENT: MATERNAL-FETAL ATTACHMENT

APPENDIX F

PRE-PARTUM INSTRUMENT: EGO IDENTITY

APPENDIX G
MATERNAL-~~INFANT~~ OBSERVATION INSTRUMENTS

APPENDIX H
INSTRUCTIONS FOR INTERVIEWERS

Instructions for Interviewers

1. Contact subjects by phone and arrange an interview date as soon as possible after receiving the subject's name (within 2-3 weeks):
 - a. Identify yourself by name
 - b. Mention that you are a research assistant working with Judy Penny and Carol Womble
 - c. Remind them that they volunteered to be in the study about first-time mothers and their babies
 - d. Remind them that the interview will take about 1 hour
 - e. Arrange the interview time
 - f. Select the interview place -- some subjects may prefer to meet at home; others may prefer to meet elsewhere -- it just needs to be a place where they will have some privacy and quiet
 - g. Obtain directions to the meeting place
 - h. Give them your name and number to call in case of need to cancel.

Sample Phone Call:

Hello, (subject's name) , my name is Susan Peoples.

I'm a research assistant with Judy Penny and Carol Womble. I believe you volunteered to be in a study at UNCG about first-time mothers and their babies. I'm calling to arrange a time to get together with you for the interview. The interview will take approximately one hour. When would be a good time for you?
 . . . (arrange time) Where would you prefer to meet?
 . . . (arrange place and get directions to home)

So, I will plan to meet you at (chosen location) on
 (day of week) , (calendar date) at (time)
 o'clock. Let me give you my name and number in case you need to change this time for any reason. My name is Susan Peoples and my phone number is 852-1333. Thank you very much. Goodbye.

2. Call each subject the night before the scheduled interview to remind them about the time/place.
3. Before going for the interview, gather your interview packet and gift packet. Write in the subject's name on the reminder card.
4. Arrive for interview on time. Introduce yourself by name and affiliation with the UNCG study. Find a quiet and comfortable location for the interview and begin. Make sure no one else is present during the interview.

Sample Arrival:

Hello, I'm Susan Peoples. I'm working with the UNCG study about first-time mothers and their babies. I'm here for the interview (enter house) This will take about an hour -- where would you feel most comfortable? Will it be quiet there? . . . (get situated and make sure subject is comfortable) I'm going to ask you some questions and then sometimes I'm going to ask you to fill out some short questionnaires. To begin, what is your birthdate? . . . (continue with interview schedule) . . .

5. As you hand the Family/Friend APGAR to the subject, say something like the following:

This is the first questionnaire for you to fill out. Would you like to fill it out by yourself or would you prefer that we read it over together?

(This is to allow subjects who have difficulty reading to ask for assistance in a non-threatening way.)

- a. If the subject prefers to fill out the questionnaire by herself, you may be checking over the next questions on the interview schedule while she fills out the questionnaire.
 - b. If the subject prefers to do it together, hand her the questionnaire and read over the instructions, pointing to the appropriate places for responses -- be sure she understands how to respond. Then you read the questions from your copy of the questionnaire and let the subject respond without you watching how she responds to each item.
6. Proceed with the interview in the exact order on the Interview Schedule; administer all questionnaires in the order in which they appear in the packet.
- a. The Family/Friend APGAR is always first; it is on white paper/front & back.
 - b. The next three instruments are printed on colored paper. Each instrument will be marked with an 'A', a 'B', or a 'C'. Give these instruments at the designated times during the interview.
 - c. The last instrument is always the Adolescent Ego Identity Scale. It is printed on white paper in booklet form.
7. After the subject has completed each questionnaire (instrument), quickly look over the questionnaire to make sure all items have been marked. If any items have been ignored, ask the subject to complete them:

Here's one you must have overlooked. Could you please answer this one?

8. When the interview is complete, thank the subject for her time. Give her one of the reminder cards for the hospital and explain that she should carry this card to the hospital and have someone call us after her baby is born. Also give her the gift packet.

