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A Program Evaluation of the Welcome Baby Project: A Primary Prevention Program for Teenage Mothers and Their Infants

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A PROGRAM EVALUATION OF THE WELCOME BABY PROJECT:

A PRIMARY PREVENTION PROGRAM FOR

TEENAGE MOTHERS AND THEIR INFANTS

by

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ABSTRACT

A PROGRAM EVALUATION OF THE WELCOME BABY PROJECT:
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Virginia Consortium for Professional Psychology, 1991
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The central purpose of this study was to evaluate the effectiveness of the Welcome Baby Project (WBP), a primary prevention program with the mission of promoting child development and a positive relationship between "at-risk" adolescent mothers and their infants and to prevent disorders of attachment, child abuse and neglect, and unwanted, repeat pregnancy. Intervention involved weekly home visits by trained parent volunteers for children from birth to two years.

The WBP mothers and a control group of adolescent mothers were compared on assessments collected during a home visit. Participants were asked to complete the Adult-Adolescent Parenting Inventory (AAPI), and the High Scope Knowledge Scale (HSKS). Videotaped observations of mother-infant interactions in a teaching session were rated using the National Child Assessment Teaching Scale (NCATS). The quality of the home environment was assessed using the Home Observation for Measurement of the Environment (HOME). The Battelle Developmental Inventory - Screening Test (BDI) was used to assess infant development. WBP

mothers and Home Visitors were asked to evaluate the program.

The groups differed on important variables associated with high risk status; the greater risk status of WBP mothers increases the likelihood of underestimating the program's impact. Low statistical power (n = 30) made detecting program effectiveness difficult. WBP mothers were significantly more accurate in their knowledge of developmental milestones and had fewer late expectations than control mothers on the HSKS. The NCATS, HOME, AAPI, and HSKS approached significance when the variability due to birth weight, prematurity, and household income were controlled. Comparison of the means reflected a strong trend favoring the WBP mothers.

Comparisons with normative and other study samples on the NCATS, HOME and AAPI lends support for program effectiveness. Evaluations of the program by WBP mothers and Home Visitors were positive. The results are encouraging but point to the need for continued evaluation over the next several years.

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Introduction

This study is a program evaluation of the Welcome Baby Project, a primary prevention program designed to ameliorate the "at-risk" status of adolescent mothers and their infants. The program provides a comprehensive array of services based on the design of other, larger scale, empirically validated early intervention programs (see Greenspan, 1984; Halpern & Covey, 1983; Olds, Henderson, Tatelbaum, & Chamberlin, 1984). The difficulties associated with early childbearing will be reviewed with an initial focus on the prevalence of adolescent pregnancy and the socioeconomic consequences for the adolescent mother and her child. A thorough literature review detailing the impact of early childbearing on the children of adolescent mothers follows with an emphasis on the social, emotional, and cognitive development of the child. The potential causes associated with these child outcomes are also examined: Maternal knowledge and expectations of child development, the provision of an adequate home environment, maternal personality, psychosocial stresses associated with adolescent pregnancy, social support, and child abuse and neglect. Prevention/early intervention efforts which address these areas of risk are reviewed briefly with emphasis on those program components which have been successful in promoting optimal child development and ameliorating the "at-risk" status of young mothers and their offspring. Special attention is paid to strategies and interventions similar to those used in the Welcome Baby Project. Finally, the Welcome Baby Project (WBP) and the design and implementation of the WBP evaluation are described.

Prevalence and Socioeconomic Consequences

One reason to focus on teen pregnancy is the ever increasing scope of the problem. Adolescent births are estimated at 600,000 per year or one fifth of all births in the United States (Richmond, 1979; Zelnick & Kanter, 1980). While birthrates for the general population have declined since World War II, adolescent birthrates have not fallen as rapidly as those of older women (Moore, Hofferth, Wertheimer, Waite, & Caldwell, 1981). Proportionally, there are more births to adolescents, and births to those girls 16 years or younger have increased (Baldwin, 1980; National Center for Health Statistics, 1978). Consistently, adolescent mothers under 16 years of age have been found to be considerably more "at-risk" than older teenage mothers suggesting that as a whole the risk status of adolescents is increasing.

There have been widespread social changes in the last two decades that have had an impact on parenting. Unwed mothers are much less likely to place their child up for adoption than in the past (Baldwin, 1976). Ninety-five percent of adolescent mothers keep their children (Guttmacher Institute, 1976) and 93% of these children are being raised by their teenaged mothers. Increases in maternal employment, in the number of single-parent households, in out-of-wedlock births, accompanied by decreases in family size (Brooks-Gunn & Furstenberg, 1986) have changed the composition and economic foundation of the family. Many more children are being raised in households comprising the lowest income levels. Births to adolescents are occurring out of wedlock more frequently as demonstrated by a 29% increase in births to unwed Caucasian teenagers between 1970 and 1977. In 1981, 39% of white

teenage births and 90% of black teenage births were outside of marriage (National Center for Health Statistics, 1981). By 1984, the proportion of teenage births occuring out-of-wedlock climbed to 56% of all teenage births (Hofferth and Hayes, 1987). With these social changes, teenage mothers are more likely to be unmarried and to head single-parent households (Furstenberg & Crawford, 1978; Moore & Burt, 1982) putting them at the lowest end of the socioeconomic scale. The fact that 60% of unmarried mothers receive Aid to Families of Dependent Children (AFDC) (Clapp & Raab, 1978; Moore & Caldwell, 1976) indicates the difficulty inherent in supporting children as a female head of household. Households headed by a mother who was a teenager at the time of her first birth account for 55% of AFDC expenditures (Moore, 1978; Moore, Wertheimer, & Holden, 1981). These statistics reveal a serious social problem because of both the large number of children raised in disadvantaged households and the soaring costs of welfare.

What does the future hold for those women who bear children during their teenage years? Studies indicate that teenage parenthood is associated with long-term psychological, social, and economic problems for mother and child (Brooks-Gunn & Furstenberg, 1986). "The economic impact of an early birth is not direct. Rather, it seems to trigger a chain of events that combine to undermine economic well-being" (Moore et al., 1981, p. 36). Extensive research has documented the disruptive effect early childbearing has on adolescent mothers' subsequent educational attainment, occupational success, and marital decisions. Adolescent mothers are less likely to complete high school even when social and motivational factors (e.g., family background, educational

goals, and age at marriage) are controlled (Card & Wise, 1978; Moore & Waite, 1977; Moore et al., 1981). Fifty percent of women who had a first birth when they were 18 years or younger acquire a high school diploma by age 29, while 96% of those women who delay childbearing until age 20 obtain a high school diploma (Card & Wise, 1978). Fewer than 20% of adolescent mothers under the age of 17 finish high school (Ventura, 1977; Wurtz & Fugen, 1970). Completion of college by age 29 was accomplished by 1.6% of a sample of high school age mothers as compared to 22.4% of a matched sample of women who delayed childbearing beyond age 24. Girls enrolled in the 10th-grade or lower, who do not have children or marry, drop out only 7 to 9% of the time (Moore, Hofferth, Caldwell, & Waite, 1979). Those girls who have a child in these years but do not marry are three times more likely to drop out of school. Marriage and a first birth in 10th-grade or below results in nearly 4 out of 5 of these girls dropping out of school.

Additionally, teenage mothers are far more likely to marry and more likely to have their marriage end in divorce than teenagers who do not become mothers (Card & Wise, 1978; Furstenberg, 1976a; Glick & Norton, 1977; Moore & Burt, 1982; Moore, Hofferth, Caldwell, & Waite, 1978). Glick and Norton (1977) estimate that 72% of marriages formed during adolescence end in divorce. Furthermore, those women who have their first child in adolescence tend to have more children as compared to women who become mothers later in life (Moore et al., 1981).

Education, work experience, and family size directly correspond with occupational status (as measured by hours of work, wages, annual earnings) (Moore et al., 1981). Likewise, age at first birth has been

shown to affect educational achievement and family size. Thus the occupational status of teenage mothers is hampered through the indirect effects of lower educational attainment and larger families.

Each of these factors combine to put early childbearers at a significant economic disadvantage as much as 5 years after the birth of their first child (Furstenberg, Brooks-Gunn, & Morgan, 1987), and for many this initiates life-long dependence on welfare. Adolescent childbearers clearly have a rather bleak future as compared with later childbearers. Hardy (1988) described the serious consequences of adolescent pregnancy as "...one of the nation's most serious, costly, and pressing problems (p. 119)." These young mothers are raising their children with fewer resources available to them than older mothers.