Sample Departure

Thank you very much for your time today. You have been a great help for our study. . . . (hand her card) . . . Please take this card to the hospital with you — you could put it in your suitcase or your labor bag. Have your coach or one of the nurses call us when your baby is born. . . . (hand her gift packet) . . . This gift packet is our way of saying thanks for your help so far. After your baby is born, we'll call you and arrange the visit with you and your baby. Thanks again.
Goodbye.

HOME INTERVIEW

SUBJECT'S NAME _____ DUE DATE _____

ADDRESS _____

HOME PHONE _____ WORK PHONE _____

MEETING TIME & PLACE: _____

DIRECTIONS:

RECORD OF PHONE CALLS

<u>Date</u>	<u>Time</u>	<u>Response</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

RECORD OF VISITS

<u>Date</u>	<u>Began</u>	<u>Finished</u>	<u>General Reaction/Problem</u>
_____	_____	_____	_____
_____	_____	_____	_____

Read instruments to subject? _____ 1 Yes _____ 2 No

All instruments complete? _____ 1 Yes _____ 2 No (give explanation on back)

RACE: _____ 1 White _____ 2 Black

Interviewer's Signature _____

APPENDIX I
INSTRUCTIONS FOR OBSERVERS

Instructions for Observers

1. Contact subjects by phone and arrange an observation time (the observation must take place when infant is 3-4 weeks old):
 - a. Identify yourself by name
 - b. Mention that you are a research assistant working with Judy Penny and Carol Womble and that you will be doing the observation of the baby
 - c. Remind them that this is part of the study about first-time mothers and their babies
 - d. Tell them that the observation will take about 1/2 hour
 - e. Mention that you need to observe the baby during feeding and ask them to suggest a good time
 - f. Ask if they are bottlefeeding or breastfeeding
 - g. Arrange the observation time
 - h. Confirm the address and obtain directions to the home
 - i. Give them your name and number to call in case of need to cancel.

Sample Phone Call:

Hello, (subject's name) , my name is Susan Peoples.

I'm a research assistant with Judy Penny and Carol Womble. I believe you volunteered to be in a study at UNCG about first-time mothers and their babies. I'm calling to arrange a time to get together with you to observe your baby feeding. This observation will take approximately one-half hour. I need to observe your baby while he/she is feeding. When would be a good time to come? . . . (arrange time) . . . (confirm address and get directions to home) . . . So, I will plan to come to your house on (day of week) , (calendar date) at (time) o'clock. Let me give you my name and number in case you need to change this time for any reason. My name is Susan Peoples and my phone number is 852-1333. Thank you very much. Goodbye.

2. Call each subject the night before or the morning of the scheduled observation to remind them about the time and ask them to try and postpone feeding until you get there if at all possible.
3. Before going for the observation, gather your observation materials and gift packet (appropriate packet for breast or bottle).
4. Arrive for observation on time. Introduce yourself by name and affiliation with the UNCG study. Find a quiet and comfortable location for the observation.

Sample Arrival:

Hello, I'm Susan Peoples. I'm working with the UNCG study about first-time mothers and their babies. I'm here to observe your baby feeding (enter house) This will take about a half-hour -- where would you feel most comfortable? (get situated and make sure subject is comfortable)

5. Assess when the infant will be ready to feed. Based on this assessment, make the decision to ask the questions about labor/delivery first or proceed with the Feeding Scale.
6. When asking the labor/delivery questions, record as much of the mother's response as possible, particularly major statements and all adjectives used to describe the labor/delivery of the baby.
7. When actually conducting the Feeding Scale observation, become "part of the woodwork" by not talking to the mother unless absolutely necessary. Mothers can be told initially that you would like to quietly watch her feed her infant for about 15 minutes, but would be happy to talk to her and answer any questions after the observation is finished. Ask the mother to let you know when the feeding is over.
8. When both the Feeding Scale and labor/delivery questions are completed, feel free to conduct yourself as you would on a home visit -- you may answer questions the mother may have about her baby, feeding, parenting, etc. You may provide the mother with referral sources that she can contact BUT you may not contact any referral source and give them the mother's name.

9. When you are finished, thank the mother for her participation and give her the gift packet. Also remind her about the drawing for prizes this summer and about receiving a report of the results.

Sample Departure

Thank you very much for your time today. You have been a great help for our study (hand her gift packet) . . . This packet is our way of saying thanks for your help. The drawing for prizes will be held this summer and you will be notified if you won a prize. Also, if you checked on your consent form that you wanted a copy of the results, you will receive a report around the end of the summer. Thanks again. Goodbye.

HOME OBSERVATION

SUBJECT'S NAME _____ BABY BORN _____

ADDRESS _____

HOME PHONE _____

OBSERVATION DATE & TIME: _____

DIRECTIONS:

RECORD OF PHONE CALLS

<u>Date</u>	<u>Time</u>	<u>Response</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

RECORD OF VISITS

<u>Date</u>	<u>Began</u>	<u>Finished</u>	<u>General Reaction/Problem</u>
_____	_____	_____	_____
_____	_____	_____	_____

Interviewer's Signature _____

APPENDIX J
RECRUITMENT FLYERS

SIGN UP & WIN ! ! ! !

3 WEEKS OF FREE DIAPER SERVICE
(Baby Diaper Service)

BABY PORTRAIT PACKAGE
(1 8x10, 1 5x7, 4 wallets)
(Kinderfoto)

\$25 GIFT CERTIFICATE
(K-Mart)

\$10 GIFT CERTIFICATE
(A to Z Children's Fashions)

\$5 GIFT CERTIFICATE
(B Dolphin Ltd. Books for Kids)

\$5 GIFT CERTIFICATES (2)
(K-Mart)

**BABY BLANKET, INFANT GOWN,
RATTLE & SILVER SPOON**
(Belk)

DIGITAL THERMOMETER
(Mead Johnson)

CASE OF ENFAMIL WITH IRON POWDER
(Mead Johnson)

**CASE OF ENFAMIL WITH IRON
CONCENTRATED LIQUID**
(Mead Johnson)

**CASE OF SIMILAC WITH IRON
CONCENTRATED LIQUID**
(Ross Labs)

CASE OF PAMPERS
(Mother-Infant Research Project)

**BABY TOYSET & 10% DISCOUNT
ON ANY ONE ITEM FOR BABY**
(Animal Quacker Ltd.)

BABY BOOKS
(News & Novels and Wills)

PARENTING BOOKS
(News & Novels)

BABY GROWTH CHART
(Mead Johnson)

TO BE ENTERED IN THE DRAWING TO WIN ONE OF THE ABOVE PRIZES, YOU MUST:

1. Be Under 30 Years of Age;
2. Be Expecting Your First Child;
3. Participate in a Mother-Infant Research Project at UNCG

FOR MORE INFORMATION, COMPLETE THE ATTACHED CARD AND PLACE IN THE BOX
IN YOUR DOCTOR'S OFFICE WAITING ROOM.

SIGN UP & WIN ! ! ! !

APPENDIX K
HOME INTERVIEW SCHEDULE

(Introduce Yourself)**BIRTHDATE:** _____**AGE:** _____**MARITAL STATUS:** (Check one)

- 1 Single
 2 Married (how long? _____)
 3 Separated (how long? _____)
 4 Divorced (how long? _____)
 5 Widowed (how long? _____)

EDUCATION: (Circle the highest grade completed)

6 7 8 9 10 11 12 13 14 15 16 16+

If more than 16, specify degree(s): _____

PRESENTLY WORK OUTSIDE THE HOME? (check one)

- 1 Yes
 2 No

If yes, work full-time or part-time? (check one)

- 1 Full-time
 2 Part-time

USUAL OCCUPATION? _____**[Administer FAMILY/FRIEND APGAR]**

HOW MANY TIMES PREGNANT? _____

IS THIS FIRST CHILD? (check one)

_____ 1 Yes

_____ 2 No If no, discontinue interview.

THIS PREGNANCY PLANNED? (check one)

_____ 1 Yes

_____ 2 No

DUE DATE FOR THIS PREGNANCY: _____

WHAT HOSPITAL ARE YOU PLANNING TO USE?