Review of the literature reveals many methodological problems with the studies on adolescent parenting practices. Most studies have used small sample sizes, few have used comparison groups, and many have lumped various ethnic and income groups together (Phipps-Yonas, 1980; Roosa, Fitzgerald, & Carlson, 1982). This is important because there are important subcultural differences in attitudes toward teenage pregnancy (Field, Widmayer, Stringer, & Ignatoff, 1980; Garcia Coll, 1987; Garcia Coll, Sepkoski, & Lester, 1982). Cultural differences in parenting practices and family relationships can have an immense impact on the teenage mother and her child. The black, urban teenager living in a disadvantaged neighborhood is over represented in the literature and is the focus of the majority of teen parenting programs (Brooks-Gunn & Furstenberg, 1986). A disproportionately large number of black, urban teens become pregnant; however, this group does not represent the

largest group in absolute numbers. Brooks-Gunn and Furstenberg (1986) suggest that this emphasis neglects rural blacks, whites, and hispanics and reinforces a damaging stereotype of the "modal teenage mother" being black, urban, poor, and unmarried. Given this focus in the literature, we must be cautious about generalizing the results of many studies to samples of white, hispanic, middle-class, rural, or married teenagers. Another cautionary note: Much of the research to date focuses on the older teen (16 years of age or more) who has been considered less "at-risk" than her younger counterpart (Brooks-Gunn & Furstenberg, 1986). Many studies have also used a single sample of mother-child interaction, have assessed parent-child interaction in laboratory settings, and have used short observation periods (Brooks-Gunn & Furstenberg, 1986).

The detrimental effects of adolescent pregnancy on the mother and child and the substantial amount of public assistance needed to support these families make adolescent pregnancy prevention an important goal. The difficulties inherent in having a teenager raise a child, the risk status of children of young mothers, and the enormous social costs warrant efforts to ameliorate the problems and challenges facing adolescent mothers.

OUTCOMES

Attachment

Socio-emotional development during infancy has a tremendous influence on many areas of child development. The infant must not only be engaged physically, but must be engaged emotionally (Bowlby, 1973). Emotional availability of the caregiver has been emphasized as a central growth-promoting feature of the environment. Sensitive parental

behavior is characterized by contingent, consistent, and appropriate responses to infant cues (Lamb, 1981a; Lamb, 1981b; Lamb & Easterbrooks, 1981). The infancy period (first 12 to 18 months of life) is marked by the dynamic interplay of two primary behavioral systems: Attachment and the need for exploration/separation (Ainsworth, Blehar, Waters, & Wall, 1978; Mahler, Pine, & Bergman, 1975). The emotional availability of the mother influences both the emotional development of the infant and the ability of the child to actively engage in exploration and play (Emde, 1988; Osofsky & Eberhart-Wright, 1988). Children who are emotionally secure are more likely to explore and play freely. Play and exploration are children's most important work and their central avenue for learning about the world in which they live.

Social-emotional development of the infant has been described by Bowlby (1973, 1980, 1982) as the patterning of the early attachment relationship with the infant's primary caregiver which creates the foundation for the development of later representational models of self and of the attachment figure. The person who has formed a secure attachment "is likely to possess a representational model of attachment figure(s) as being available, responsive, and helpful and a complementary model of himself as at least a potentially lovable and valuable person" (Bowlby, 1980, p. 242). Relationship to the primary attachment figure determines the child's future expectations for relating to others, for approaching the environment, and for resolving later developmental crises. Resolution of early developmental stages or issues lays the groundwork for successful resolution of future developmental tasks (Erikson, 1963; Mahler, Pine, & Bergman, 1975).

These same principles govern maladaptive or pathological processes as well. Infants for whom the world has been unpredictable and lacking in comfort develop expectations that the world is depriving and unpredictable. For example, adaptational failures in the development of secure attachment and autonomy may result in "pronounced difficulties with impulse control, aggression, and other antisocial behaviors, prolonged emotional dependency, and extreme difficulty in relating to other children" (Erickson, Sroufe, & Egeland, 1985, p. 48).

Several studies have established a predictive relationship between the quality of attachment at 12-18 months and resolution of future developmental stages. Matas, Arend, and Sroufe (1978) demonstrated that children who were securely attached as infants exhibited more competent and autonomous functioning at 24 months than did children who had been classified as anxiously attached at one year of age. Securely attached one-year-olds have been shown to develop into more socially competent toddlers (Matas et al., 1978), preschoolers (Sroufe, Fox, & Pancake, 1983; Waters, Whippman, & Sroufe, 1979), and kindergartners (Arend, Gove, & Sroufe, 1979). The secure children approached problem-solving situations with enthusiasm and positive affect, and were more persistent and effective in securing assistance from their mothers than the comparison children (Matas et al., 1978). Sroufe holds that:

> It was the behavioral organization, the flexible use of the mother when their own goal attainment capacities were exhausted, that distinguished secure from anxious children...This was an explicit confirmation of Bowlby's hypothesis and Mahler's (Mahler et al., 1975) idea that individuation is influenced by the quality of the earlier symbiosis (Sroufe, 1983, p. 48).

While preschool performance could be predicted on the basis of attachment pattern, this relationship holds true only when the pattern

remains consistent over time. Changes in stress level in the home can also influence attachment patterns and in turn alter the ultimate development of the child (Coates & Lewis, 1984; Lamb, Thompson, Gardner, Charnov, & Estes, 1984). The quality of mother-infant attachment from 12-18 months is quite stable for middle-class samples (Waters, 1978); however, quality of attachment appears significantly less stable in poverty samples characterized by environmental instability and life stress (Vaughn, Waters, Egeland, & Sroufe, 1979). Change in life circumstances is strongly associated with change in attachment status.

Maternal sensitivity to infant cues or awareness of the infant's communications and signals, together with accurate interpretation of these cues and prompt and appropriate response to them, appear to determine the quality of infant-mother attachment (Bowlby, 1982). Hence, *maternal sensitivity* represents not only the mother's response to her infant's signals but also the synchrony of that response with the behavioral rhythms and unique characteristics of the infant (Shuman & Masterpasqua, 1981). Bell and Ainsworth (1972) found that when mothers responded to their infants' cries quickly and consistently in the first three months, their babies cried less in the last three months of their first year; these babies were also more communicative at one year. Ainsworth (1979, 1982) and others (Ainsworth et al., 1978) found that mothers rated as sensitive to infant cues during the first year of the infant's life displayed different patterns of attachment in the Strange Situation procedure at one year of age than did those rated relatively insensitive to their infants' cues. Several other researchers have also found that mother's sensitivity to their infant's cues (as rated in

early home observations) predict attachment classification status of infants into securely and anxiously attached groups (Blehar, Lieberman, & Ainsworth, 1977; Egeland & Farber, 1984; Goldberg, Perrotta, Minde, & Corter, 1986; Grossman & Grossman, 1982). Smith and Pederson (1988) and Belsky, Rovine, and Taylor (1984) identified a relationship between anxious-avoidant infants and overstimulating, intrusive maternal responses to infant cues, and a relationship between anxious-resistant infants and maternal unresponsiveness to infant cues. In studying the ego-control of preschoolers, Arend, Gove, and Sroufe (1979) found anxious-avoidant infants (classified using the Strange Situation procedure at 18 months) tended toward overcontrol while anxious-resistant infants responded in an undercontrolled manner reflecting inappropriate emotionally expressive behavior. Those infants who received adequate levels of stimulation were later found to be securely attached. In another study, home observations of anxiously attached mother-infant dyads revealed a number of significant differences in the mothers' interactions with their infants, namely, they were less responsive, interfered with play to a greater extent, engaged in more noncontingent physical contact, and were more awkward and routine-oriented, compared with mothers in securely attached dyads (Blehar et al., 1977).

Research on mother-infant interactions has revealed differences related to maternal age; adolescent mothers tend to be less verbal, more physical, and less contingently responsive to their infants in parent-child interactions (McAnarney, Lawrence, & Aten, 1979; Osofsky & Osofsky, 1970; Sandler, Vietze, & O'Connor, 1981). These findings have

led many to assume that adolescents make inadequate parents. Teenage mothers tend to be more passive in face-to-face interactions with their 4-month-old infants than older mothers (Field, 1981). Yet, most investigators have discovered that young mothers display as much warmth in interactions with their infants as do older mothers (Brooks-Gunn & Furstenberg, 1986). Jones, Green, and Krauss (1980) investigated maternal responsiveness of first time, low socioeconomic status (SES) mothers during the postpartum period and discovered that maternal responsiveness varied with maternal age. The mothers 18 years old and younger were less responsive (including physical contact, verbalizations, and face-to-face position) than those 19 years and older irrespective of race (black-white) or marital status. The younger mothers were less likely to hold their babies closely while nursing or to comfort their babies through physical proximity during times of distress. Unfortunately, the babies of younger mothers were also more likely to be distressed during their physical examination and in need of soothing. Garcia Coll, Hoffman, and Oh, (1987) found qualitative and quantitative differences in the interaction patterns and communicative styles of their adolescent sample as compared to their adult sample of mothers. The adolescents were less verbal, less emotionally positive, and less didactic in their interactions than older mothers (p. 961). In a study conducted by McAnarney, Lawrence, Ricciuti, Polley, and Szilagyi (1986) mother-child behavioral interactions were studied with a sample of 30 lower socioeconomic adolescent mothers aged 15 to 20 and their children of 9 to 12 months. Twenty minute videotaped laboratory interactions were rated on maternal behaviors, child behaviors, and

maternal-child behaviors. Five of the maternal behavior scales were associated with maternal age such that the youngest mothers were less accepting, less cooperative, less accessible, less sensitive, and more negative in their verbal communication than were the older adolescents. Adolescent mothers have displayed aggressive, inappropriate behaviors such as pinching and poking, in contrast to adult mothers who rarely exhibit these negative behaviors (Lawrence et al., 1981).

In their review of the literature on teenage childbearing, Brooks-Gunn and Furstenberg (1986) concluded that those studies that control for the socioeconomic status of the mother suggest that teenage mothers do not exhibit significant differences in parenting when compared with older mothers. However, many researchers in the area of early intervention believe that characteristics frequently asociated with socioeconomic status are responsible for poor developmental outcomes in children, rather than socioeconomic status alone (Meisels & Wasik, 1990). Young maternal age compounds the risk factors typically associated with low socioeconomic factors. While some teenagers are capable of providing adequate care for their child, these teenagers are likely to also have more support from family and friends (Aten, 1988).

Evidence of deficits in social and emotional development in children of teenage mothers suggests that these differences in parenting styles may have important consequences for the offspring of teenage mothers (Osofsky & Eberhart-Wright, 1988). Three patterns of negative affective exchanges in behavioral interactions of young mothers and their infants have been delineated by Osofsky and Eberhart-Wright (1988). The essential quality of the first pattern is a "blandness" or

"dullness" in the interaction. The mother and infant appear to be in separate worlds with little communication of any kind. The second pattern is characterized by "angry, negative" affect. The mother appears frustrated and angry with the child who appears to mirror this affect with an angry, aggressive posture. The third pattern young mothers and their infants demonstrate is a "mixed negative" affective interaction. The dyad appears out of synchrony in that the infant may display anger while the mother appears to mock the child, or the mother may verbally communicate one message but affectively (tone of voice or nonverbal signals) convey a different message (p. 223).

In another study, three styles of parent-infant interaction were identified in a sample of adolescents (57% white, 50% middle-class, 80% unmarried) (Epstein, 1980). The most frequent interaction style was marked by absence of verbal interaction with their babies; yet these mothers provided for their infants' physical needs adequately. The second most common style was shared interaction in which mothers demonstrated warmth in both their verbal and physical behaviors. Finally, the smallest group of mothers interacted in a directive manner, demanding that their infants do specific things. The nonverbal style of interaction was most frequently used by the youngest teens who also underestimated the needs and abilities of their infants.

Attachment (emotional bond between mother and infant) can have an immense impact on the subsequent emotional and social development of the child. Quality of attachment depends on the sensitivity of the parent to infant cues. Some important differences appear in mother-infant interactions of teenagers as compared to those of older mothers. These

differences would be expected to have an impact on the later social and emotional development of children of teenage mothers.

Impact of Adolescent Parenting on Children's Development

It has been well-documented that children of teenage mothers score lower on cognitive tests when they reach school age. As they progress through school, children of adolescent mothers are likely to demonstrate deficits in cognitive and intellectual functioning which eventually may result in school failures and reduced likelihood of educational achievement (Hardy, 1986). Record, McKeown, and Edwards (1969) studied cognitive development of 48,193 eleven-year-old children and found that children of teenage mothers (those below the age of 20) scored lower on tests of verbal reasoning. This finding remained significant even when the effects of social class and parity were statistically removed. The performance of children born to 4,600 lower-middle and lower socioeconomic status adolescent mothers living in the Baltimore area (sample was 77% black, 23% white) was compared with the performance of children born to adult mothers on the Bayley Scales of Infant Development at the age of 30 months. The children of adolescent mothers attained lower scores on the developmental test and displayed poorer school performance on follow-up studies of 7 and 12 years (Hardy, Welcher, Stanley, & Dallas, 1978). In another study, children of 86 mothers below the age of 18 were matched to children of mothers over 18 on the basis of socioeconomic status, birth weight, parity, and race; children of the younger mothers achieved lower intelligence quotient (IQ) scores at six to eight years of age and were more likely to be reading below grade level at 8 to 10 years (Oppel & Royston, 1971). The

Wechsler Intelligence Scale for Children (WISC) and the Wide Range Achievement Test (WRAT) were used to measure 12 to 17-year-old children's IQ and school achievement for white first borns across low, medium, and high income levels (Rhinebold, Kehl, & Elster, 1982 as reported in Elster, McAnarney, & Lamb, 1983). Maternal age, irrespective of child's birth weight, predicted WISC and WRAT scores such that the youngest maternal age group (15 to 18-year-olds) had children with lower IQs and school achievement scores than those of older mothers across income levels. Another noteworthy finding was that economic status had a significant independent effect on cognitive and academic performance.

Broman (1981), in analyzing data from the National Collaborative Perinatal Project (NCPP; Broman, Nichols, & Kennedy, 1975), a longitudinal study of the National Institute of Neurological Disorders and Stroke, looked at differences among maternal age groups within socioeconomic status for whites and blacks. He found that the four-year-old children of adolescent mothers had lower IQ scores (Stanford-Binet), poorer motor development, and a higher frequency of deviant behavior than the children of adult mothers. At age seven, the children of adolescent mothers had lower scores on the WISC, scored below grade level more frequently on the WRAT, and were considered deviant in behavior more often. It is important to note that Broman (1981) also established that socioeconomic status exerted a stronger influence on intelligence than did maternal age for children at both four and seven years of age. Data from the Collaborative Perinatal Study were also analyzed by Lobl, Welcher, and Mellitz (1971). They controlled for

birthweight and found that regardless of sex and race, full-term infants of school age mothers scored lower on the Stanford-Binet test at age four than those children with older mothers.

Data from three national studies, namely, the Health Examination Survey Cycles II and III, and the National Collaborative Perinatal Project (NCPP), were used to investigate the cognitive development of 6 to 17-year-olds with respect to maternal age (Belmont, Cohen, Dryfoos, Stein, & Zayac, 1981). The Health Examination Survey sample was designed to represent the geographic, ethnic, and socioeconomic strata of the United States. Children of teenage mothers were under-represented in two-parent families, over-represented in lower educational and lower income groups in all three data series. These trends are consistent with the social and demographic characteristics of early parenthood reported elsewhere. Children of mothers in younger maternal age groups had lower WISC scores than did children whose mothers were 20 or older at the birth of their first child; however, several independent variables had a greater effect in explaining variation in children's intelligence than maternal age (Belmont et al., 1981, pp. 185-190). The effect of maternal age was consistent on all three data sets; however, the overall pattern was different for black children in Cycles II and III.

Several variables have been shown to have significant impact on child development in large scale longitudinal studies. Many of the same characteristics that put infants and children at risk co-occur with adolescent childbearing. For example, perinatal status variables generally have been shown to correspond with poor cognitive and motor

development. One such variable that reliably predicts poor developmental outcomes is low birth weight. Adolescents are more likely than older women to have a premature and low birth weight infant. However, when adolescent mothers receive adequate prenatal medical care, they do not incur greater risk than older childbearers (Broman, 1981; McCormick, Shapiro, & Starfield, 1984; Sandler et al., 1981). When adolescent mothers 15 years and older receive prenatal care, risks of perinatal complications and low birthweight status are comparable to those of older mothers (Elster & McAnarney, 1980). Seventeen to 19-year-old mothers are far less "at-risk" and including this age group may dilute the observed effects of maternal age on perinatal risk status (Field, 1981). The offspring of adolescent mothers are at high risk for birth related medical problems and have a higher mortality rate; however, this may be related to the delayed initiation of prenatal care (common among early childbearers). Broman (1981) reported that children of adolescent mothers in the NCPP had higher frequencies of short gestational age, low birthweight, and low Apgar scores. Nevertheless, children of adolescent mothers exhibited slightly better psychomotor performance at 8 months and were not different in occurrence of selected signs of developmental delay (Bayley Research Scales) throughout the first year of life. These findings suggest that children of teenage mothers did not have significant biological deficits. However, as reported above (see Broman, 1981 results), this sample of children consistently demonstrated poorer performance on tests of intelligence, achievement, motor skill, and behavior in early and middle childhood. All of the mothers in the NCPP received prenatal care and did not differ

in the number of prenatal visits, hence, differences across several important areas of development may be attributable to environmental variables. Some researchers have reported that teenage mothers (of heterogenous SES) who have participated in prenatal intervention programs have no increased risk of biological disadvantages for their offspring (Osofsky & Osofsky, 1970). Others have found that low income, black teenage mothers who had eight prenatal visits and participated in a comprehensive prenatal intervention program for 4 months, delayed their first visit until their 4th gestational month and continued to be at greater risk for obstetric and postnatal problems (Field, 1981). The initial delay in beginning prenatal care may be sufficient to maintain high risk status as all of the major fetal organ systems develop during this crucial period. Broman (1981) reported that white, adolescent mothers registered significantly later (24 weeks into pregnancy) for prenatal care than white, adult mothers, while for the black sample, both adult and adolescent mothers registered 23 weeks into their pregnancy. Lower socioeconomic status was also associated with longer delays in registration for prenatal care. Unfortunately, lower socioeconomic groups are more at risk for pregnancy complications and infant mortality. Delay in seeking prenatal care may in part be responsible for increased rates of medical problems.