_____ 1 Moses Cone

_____ 2 Wesley Long

_____ 3 Forsyth

_____ 4 High Point Memorial

_____ 5 Other (specify _____)

WHO IS YOUR OBSTETRICIAN? _____

WHO IS YOUR PEDIATRICIAN? _____

WHEN DID YOU FIRST VISIT THE DOCTOR ABOUT THIS PREGNANCY?

ARE YOU PLANNING TO BREASTFEED OR BOTTLEFEED YOUR BABY?

_____ 1 Breastfeed

_____ 2 Bottlefeed

_____ 3 Undecided

[Administer Instrument marked 'A']

Did you have younger brothers or sisters or other children living with you when you were growing up?

_____ 1 Yes

_____ 2 No

If yes, how old is the youngest one now? _____

Have you ever completed a course in child development?

_____ 1 Yes

_____ 2 No

If yes, did you have any "hands on" learning experience?

_____ 1 Yes

_____ 2 No

FAMILY/HOUSEHOLD INCOME: (check one)

- | | |
|-----------------------------|------------------------------|
| _____ 1 \$5,000 OR LESS | _____ 6 \$25,001 - \$30,000 |
| _____ 2 \$5,001 - \$10,000 | _____ 7 \$30,001 - \$35,000 |
| _____ 3 \$10,001 - \$15,000 | _____ 8 \$35,001 - \$40,000 |
| _____ 4 \$15,001 - \$20,000 | _____ 9 \$40,001 - \$45,000 |
| _____ 5 \$20,001 - \$25,000 | _____ 10 \$45,001 - \$50,000 |
| | _____ 11 \$50,001 OR MORE |

[Complete Household Information Sheet]

Fill in information on every person who lives in the home.

HOUSEHOLD INFORMATION SHEET

First Name	Relationship to Subject	Age	Sex	Ed. Level	Usual Occupation

[Administer Instrument marked 'B']

Thinking back to the time before this pregnancy, how would you rate your health? (check one)

- | | | | | | |
|--------------------------|---|-----------|--------------------------|---|------|
| <input type="checkbox"/> | 1 | Excellent | <input type="checkbox"/> | 4 | Fair |
| <input type="checkbox"/> | 2 | Very Good | <input type="checkbox"/> | 5 | Poor |
| <input type="checkbox"/> | 3 | Average | | | |

If checked #4 or #5, explain:

Now, during this pregnancy, how would you rate your health? (check one)

- | | | | | | |
|--------------------------|---|-----------|--------------------------|---|------|
| <input type="checkbox"/> | 1 | Excellent | <input type="checkbox"/> | 4 | Fair |
| <input type="checkbox"/> | 2 | Very Good | <input type="checkbox"/> | 5 | Poor |
| <input type="checkbox"/> | 3 | Average | | | |

If checked #4 or #5, explain:

How would you rate the health of the baby you are carrying now? (check one)

- | | | | | | |
|--------------------------|---|-----------|--------------------------|---|------|
| <input type="checkbox"/> | 1 | Excellent | <input type="checkbox"/> | 4 | Fair |
| <input type="checkbox"/> | 2 | Very Good | <input type="checkbox"/> | 5 | Poor |
| <input type="checkbox"/> | 3 | Average | | | |

If checked #4 or #5, explain:

Compared to most new mothers-to-be, how would you describe the way this pregnancy has progressed? (check one)

- 1 With almost no difficulty
 2 With less than average difficulty
 3 With about the average amount of difficulty
 4 With somewhat more than average difficulty
 5 With a great deal of difficulty

If checked #4 or #5, explain:

Based on your own knowledge and what your doctor or nurse may have told you, would you consider your pregnancy to be (check one)

- | | |
|--|---|
| <input type="checkbox"/> 1 Very low risk | <input type="checkbox"/> 4 High risk |
| <input type="checkbox"/> 2 Low risk | <input type="checkbox"/> 5 Very high risk |
| <input type="checkbox"/> 3 Moderate risk | |

If checked #4 or #5, explain:

Thinking about this pregnancy overall, would you say it has caused you (check one)

- 1 Almost no stress at all
 2 A slight amount of stress
 3 A moderate amount of stress
 4 A great deal of stress

If checked #4, explain:

[Administer Instrument marked 'C']

(For the following questions, write in the number and then circle the appropriate time frame:)

At what age do you think your baby will start to be aware of his/her surroundings or know what is going on around him/her?