Infants who are born prematurely to teenage mothers may be substantially more at risk than premature infants born to adult mothers (Field, 1981). Psychosocial and demographic factors appear to play an important role in perinatal outcome. For example, perinatal status variables appear to be mediated by the quality of the childrearing

environment (Werner, Simonian, Bierman, & French, 1967). In another study, high level of perinatal complications alone was not the best predictor of poor cognitive functioning unless the child was also raised in a poverty-level environment (Willerman, Broman, & Fiedler, 1970). Another study found the best predictor of intellectual performance was the mother's educational level (Smith, Flick, Ferriss, & Sellman, 1972). The data from Cycles II and III of the Health Examination Survey and the NCPP consistently support the positive relationship between maternal education and children's intelligence test scores; however, race appears to determine the strength of this relationship. The relationship between maternal education and children's IQ was weaker for black children than for white children (Belmont et al., 1981).

The style of parent-child interaction can have a significant influence on cognitive development of the child (Bee, Van Egeren, Streissguth, Nyman, & Leckie, 1969; Hess & Shipman, 1967). For example, affectionate, nonrestrictive, and nonpunitive caregiving has been shown to be associated with better intellectual or language skill (Beckwith, Cohen, Kopp, Parmelee, & Marcy, 1976; Bradley & Caldwell, 1976a; Clarke-Stewart, 1973; Clarke-Stewart, VanderStoep, & Killian, 1979; Ramey, Farran, & Campbell, 1979). Unfortunately, teenage mothers have been found to be impatient, insensitive, irritable, and prone to use physical punishment with their children (DeLissovoy, 1973b). A number of studies have found that teenage mothers talk to their babies less than older mothers. Teenage mothers across many different ethnic and socioeconomic groups have been found to be less verbal in their interactions with infants (Field, 1981; Levine, Garcia Coll, & Oh, 1985; Oppel & Royston,

1971; Roosa et al., 1982; Sandler et al., 1981). Maternal provision of verbal stimulation and verbal response to child behavior and vocalization has an important impact on later language skill (Bradley & Caldwell, 1976; Clarke-Stewart, 1973; Clarke-Stewart et al., 1979; Elardo, Bradley, & Caldwell, 1977; Engel, Necin, & Arkin, 1975). The tendency for teenagers to talk less to their babies may result in delays in their children's language development. Pre-school children of teenage mothers have exhibited language delays (Furstenberg, 1976; Marecek, 1979); on the other hand, some studies of white, middle-class teenage mothers and their children fail to report such findings (Bates, Bretherton, Beeghly-Smith, & McNew, 1982). While there is some disagreement in the literature about the presence of language delays in the children of adolescent mothers, many studies have found adolescent mothers talk less to their infants than older mothers.

CAUSES

Maternal Knowledge and Expectations of Child Development

Adolescents may interact differently with their infants due to their less accurate knowledge of child development and, therefore, possess more inappropriate expectations for infant behavior. The developmental expectations mothers hold for their children have been shown to relate to later development. Those mothers who believed that their infants were capable of seeing, hearing, learning, and benefiting from being talked to early on, had infants who exhibited better receptive language development at 36-months-of-age (Bee et al., 1982). The majority of studies examining knowledge of child development and expectations of abilities of young children have reported that teenage

mothers lack knowledge necessary for adequate parenting and have unrealistic expectations of children's abilities (DeLissovoy, 1973b; Field et al., 1980; Phipps-Yonas, 1980; Roosa et al., 1982; Roosa & Vaughan, 1984; Vukelich & Kliman, 1985). Lacking adequate knowledge of child development may render young mothers less sensitive and less accurate in their perception, interpretation, and responsiveness to infant cues (Elster et al., 1983). Epstein (1980) found that teenage mothers underestimated the intellectual development of young children and were consistently inaccurate in their knowledge of cognitive, social, and language development. In summary, teenage mothers do appear to have less knowledge of child development milestones than do older mothers, regardless of social class (Brooks-Gunn & Furstenberg, 1986).

Maternal attitudes toward child-rearing constitute the "lenses" through which parents perceive and appraise the needs, behavior, and cues of their infants and children (Elster et al., 1983; Park, 1978). Teenage mothers have also been shown to hold less favorable attitudes toward child-rearing; four specific studies revealed that teenage mothers' self-reports indicate they are less tolerant and sensitive to their infant's needs than older mothers (DeLissovoy, 1973a, 1973b; Field, 1981; Field et al., 1980; Gutelius, 1970; Jarrett & Woodson-Turner, 1982). In Tiffany Field's (1981) study of lower income, black teenage and adult mothers, she found that the teenage mothers rated their infants' temperament as less optimal on scales of activity, adaptability, approach, and distractibility. Field (1981, p. 167) suggested that because the teenage mothers were also more passive in face-to-face mother-infant interaction, their perceptions may have been

colored by their less effective interaction and less accurate recognition of infant cues. Unfortunately, the possibility that the offspring of teenage mothers actually tend to have less optimal temperaments cannot be ruled out. On the other hand, a small number of studies have found similar child-rearing attitudes among teenage and older mothers (Parks & Smeriglio, 1983; Reis, 1988; Roosa et al., 1982; Zuckerman, Winsmore, & Alpert, 1979) demonstrating that one must be careful about generalizing. Those mothers with more education have been found to have children who do better in school, yet,

> ...infants born to better-educated or less well educated mothers did not differ on any measures during the first two years of life, despite the fact that environmental and parent-infant interaction measures show differences beginning as early as four months, and measures of parent perception differ at birth (Bee et al., 1982, p. 1142).

Thus while developmental outcomes do not show up until the preschool years, numerous studies (as reviewed above) demonstrate that differences in parenting and home environment during the infancy period appear to play a significant role in determining the developmental outcomes of the pre-school and schoolage years.

Actual child-rearing practices were investigated in the Health Examination Survey (Levin, 1983). Even when social demographic factors were controlled for, young mothers of 6 to 11-year-olds as compared to older mothers, were less likely to control bedtime, know their child's friends, or report a recent visit to a doctor or dentist. Other investigators have found that adolescent mothers display more impatience and are more likely to punish their children than older mothers (DeLissovoy, 1973a; Furstenberg, 1976a; Oppel & Royston, 1971).

Provision of Adequate Home Environment

Knowledge of child development and critical environmental factors (e.g., support, stimulation, safety) tend to be associated with provision of an environment conducive to growth and development of the child (Hunt & Paraskevapoulos, 1980; Rivara & Howard, 1982; Stevens, 1984). The infant's early home environment has been shown to be associated with mental test performance at age three (Elardo, Bradley, & Caldwell, 1975). Cognitive development of children is influenced by the variety and amount of stimulation in the home both from people and from inanimate materials such as toys (Yarrow, Rubenstein, Pederson, & Jankowski, 1972). Stimulation from inanimate materials includes furnishing sufficient and appropriate play materials (Bradley & Caldwell, 1976a; Clarke-Stewart, 1973; Wachs, 1979; Yarrow, Rubenstein, & Pederson, 1975). Adolescent mothers tend to provide less stimulating environments than do mothers in older age groups (ages 20-29 and 30-42) (Mercer, Hackley, & Bostrom, 1984) as measured on questionnaires and semi-structured interviews thereby limiting learning opportunities for their infants.

Cognitive development appears to be enhanced by stimulation delivered in a manner that is contingent on the infant's behavior (Lewis & Goldberg, 1969). Reciprocal social transactions between the mother and her infant or transactions characterized by contingent maternal response to the infant's signals (e.g., mutual gazing, appropriate response to distress and nondistress vocalizations) are positively correlated with scores on the

Griffiths scale, with Bayley mental scores, and with enhanced skill in object permanence tasks (Ainsworth & Bell, 1973; Beckwith et al., 1976; Bell, 1970; Yarrow et al., 1972). Contingency to vocalization alone is associated with increases in infant vocal output, while contingent maternal responses to distress, gaze, and vocalization correspond with better acquisition of sensorimotor skills (Beckwith et al., 1976; Yarrow et al., 1972).