_____ weeks months years

At what age do you think your baby will be able to recognize faces and objects clearly?

_____ weeks months years

At what age do you think your baby will be able to hear sounds and voices clearly?

_____ weeks months years

At what age do you think you will be able to start teaching things to your baby?

_____ weeks months years

At what age do you think it will be especially important to talk to your baby?

_____ weeks months years

How important do you think it is to talk to your baby during the first year? (check one)

- ___ 1. Not at all
 ___ 2. A little bit
 ___ 3. Pretty important
 ___ 4. Very important

[Administer Adolescent Ego Identity Scale]

APPENDIX L
REMINDER CARD

I, _____, am a
participant in a study at UNCG. After my baby is born,
please contact one of the following:

Judy Penny: 334-5307 or 379-8749

Carol Womble: 333-6643 or 668-0125

APPENDIX M
HOSPITAL RECORD INFORMATION

Hospital Record Information

Name _____ Date _____

Hospital _____ Date of Delivery _____

Sex of Infant: _____ 1 Male
_____ 2 Female

Birthweight: _____ Length: _____

Length of Labor: _____

Intrapartum complications: (Continue on back, if needed)

Method of delivery:

- _____ 1 Vaginal, no forceps
 _____ 2 Vaginal, low forceps
 _____ 3 Vaginal, mid or high forceps or vacuum extraction
 _____ 4 Caesarian Section

Analgesia/anesthesia:

APGAR @ 1 minute: _____ APGAR @ 5 minutes: _____

Resuscitation:

Notes:

APPENDIX N
INDIVIDUAL ITEM RESPONSES FOR EACH GROUP

Percentage Correct For Each Item of the Knowledge About Infants
and Infant Care Instrument For Each Group

	Adolescents (n=100)	Adults (n=100)
1. During the child's first year of life, a mother who spends all her time with the baby and her housework makes the transition to parenthood more easily.	27%	54%
2. If a baby skips a meal or doesn't seem hungry at his usual mealtime, the parents should call the doctor because the child is probably ill.	77%	95%
3.* One of the most important things to remember when holding a newborn baby is to support his or her head.	100%	99%
4.* Long before learning to talk, a baby uses other means of communication to let the parents know that he or she wants something and what it is he or she wants.	99%	99%
5.* The "games" that mothers and fathers play with their infants (like "peek-a-boo" and "this little piggy") are important parts of the child's learning experiences.	91%	97%
6.* It is normal for a new father to worry about how well he will be able to care for the baby's needs.	98%	99%
7.* When a baby has a very high temperature, clear liquids are recommended to avoid dehydration.	77%	91%
8. A pile of 30 clean diapers will last about a week.	65%	77%
9.* A baby first "smiles" only at his mother. Later, he or she begins to smile at others, as well.	32%	23%
10. Most babies learn to crawl before they can sit up by themselves.	59%	62%

Percentage Correct For Each Item of the Knowledge About Infants
and Infant Care Instrument For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
11. The time after a new baby is born is usually one of the smoothest and happiest times in a marriage.	34%	73%
12. It is important to keep the baby's navel clean and dry by washing with soap and water, then applying rubbing alcohol.	31%	46%
13.* Most mothers are more likely to overdress their babies than underdress them.	87%	93%
14. Babies rarely show fear of unfamiliar people until they are about 10 months old.	48%	50%
15.* At first babies try to pick up little things like raisins with their whole hand instead of using the thumb and forefinger.	92%	87%
16.* A baby's sleeping schedule during the first couple of weeks often causes both parents to lose sleep and therefore become tired and irritable.	89%	97%
17.* Excessive amounts of vitamins can be dangerous.	80%	87%
18. Most babies do not like to be bathed.	41%	70%
19.* It is important for parents to talk to their babies even though the infants cannot understand what the adults are saying.	99%	100%
20. Babies should <u>not</u> be encouraged to explore their surroundings by crawling around and inspecting things because it is too dangerous and they could be hurt.	55%	82%