Several studies of predominantly white, middle-class populations have demonstrated that home environments which receive lower scores on the Home Observation for Measurement of the Environment (HOME) scale, particularly on subscales revealing less responsive, verbal and didactic mother-infant interactions, tend to produce children with poorer intellectual status later in childhood (Clark-Stewart, 1973; Elardo et al., 1975; Moore, 1968). Use of the HOME indicates that Caucasian adolescent mothers provide less optimal home environments than do older mothers. Differences showed up in maternal behaviors such as verbal and emotional responsiveness and involvement, rather than in the physical properties of the home (Garcia Coll et al., 1987). Two studies using the HOME found that inner city mothers of pre-school aged children provided fewer opportunities for stimulation but did not find the mothers to be less responsive or more restrictive than older mothers (Darabi, Graham, Namerow, Philliber, & Varga, 1984; Philliber & Graham, 1981).

Maternal Personality

Teenagers are in the midst of negotiating the developmental

tasks of adolescence (Hamburg, 1980); challenges in their own development may require expenditure of personal resources, leaving little for the monumental tasks of parenting effectively. Osofsky and Eberhart-Wright (1988) attribute adolescent mothers' difficulty changing their patterns of interacting with their infants to the difficulties inherent in negotiating their own developmental issues of identity and autonomy. During adolescence the ability to use logic and abstract thought begins to unfold enabling the adolescent to more fully comprehend the complexity of social and psychological predicaments (Elkind, 1974; Elster et al., 1983; Keating, 1980). Elster et al., (1983) argue that the relative cognitive immaturity of adolescents may prevent them from developing realistic expectations and attitudes toward childrearing. Furthermore, they suggest that cognitive immaturity creates a self-centeredness that precludes putting infants' needs ahead of their own.

A commonly held belief is that adolescents who become pregnant are the least prepared for handling the demands of childrearing. In a prospective study of ninth grade girls, Pauker (1969) compared MMPI profiles for girls who later became pregnant with those for girls who did not become pregnant. He found the profiles to be more similar than different; in fact the pregnant girls appeared to be more energetic, outgoing, and socially active. He did not find evidence to support the notion that pregnant adolescents tend to be less socially mature, more passive, or less emotionally integrated than their nonpregnant

classmates (Brooks-Gunn & Furstenberg, 1986).

Attitudes toward pregnancy for adolescents could be expected to be different from those of older mothers. Little research has been done to determine whether less positive attitudes toward pregnancy has any impact on parenting behavior. In a longitudinal study of 400 pregnant teenagers who were receiving prenatal care in Baltimore City hospitals, three-quarters of these teenagers wished they had not become pregnant and three-fifths indicated that their initial reaction was decidedly negative (Furstenberg, 1976b). These mothers and their children were tracked for five years. Seventy percent of these mothers reported feeling less negative one year after having the baby, yet less than one third of the mothers were able to report being "very happy". Four years postpartum, maternal attitudes persisted such that those women who reported being initially unhappy about the pregnancy also reported less interest in their four-year-old children. Nevertheless, attitudes toward parenthood were not reflected in actual maternal behavior (Furstenberg, 1976b).

Psychosocial Stresses Associated with Adolescent Pregnancy

Precursors of adequate parenting may include personal resources of the mother or primary caretaker, sources of stress and buffers available through social support, characteristics of the child, cultural beliefs, and socioeconomic status (Belsky, Robins, & Gamble, 1982; Brooks-Gunn & Furstenberg, 1986).

> With regard to stresses in conjunction with pregnancy, it is not clear that the teenager experiences more stress than the unmarried young adult, at least within a disadvantaged community; however, pregnancy, child-birth, and parenting are considered to be

> stressful events in and of themselves (Brooks-Gunn & Furstenberg, 1986, p. 234).

Research with adult mothers reveals that parental sensitivity can be adversely affected by maternal stress (Crnic, Greenberg, & Ragozin, 1981; Lamb & Easterbrooks, 1981; Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982; Thompson, Lamb, & Estes, 1982; Vaughn, Waters, Sroufe, & Egeland, 1979). Negative life events are moderately related to psychological adjustment (Dohrenwend & Dohrenwend, 1974; Mueller, Edwards, & Yarvis, 1977; Ross & Mirowski, 1979). Negative life events also tend to be associated with lower socioeconomic status, less education, with being female, young, and unmarried (Brown, Bhrolchain, & Harris, 1975; Pearlin & Johnson, 1977; Pearlin & Lieberman, 1977; Thoits, 1982); a combination of characteristics that describes most teenage mothers.

Adolescents tend to rely heavily on their families to meet their practical needs. Family conflict, such as serious arguments with parents, boyfriends, and husbands, present significant difficulties for teenage mothers. In contrast, nonadolescent mothers report more difficulty with scheduling of infant care. Marriages between teenage parents tend to be very unstable and frequently result in divorce (Glick & Norton, 1977). Although some teenage mothers find their husbands or boyfriends are an important source of support, researchers have found that they frequently create a great deal of stress for the teen mother (Crockenberg, 1987; Gonsalves, 1980). When adolescents have a boyfriend as part of their social support network, this relationship may limit contacts with other sources of social support (Thomas, Rickel, Butler, & Montgomery, 1990), especially sources that stress responsible parenting

behaviors or roles. Researchers expressed concern that reliance on a single source of support, and one which is likely to be unstable, fosters insecurity in the caretaking environment.

Social Support

Social support has been found to buffer the effects of stress. Turner and Noh (1981) investigated the relationship of life events to psychological adjustment in pregnancy and confirmed the premise that high social support and perceived personal control reduced the potentially negative impact of undesirable life events. Unfortunately, most first-time mothers and their infants experience social isolation (Halpern & Covey, 1983). This effect is compounded for the adolescent mother who is often isolated from the formal and informal societal networks which provide childrearing information and long-term social support, that are normally available to older mothers (Cannon-Bonventure & Kahn, 1979; Salguero, 1979). While social support in adolescent pregnancy and parenthood has not been researched extensively, antepartum social support in adults has been shown to lead to positive pregnancy outcomes (Nuckolls, Cassel, & Kaplan, 1972). Studies that have addressed the role of social support in adolescent pregnancy and childrearing have consistently shown that the adolescent mother's parenting ability is influenced by emotional support available to her (Baldwin, 1983; Colletta, 1981; Crockenberg, 1987; Osofsky & Diamond, 1988). Social support may enhance the adolescent mother's emotional well-being and facilitate her emotional availability to the child (Brooks-Gunn & Furstenberg, 1986). Osofsky and Eberhart-Wright (1988) believe that adolescent mothers are at considerable risk for being

emotionally unavailable to their infants and suggest that they need "refueling" through "meaningful supportive relationships". "The young mother who lacks support and feels abandoned and isolated is more likely to take out her frustrations on her child, either directly through aggressive behaviors, or, indirectly, through withdrawal and depression" (Osofsky & Eberhart-Wright, 1988, p. 229). Social support plays an important role in alleviating stress experienced by adolescent mothers and in increasing their emotional availability and sensitivity with their infants. The amount of social support received by adolescent mothers is positively related to the frequency of appropriate maternal behavior (Colletta & Gregg, 1981). Teenage mothers who perceive their social support as satisfactory also tend to respond to their children with more affection (Lee & Colletta, 1983). Adolescent mothers with more extensive social support networks espouse more nurturing parenting roles, and those who are more satisfied with this network have less restrictive parenting practices (Thomas et al., 1990).

Emotional support appears to be the most important form of social support, particularly when it comes from the adolescent's family of origin (Colletta & Gregg, 1981). Emotional support from parents and/or a partner appears to be associated with greater maternal expression of warmth and acceptance towards their children. Furthermore, the presence of a "significant other" in child care appears to be related to healthy development of the child (Furstenberg, 1976b; Kellman, Ensminger, & Turner, 1977). The presence of an adult or another child care provider in the home may contribute to the child's development directly through increased stimulation and nurturance or indirectly through alleviating

economic strain or adding a source of social-emotional support to the mother. Unger and Wandersman (1988) found that 75% of their teen mothers remained living in their parents' homes and relied on their parents for satisfaction of practical needs, while perceptions of current partner support were predictive of their responsiveness to the infant. Adolescents who continue to live with their families after the birth of their child are more likely to return to school and to be employed, and are less likely to depend on welfare (Furstenberg, 1976b; Furstenberg, Lincoln, & Menken, 1981). Adolescents remaining in their parent's home are also more likely to receive assistance with child care and display more nurturing behaviors with their infants (Clapp & Raab, 1978).