Percentage Correct For Each Item of the Knowledge About Infants
and Infant Care Instrument For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
21. Most mothers, in addition to taking care * of their new baby, find it easy to continue to do everything around the house that they normally did.	58%	78%
22. It is <u>not</u> important for parents to respond to or encourage the "cooing" sounds babies make because they are not words.	81%	93%
23. I will need to buy a special thermometer to put under my baby's arm to take his or her temperature.	46%	67%
24.* New baby clothes should be washed before they are worn so that the chemicals used in the fire-proofing treatment do not irritate the baby's skin.	81%	84%
25. My baby will learn to understand the words I use before he or she understands my tone of voice.	69%	89%

*Correct answer = True.

Average Rating on Each Item of the Perception of
Caretaking Competence Instrument
For Each Group

	Adolescents (n=100)	Adults (n=100)
1. Buying the right kind of supplies for the baby (like powder, lotion, shampoo, diapers, etc.).	8.8	9.1
2. Understanding how to give first aid in case of accident, poisoning, or other emergency.	6.3	6.7
3. Knowing if my child is developing normally.	7.6	7.6
4. Helping my child to understand and control his or her emotions.	8.3	7.7
5. Preparing my child for what lies ahead of him or her.	8.5	8.0
6. Getting my figure back.	8.2	7.8
7. Helping my child learn to handle fear.	8.1	7.7
8. Understanding when my child is ready to learn new skills.	8.1	7.9
9. Knowing what to do about a fever.	8.1	7.9
10. Helping my child learn to like himself.	8.9	8.5
11. Keeping up with my hobbies or my job.	8.2	7.8
12. Knowing if my child is gaining the right amount of weight.	7.8	7.9
13. Buying the right kind of baby equipment (i.e., crib, high chair, changing table).	8.9	8.9
14. Understanding what to do when my baby is teething.	8.2	8.2
15. Making time to go out.	6.9	7.0

Average Rating on Each Item of the Maternal-Fetal
Attachment Instrument For Each Group

	Adolescents (n=100)	Adults (n=100)
1. I talk to my unborn baby.	4.3	4.4
2. I feel all the trouble of being pregnant is worth it.	4.2	4.5
3. I enjoy watching my tummy jiggle as the baby kicks inside.	4.8	4.8
4. I picture myself feeding the baby.	4.4	4.4
5. I'm really looking forward to seeing what the baby looks like.	4.9	5.0
6. I wonder if the baby feels cramped in there.	4.1	4.3
7. I refer to my baby by a nickname.	3.0	3.2
8. I imagine myself taking care of the baby.	4.5	4.6
9. I can almost guess what my baby's personality will be from the way s/he moves around.	3.3	3.5
10. I have decided on a name for a girl baby.	4.0	4.3
11. I do things to try to stay healthy that I would not do if I were not pregnant.	4.3	4.4
12. I wonder if the baby can hear inside of me.	4.4	4.3
13. I have decided on a name for a baby boy.	4.0	4.4
14. I wonder if the baby thinks and feels inside of me.	4.3	4.4

Average Rating on Each Item of the Maternal-Fetal

Attachment Instrument For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
15. I eat meat and vegetables to be sure my baby gets a good diet.	4.5	4.7
16. It seems my baby kicks and moves to tell me it's eating time.		
17. I poke the baby to get him/her to poke back.	3.9	3.9
18. I can hardly wait to hold the baby.	4.9	4.8
19. I try to picture what the baby will look like.	4.7	4.9
20. I stroke my tummy to quiet the baby when there is too much kicking.	3.7	4.2
21. I can tell that the baby has hiccoughs.	2.6	3.6
22. I feel my body is ugly	3.1	3.0
23. I give up doing certain things because I want to help my baby.	4.5	4.3
24. I grasp my baby's foot through my tummy to move it around.	2.3	2.7