Caucasian teenage mothers, regardless of socioeconomic status, depend on other teenagers for help with child care more often than do nonadolescent mothers who tend to rely on other adults. The adolescent mothers also relied on their child-care network more frequently than nonadolescent mothers (Garcia Coll et al., 1987). Nonadolescent mothers reported almost exclusive reliance on their partners for support, while adolescent mothers in the Garcia Coll et. al, (1987) study reported depending on their mothers to a greater extent than on their partners for support in child care. Adolescent mothers were also much less likely to rely on their partner's relatives for support than nonadolescent mothers.

Child Abuse

Few researchers have investigated the characteristics associated with child abuse for populations of adolescent mothers. Research with

abusive, adult parents has shown that they tend to be deficient in knowledge of child development and hold inappropriate expectations for their children (Galdston, 1965; Oates, Davis, Ryan, & Stewart, 1977; Steele & Pollack, 1968). The United States Department of Health, Education, and Welfare (as reported in Avison, Turner, & Noh, 1986) announced the following characteristics are commonly associated with abusive parenting: Unrealistic expectations, lack of knowledge of child development, and an idiosyncratic view of the child. Adolescent mothers have been shown to demonstrate similar deficiencies in knowledge and expectations. Another characteristic of abusive parents appears to be that they dismiss the child's needs and are unaware of the child's thoughts and feelings (Steele, 1975). Other researchers have found that abusive parents hold the expectation that their children should be sensitive to the parent's emotional state and they tend to hold their children responsible for their own emotional well-being, otherwise known as role reversal (Flanzraich & Dunsavage, 1977; Martin, 1976; Spinetta & Rigler, 1972; Steele & Pollack, 1968). Abusive parents tend to maintain the conviction that children should be disciplined with physical punishment (Gray, Cutler, Dean, & Kempe, 1979; Steele, 1975; Wasserman, 1967). A study comparing abusive family characteristics with matched (i.e., SES, education, marital status, nationality of parent and age, sex, and health of baby) nonabusive families, found 34% of the child abuse and neglect (CAN) group mothers stated that they did not enjoy caring for their child while none of the control group mothers made this report (Oates et al., 1979). The CAN group mothers were more likely to have an unplanned pregnancy and to have a complicated delivery. Belsky

(1980) relates in his review of child abuse that a disproportionate number of abused children were born prematurely. Most adolescent pregnancies are unplanned and many more births to adolescent mothers are premature as compared to births to adult mothers. The CAN group mothers were more restrictive of their children's behavior but were also less likely to check on the activities or whereabouts of their child at any given time (Oates et al., 1979).

Burgess and Conger (1978) directly observed abusive parents interact with their children and found that they exhibited fewer behaviors toward their children (of any kind), were consistently more negative toward their child, and less likely to conform to requests made by their child. Bee, Disbrow, Johnson-Crowley, and Barnard (1981) investigated 22 abusing families and 45 non-abusing families from well-child clinics using the NCATS. They found abusive parents did not attend to or read their child's cues well. They began the teaching episode before securing the child's attention, and gave instructions throughout the task even when the child was not paying attention. They talked while the child was vocalizing and failed to pause when the child was engaged in non-task activity. There was no mutuality of interaction in the verbal interactions of each partner in the dyad. The abused children vocalized less throughout the teaching session. Abusive parents also used an imperative, demanding style of giving instructions and were far more likely to show disapproval than to smile, laugh, or praise.

Another research group found that confirmed physically abusive mothers scored higher on scales of depression and somatic complaints

than matched, nonabusive controls (Lahey, Conger, Atkeson, & Treiber, 1984). These abusive mothers directed negative physical actions toward their children at a rate five times greater than the control mothers. Another study revealed that mothers who had greater overall life stress, who were more reactive to emotional stress, and who were least effective in coping and problem-solving were more likely to become abusive parents (Pruitt & Erickson, 1983; 1984 as cited in Milner, Gold, Ayoub, & Jacewitz). The CAN mothers experienced more stress due to problems with finances, housing, domestic friction, and the health of family members (Oates et al., 1979). Unemployment, lack of monetary resources, and low job satisfaction appear to be related to increased instances of family violence (Gil, 1977; Steinmetz & Strauss, 1974). Many researchers have observed the link between child abuse and isolation from formal and informal social networks (Belsky, 1980). Mothers in the CAN group had less social support as measured by the amount of contact with other people and involvement in regular social activities (Oates et al., 1979).

Taken together the tendency of adolescent parents to have inappropriate developmental expectations of their young children, to experience social isolation, to value physical punishment as a primary means of discipline, and to experience many more stresses than older mothers suggests that they may be more "at-risk" of abusing and neglecting their children (Garbarino, 1976). "As a population, adolescents are more abusive in their attitudes than a population of known child abusers" (Bavolek, 1984, p. 42). Adolescents also tend to have poorer interactions with their infants and to praise or offer

reinforcement less often during teaching interactions (Grace, 1990).

EARLY INTERVENTION EFFORTS

Most intervention programs with teenage mothers are directed at the prenatal period and terminate services shortly after delivery (Field, 1981). While these programs are essential in promoting optimal physiological growth and development, the point at which these programs bow out may be most crucial in the emotional and social development of mother and infant (Field, 1981). Programs are needed that ameliorate the long term social, emotional, and educational consequences for mother and child. Intervention programs providing support to mothers with premature babies for 2 years post partum have been successful in improving mother-infant interactions and enhancing the social skills of infants (Bromwich, 1983). Tiffany Field (1981) developed an intervention program for lower income, black, teenage mothers with preterm infants. Biweekly home visits of 1/2 hour duration were designed to:

> (1) educate the mothers on developmental milestones and childrearing practices; (2) to teach the mothers exercises and age-appropriate stimulation for facilitating the sensorimotor and cognitive development of their infants; and (3) to facilitate mother-infant interactions in the interest of developing communication skills and fostering harmonious mother-infant relationships (p. 149).

Mothers were provided with developmental milestone charts with exercises for stimulating development. These exercises were demonstrated on home visits and toys were made available for practice between visits. The intervention was found to be successful in stimulating overall physical size of the infant, in generating more optimal Denver adaptability scores, in teaching teenage mothers to

assess developmental milestones more realistically, and to be more active in face-to-face interactions.

Beckwith (1988) implemented and evaluated a preventive intervention program using supportive home-visitor services to parents of infants who were at risk due to prematurity and low socioeconomic status. The home visitors intervened by developing a trusting, supportive relationship with the primary parent (mostly mothers) through which they linked families to community resources, provided concrete help to families (i.e., clothes, toys, transportation), and taught parents to develop the ability to observe and understand their infant's behavior in the context of normal development. With random assignment to intervention and control groups the intervention proved effective in increasing parental involvement with the infant and increasing the level of reciprocal interactions between parent and infant. Additionally, the evaluation revealed that "women who showed ambivalence or rejection of their pregnancies by not getting prenatal care were able, with intervention, to show high involvement to their infants, but did not do so without intervention" (p. 245). While the intervention was successful in changing parent-infant interactions, no differences were found between groups on the Bayley Mental Scale or attachment (using Strange Situation procedure) for infants at 13 months of age. However, at 20 months, the intervention babies began to show gains over the control babies in cognitive development. Intervention mothers had more realistic developmental expectations for their children, were more satisfied with themselves and their children, and made more realistic appraisals of themselves and their children.

Early intervention projects are most effective when they meet the following criteria: (a) Intervention begins at the earliest possible time (i.e., prenatally), (b) the mother-child dyad is given priority, (c) parents are involved as the primary teachers of their children, (d) real life needs of low-income parents are addressed (e.g., health care, housing) (Barrera, Rosenbaum, & Cunningham, 1986; Bronfenbrenner, 1975; Horowitz & Paden, 1973; Resnick, Armstrong, & Carter, 1988). Early intervention projects which support the parenting role through regular home visits have been successful in bringing about important changes in maternal responsiveness, maternal expectations for developmental milestones, and infant temperament (Shuman & Masterpasqua, 1981). Shuman and Masterpasqua (1981) suggest that programs should support parents so as to stabilize the caretaking environment. Interventions aimed at supporting parental competence to enhance child development must initially place importance on establishing a close relationship with the low-functioning parent (Barnard et al., 1988). Without the establishment of an interpersonal relationship between the home visitor and the mother, those mothers most "at risk" are likely to drop out of the program.

Welcome Baby Project

This study is a program evaluation of the Welcome Baby Project, a primary prevention program for teenage mothers and their infants. The program is a local adaptation of the Parent-to-Parent model designed by the High Scope Foundation and piloted in Vermont. The Vermont program was effective in increasing mothers' knowledge of child development and needs, ability to respond appropriately to infant cues, and ability to

recognize and enjoy new milestones as their infants performed new skills (Halpern & Covey, 1983). Mothers spent more time playing and talking to their infants. Halpern and Covey (1983) found the quality of verbal interaction most difficult to change. Only 25% of the mothers demonstrated improvement by praising, questioning, and explaining to their infants instead of forbidding, directing, and blaming in their verbal interactions. The program was most successful in fostering personal development in adolescent mothers. Many returned to school, completed high school, earned their G.E.D. equivalent, enrolled in vocational training or began working. Program mothers felt better about themselves as people and parents, established friendships, and took an interest in community life. A few sought counseling and many reported consistent use of contraceptives. These results suggest the program was effective in helping adolescent mothers feel more confident, respond more competently with their infants, set personal goals for their future, and gain more control over their lives.

The Welcome Baby project seeks to prevent developmental delay, child abuse and neglect, and disorders of attachment in the offspring of adolescent mothers. A complete program model specifying the Welcome Baby Project mission, goals, and objectives can be found in Appendix A. The Welcome Baby Project addresses the social and emotional needs of teenage mothers and their infants by promoting positive parent-infant relationships. The program monitors development of the infant and provides mothers with knowledge of child development, appropriate care-giving, home safety practices, and available community resources. The teenage mother is also encouraged to make plans for contraception to

prevent unwanted, repeat pregnancy and to give thought to planning her future. Welcome Baby receives referrals primarily from the Chesterfield Health Department as well as from the Chesterfield schools and other social service agencies. The program is delivered through weekly home visits during the first year of the child's life and biweekly home visits during the child's second year. The home visits are made by community volunteers, all of whom are mothers themselves. They receive an initial 24 hour training, monthly supervision by the program managers, monthly home visitor meetings, and in-service training about five times a year.

Home Visitors are recruited through newspaper advertising and notices to many community organizations (e.g., women's groups, day care centers, preschools, and churches). An initial telephone screening usually reduces the potential volunteer pool to about one-fifth or one-sixth of those responding to these notices and newspaper advertisements. The next step in the Home Visitor selection process is a personal interview. The WBP program managers use specific criteria for selection of Home Visitors including the following characteristics: Women who are mothers themselves and familiar with infant care, who are available during the day and have adequate free time, who express willingness to make a one year commitment, who have a high level of acceptance of less than optimal environments and tolerance for people with different values (e.g., ability to present information on contraception and abortion with neutrality), and who have the ability to prioritize. For example, the interviewer has a list of 20 questions and presents several scenarios (examples of situations a Home Visitor could encounter on a home visit)

and evaluates the respondent's ability to recognize what is optimal in infant care, the ability to tolerate poor conditions that may not meet their standards, to prioritize the aspects they would address as a Home Visitor, and understanding of useful ways to approach the teen mother. Approximately 75% of the potential volunteers who complete the interview go on to attend the 24 hour training. The training is experiential in style and addresses several broad areas, namely: Infant development (with an emphasis on speech and language), the provision of age appropriate toys, adolescent development, learning styles (volunteer identifies their own learning style and is taught to recognize its compatibility with other learning styles), and Home Visitor skills. Home Visitor skills include communication skills, observation skills, ability to prioritize, problem-solving skills, and values clarification (enhance awareness of the volunteer's own values and identify which values are difficult to suspend). The topics for in-service training vary based on informal assessment of what the volunteers need. For example, the Home Visitors recently received a two-part series on behavioral management skills.

Many prevention programs have been designed and piloted with the intention of ameliorating the "at-risk" status of infants born to adolescent mothers. However, few of these programs have been adequately evaluated. The Welcome Baby Project has been in place for eight years and has served approximately 40 to 50 teen mothers during that time. The WBP program managers believe they have a worthwhile and effective program; however, this assumption is based on clinical judgement and experience and does not derive from carefully collected and planned

empirical evidence. An evaluation of the effectiveness of the program in fostering more positive mother-infant interaction, in promoting optimal child development, in encouraging more stimulating and safe home environments, and in providing knowledge of desirable child care practices would allow the program mangers to be better informed about the impact and utility of the program. Evaluation will also serve as a guide to future decision-making as the program managers expand and/or improve the program based on information generated by this study.

The first step in the evaluation process was the elaboration of a program model. The evaluator guided the program administrators in specifying the overall program mission, goals, and objectives in clear and specific terms (see Appendix A). The program administrators were asked to formulate the questions they deemed most useful and relevant to their program. These questions were used to generate the hypotheses (listed below) and to guide the design of the evaluation. In addition to the current evaluation, consultation was provided to the program administrators and a plan (including instruments and data collection procedures) was developed so that a longitudinal evaluation could be implemented following the completion of this preliminary 2 year evaluation (see Appendices B and C).

Hypotheses

This evaluation was designed to assess the effectiveness of the program in meeting its primary goals. The absence of pre-measures on the mothers necessitated the use of a comparison group. The program evaluator worked closely with the program administrators to address their needs for information about the program. The hypotheses were

designed to answer questions of importance to the program administrators. While there are many important questions of both conceptual and practical significance, the limited availability of subjects and limited resources available for the evaluation necessitated a focus on a few primary questions.

The specific hypotheses generated were as follows:

1. Mothers who participate in the Welcome Baby Project (WBP) will demonstrate more positive mother-infant interaction/attachment than mothers who do not receive such intervention. This hypothesis will be measured by observations of mother-infant interactions during a two to three hour home visit and a semi-structured teaching exercise as well as self-report responses to an interview about daily routine and parenting practices.

2. Mothers who participate in the WBP will provide an environment for their infant which is more conducive to optimal growth and development than comparison mothers. The home environment will be assessed using a combination of interview and observation methods during a home visit and scored using a structured, empirically derived rating system.

3. Mothers who participate in the WBP will have more accurate knowledge of infant development than comparison mothers. This hypothesis will be addressed using mothers' estimates of the age at which infants achieve specific developmental milestones and become capable of performing specific tasks.

4. Mothers who participate in the WBP will have more appropriate expectations for their infants' development than comparison mothers.

Maternal expectations will be assessed using a structured questionnaire on parental expectations.

5. Mothers who participate in the WBP will have more appropriate attitudes about discipline of infants than comparison mothers. Attitudes about the use of physical punishment with infants and very young children will be measured using a structured questionnaire.

6. Mothers who participate in the WBP will use more desirable care-giving behaviors than comparison mothers. Care-giving behaviors will be observed during the home visit and scored using two empirically derived rating systems.

7. The infants of mothers who participate in the WBP will have fewer developmental delays (that are not attributable to congenital deficiencies or prematurity) than mothers who do not receive these services. The presence or absence of developmental delays will be assessed through observations of the infant performing specific skills from a developmental screening test with supplemental information supplied through maternal interview. The instrument selected to measure developmental delay is a screening tool. A more thorough examination of development is not warranted at this early stage. Measures of early child development have been found to be particularly unreliable. This is likely due to the individual differences found in achievement of developmental milestones. Those infants that show delays early in life frequently catch up to their more precocious counterparts without the aid of special intervention. This is an initial attempt to look at development. More useful information in evaluating the program will be derived from middle and late childhood with indicators such as school

performance and intelligence testing.

Method

The evaluation was cross-sectional in nature, comparing two groups of teenage mothers with infants spanning the 6 month to 2 1/2-year age range. The Welcome Baby program participants were compared to a group of teen mothers from the same geographical area. The evaluation assessed each mother-infant dyad at one point in time on a wide variety of measures during a 2 to 3 hour home visit made by the researcher and an assistant. Two William and Mary students who were trained and enrolled in a senior research course, assisted in data collection on the home visits.

In addition to the present short-term evaluation of program effectiveness, the WBP program administrators and the program evaluators have been designing a long-term strategy for data collection and program evaluation. This next phase will include both pre-post evaluation measures on the program mothers and longer-term follow-up of program "graduates." Information on "what actually happens" on home visits will be an important component of this phase II evaluation. In order to assess the degree to which the program is implemented in accordance with the program model, new questionnaires (to be filled out after each home visit) have been designed and integrated into the program's ongoing MIS/data system. Unfortunately, information on how the program was actually implemented or how much of the program (dosage) individual mothers received is not available for this evaluation. The information generated by the new questionnaires includes an analysis of the amount of time spent on particular types of activities (see Appendix B) as well as an elaboration of the methods of teaching employed by the home

visitors (see Appendix C).

Subjects

A total of 30 teenage mothers and their infants between the age of 6 months and 2 years 10 months participated in the evaluation. Fifteen current program participants and 15 control subjects participated in this study. The comparison group consisted of teen mothers who were drawn from two sources: (1) Referred to the program by the Chesterfield Health Department but for whom the program was unable to provide services or (2) referred for the study by their high school guidance counselor. To encourage the teen mothers to participate, they were offered $10 and an educational toy appropriate to their child's age.