Percentage "Occur" On Each Item of the NCAST Feeding
Scale For Each Group

	Adolescents (n=100)	Adults (n=100)
<u>Sensitivity to Cues</u>		
1. Parent positions child so that child is safe but can move his arms.	99%	99%
2. Parent positions child so that the child's head is higher than hips.	100%	96%
3. Parent positions child so that trunk-to-trunk contact is maintained during more than half of the breast or bottle feeding.	82%	95%
4. Parent positions child so that eye-to-eye contact is possible.	93%	91%
5. Parent's face is at least 7-8 inches or more from the child's face during feeding except when kissing, caressing, hugging or burping the child.	97%	98%
6. Parent smile, verbalizes, or makes eye contact with child when child is in open-face gaze position.	87%	88%
7. Parent comments verbally on child's hunger cues prior to feeding.	72%	88%
8. Parent comments verbally on child's satiation cues before terminating feeding.	63%	91%
9. Parent varies the intensity of verbal stimulation during feeding.	60%	89%
10. Parent varies intensity of rocking or moving the child during the feeding.	75%	84%
11. Parent varies the intensity of touch during the feeding.	88%	98%

Percentage "Occur" On Each Item of the NCAST Feeding

Scale For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
12. Parent allows pauses in feeding when the child indicated by cry face, halt hand, back arching, etc. or falling asleep or when child is in pause phase of the burst-pause sequence of sucking (75% of the time).	94%	91%
13. Parent slows pace of feeding or pauses when child averts gaze, places hand-to-ear, etc. (75% of the time).	91%	83%
14. Parent terminates the feeding when the child turns head, fall asleep, etc.	93%	90%
15. Parent does not interrupt child's sucking or chewing by removing the nipple, jiggling the nipple or offering the child more or other kinds of food while child is eating.	78%	79%
16. Parent does not offer food when the child looks away, looks down, turns away or turns around.	87%	94%
<u>Response to Distress</u>		
17. Stop or start feeding in response to the child's distress.	90%	96%
18. Change the child's position in response to child's distress.	94%	95%
19. Make positive or sympathetic verbalization in response to child's distress.	74%	89%
20. Changes voice volume to softer or higher pitch in response to child's distress.	76%	89%

Percentage "Occur" On Each Item of the NCAST Feeding

Scale For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
21. Makes soothing non-verbal efforts in response to child's distress.	91%	91%
22. Diverts child's attention by playing games, introducing a toy, or making faces in response to child's distress.	54%	54%
23. Parent does not make negative verbal response in response to child's distress.	96%	96%
24. Parent does not make negative comments to home visitor about child in response to child's distress.	97%	95%
25. Parent does not yell at the child in response to his distress.	99%	100%
26. Parent does not use abrupt movements or rough handling in response to child's distress.	94%	96%
27. Parent does not slap, hit or spank child in response to distress.	100%	100%
<u>Social-Emotional Growth Fostering</u>		
28. Parent pays more attention to child during feeding than to other people or things in environment.	76%	80%
29. Parent is in en face position for more than half of the feeding.	69%	74%
30. Parent succeeds in making eye contact with child once during feeding.	84%	86%
31. Parent's facial expression changes at least twice during feeding.	87%	98%

Percentage "Occur" On Each Item of the NCAST Feeding

Scale For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
32. Parent engages in social forms of interaction (plays games with child) at least once during the feeding.	34%	49%
33. Parent uses positive statements in talking to child during the feeding.	57%	90%
34. Parent praises child or some quality of the child's behavior during the feeding.	34%	79%
35. Parent hums, croons, sings or changes the pitch of his/her voice during the feeding.	37%	89%
36. Parent laughs or smiles during the feeding.	87%	99%
37. Parent uses gentle forms of touching during the feeding.	91%	94%
38. Parent smiles, verbalizes or touches child within 5 seconds of child smiling or vocalizing at parent.	39%	60%
39. Parent does not compress lips, grimace, or frown when making eye contact with child.	90%	98%
40. Parent does not slap, hit, shake, or grab child or child's extremities during the feeding.	99%	99%
41. Parent does not make negative or uncomplimentary remarks to the child or home visitor about the child or child's behavior.	88%	90%

Percentage "Occur" On Each Item of the NCAST Feeding

Scale For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
<u>Cognitive Growth Fostering</u>		
42. Parent provides child with objects, finger foods, toys, and/or utensils.	44%	65%
43. Parent encourages and/or allows the child to explore the breast, bottle, food, cup, bowl or the parent during feeding.	60%	69%
44. Parent talks to the child using two words at least three times during the feeding.	68%	92%
45. Parent verbally describes some aspect of the food or feeding situation to child during feeding.	49%	81%
46. Parent talks to child about things other than food, eating, or things related to the feeding.	40%	84%
47. Parent uses statements that describe, ask questions or explain consequences of behavior more than commands in talking to the child.	62%	90%
48. Parent verbalizes to child with five seconds after child has vocalized.	32%	51%
49. Parent verbalizes to child within five seconds after child's movement of arms, legs, hands, head, trunk.	47%	76%
50. Parent does not talk baby talk.	96%	94%

Percentage "Occur" On Each Item of the NCAST Feeding
Scale For Each Group
(Continued)

	Adolescents (n=100)	Adults (n=100)
<u>Clarity of Cues</u>		
51. Child signals readiness to eat.	81%	85%
52. Child displays a build-up of tension at the beginning of feeding.	75%	82%
53. Child demonstrates a decrease in tension within a few minutes after feeding has begun.	74%	88%
54. Child has periods of alertness during the feeding.	93%	94%
55. Child displays at least two different emotions during the feeding.	91%	94%
56. Child has periods of activity and inactivity during the feeding.	88%	95%
57. Child's movements are smooth and coordinated during the feeding.	93%	100%
58. Child's arm and leg movements are generally directed toward parent during feeding.	97%	98%
59. Child makes contact with parent's face or eyes at least once during feeding.	85%	85%
60. Child vocalizes during feeding.	59%	64%
61. Child smiles or laughs during feeding.	27%	16%
62. Child averts gaze, looks down or turns away during feeding.	81%	72%

Percentage "Occur" On Each Item of the NCAST Feeding
Scale For Each Group
(Continued)

	Adolescents (n=100)	Adults (n=100)
63. Child actively resists food offered.	44%	40%
64. Child demonstrates satisfaction at end of feeding through sleep, facial expressions, decreased muscle tone, arms extended along side, vocalizations or change in activity level or mood.	90%	100%
65. Child does not have more than two rapid state changes during feeding.	93%	92%
<u>Responsiveness to Parent</u>		
66. Child respond to feeding attempts by parent during feeding.	91%	99%
67. Child respond to games, social play or social cues of parent during feeding.	50%	60%
68. Child looks in the direction of the parent's face after parent has attempted to alert the child verbally or non-verbally during feeding.	69%	78%
69. Child vocalizes to parent during feeding.	46%	51%
70. Child vocalizes or smiles within 5 seconds of parent's vocalization.	18%	34%
71. Child smiles at parent during feeding.	22%	16%
72. Child explores parent or reaches out to touch parent during feeding.	49%	58%
73. Child shows a change in level of motor activity within 5 seconds of being handled or repositioned by parent.	91%	96%

Percentage "Occur" On Each Item of the NCAST Feeding

Scale For Each Group

(Continued)

	Adolescents (n=100)	Adults (n=100)
74. Child shows potent disengagement cues during last half of feeding.	72%	76%
75. Child shows potent disengagement cues with 5 seconds after parent moves closer than 7 to 8 inches from child's face.	32%	20%
76. Child does not turn away or avert gaze from parent during first half of feeding.	76%	74%