The age of the teen mothers at the time of the birth of their babies ranged from 15 to 20 years of age with an overall mean of 16.8 years. The mean age of subjects between groups was comparable (non-significant difference) with program mothers being slightly older than control mothers. The infant sample consisted of 15 female and 15 male infants with an average age of 15.2 months. Five program mothers and seven control mothers or 40% of the sample were 16 years or younger at the time of their delivery.

Insert Table 1 about here

There were 25 white and 5 black mothers. Two infants were bi-racial; they were born to white mothers and had black fathers. Forty percent of the mothers in the study were married. Fifty-three percent of the mothers were unemployed; most of these unemployed mothers

reported that they were either actively seeking employment or planning to work in the future. Twenty-three percent of the teen mothers lived in households where the total household income was less than $10,000 and another 23% fell between $10,000 and $25,000. The total household income for 53% of the sample was $25,000 or more. Thus, the sample appears to have been approximately half middle-class (the median national income in 1988 was $32,190; Current Population Reports, 1989; 1990), a quarter working class, and another quarter poverty level. Poverty level in 1988 was set at $13,120 yearly income for a family of four; thus, with an approximate inflation rate of 5% (Consumer Price Index), the poverty level income comes out to 14,400.

The living arrangements were varied; 37% lived with adult relatives of the baby, 53% lived with friends or siblings, and 10% lived alone or with the baby's father.

Forty percent of the teen mothers were still in school at the time of the evaluation. Of the remaining 60%, six teen mothers had completed high school and 11 teen mothers had dropped out with 11 or fewer years of education. The educational level of the teens' parents was 11 years for both the mothers and fathers.

The indicators of infant health suggest that the sample of infants was fairly healthy. Low birth weight infants only made up 13% of the sample, the remaining 87% had normal birth weights. Seventy-seven percent of the infants were delivered on time, with only 13% of the infants being premature (four or more weeks early).

Prenatal care was self-reported to have begun by the program mothers at about 2 months 10 days and at about 3 months 6 days for the

control mothers; this difference was not significant. The sample had an average of 10.8 prenatal visits.

Intervention

The program mothers began the program at various points between the 8th month of pregnancy and the first 2 months after the infant's birth based on the timing of the referral. Most of the referrals come from the Health Department in the last trimester of pregnancy. The program administrators try to match a home visitor with a teen mother one month before the due date to begin the mother-home visitor relationship. The home visitor will frequently make a visit to the hospital when the baby is born. Sometimes referrals are made just after the baby is born or as much as one month later. Another factor influencing when the first contacts are made is the availability of a home visitor and the current number of program participants. Once the intervention has begun, the home visitors attempt to visit the teen in her home on a weekly basis for the first year of the infant's life and to visit every other week for the second year of the infant's life. This schedule of visits is difficult to maintain. The visits are likely to be canceled due to unexpected family events, lapses of memory, and difficulties matching schedules. The two cases which received the most frequent home visits were: (1) 104 visits for a 25 month old infant, and (2) 29 visits for a 7 month old infant. These two examples average to slightly more than one visit per week. At the other end of the continuum is an infant 20 months old who received 14 visits; this infant received less than one visit per month. Thus, the dosage or amount of the intervention received by program mothers varied considerably.

Unfortunately, information on the quality of the home visits is unavailable for this phase of the evaluation. Implementation of the program needs to be addressed; what actually took place on the home visits and some measure of the quality of the teaching, coaching, or support provided by the Home Visitors would be an important component of phase II of the evaluation. One of the initial tasks in the evaluation process was the development and initiation of data collection on the implementation of the program model (see Appendices B and C).

Materials

Nursing Child Assessment Teaching Scale (NCATS).

The NCATS (see Appendix D) was developed as a result of several studies exploring the cognitive environment of the child (Barnard, 1978). It was discovered that the best predictor of later cognitive development of the child and the child's later performance in school was the quality of the teaching interactions between the mother and infant (Hess & Shipman, 1965). Other investigators have studied maternal teaching styles and the interaction patterns of mothers and infants (Bee et al., 1969; Steward & Steward, 1973; Streissguth & Bee, 1972). The results of these studies were used to develop an assessment instrument for measuring the quality of teaching interactions between mother and infant. The NCATS has six conceptually derived subscales. The first four subscales describe the parent's behavior, and the last two describe the infant's behavior: (1) Maternal sensitivity to infant cues (Teach1), (2) Maternal responsiveness to infant distress (Teach2), (3) Social-emotional growth fostering (Teach3), (4) Cognitive growth fostering (Teach4), (5) Clarity of Infant Cues (Teach5), and (6)

Responsiveness to parent (Teach6).

Optimal responses of both the mother and child are assumed to be contingent on one another (Barnard et al, 1989); thus the concept of contingency is built into one-third of the items on the NCATS. Examples of contingent items include: "The child smiles at parent within five seconds after the parent's vocalization" and "The parent smiles or touches the child within 5 seconds after the child smiles or vocalizes." Maternal and infant contingency scales yielded internal consistency coefficients (Cronbach alphas) ranging from .71 to .88 for the standardization sample and two intervention samples.

Additional subscales have been developed (Barnard et al., 1989) using factor analysis; these analyses resulted in item clusters that reflect patterns of behavior found in the normative sample. The factors changed with infant age as did the items defining a particular factor. Thus, there were three different sets of empirically derived clusters corresponding to infant ages 1 to 12 months, 13 to 24 months, and 25 to 36 months.

There are a total of 73 binary items for which the rater scores yes or no. The affirmative answers are given one-point each; thus high scores represent better teaching interactions. Raters are trained in a graduate level nursing course to administer and rate the NCATS and must establish 85% reliability with a partner on a set of five videotaped mother-infant interactions in order to be certified in the use of this instrument. Test-retest reliability coefficients were derived from assessments conducted at 1, 4, 8, and 12 months of age; stability scores over all of the ages for the total parent scores was quite high (.85)

and the total infant score was somewhat lower (.55). The lower infant scores may reflect developmental changes.

Normative data was obtained on the NCATS in 1979 by training various health care professionals (e.g., nurses, psychologists, teachers) from 19 western United States cities to rate a minimum of five teaching interactions with 85% agreement. After achieving this level of agreement, the trained raters were asked to rate five additional teaching interactions, discuss their differences, arrive at a common scoring, and then return their score sheets to Nursing Child Assessment Satellite Training (NCAST) for inclusion in the normative sample. The sample consisted of mostly Caucasian, educated, middle-class, married mothers (average education level of 13 years or greater (Barnard et al., 1989). This normative sample can be used as a "healthy" comparison group for other socially "at-risk" samples which have received intervention. However, it is not completely clear how the socioeconomic and cultural differences commonly associated with socially high risk samples will influence the teaching scores; many of these differences may not have a negative influence on child development, but may generate less positive scores. Thus, evaluators and researchers should use caution in making these comparisons and make comparisons with other samples that represent the economic and cultural composition of the groups in question.

The NCATS was used in this evaluation to measure the degree to which the mother-infant dyads displayed positive interactions. Mothers and their infants were videotaped for a 10 minute free play period to give them time to become comfortable with the camera. The mother was

then given the instructions for the teaching interaction and a task to teach her infant. The dyad was videotaped for a 5 minute segment of teaching by the mother. Two nurses certified on the NCATS rated the videotaped interactions and came to agreement on each item.

The materials used in the teaching task were not standard materials. For example, the color and size of some of the items were different from those used by NCATS. The most striking difference was that the mother-infant dyads were given a box of small crayons instead of a single large crayon which caused some of the mothers to have difficulty teaching due to the child's insistence on switching crayons. Due to these non-standard conditions caution should be used in making comparisons between the NCATS scores in this study and those of other researchers.

Home Observation for Measurement of the Environment Scale (HOME). The HOME is a 45-item scale administered through observation of the mother-infant interaction (two-thirds of the item pool) and interview of the mother (one-third of the item pool) that measures the quantity and quality of social, emotional, and cognitive support available to a young child (birth to three years) within his/her home (see Appendix E). The items were selected based on empirical support for the importance of certain types of experiences in supporting the behavioral development of the child (Caldwell & Bradley, 1978, p. 7). The final item pool was established using a factor analysis of the previously standardized 72-item version. The items were grouped into subscales according to their factor loadings. The HOME has six subscales which were identified using a study of their content. The subscales are listed according to the

relative importance of each factor and include the following: (1) Emotional and verbal responsivity of the mother (HOME1), (2) Avoidance of restriction and punishment (HOME2), (3) Organization of the physical and temporal environment (HOME3), (4) Provision of appropriate play materials (HOME4), (5) Maternal involvement with the child (HOME5), and (6) Opportunities for variety in daily stimulation (HOME6).

The interview took about 30 minutes and the observations took about 15 minutes to complete. The interview and observations were conducted by two research assistants who remained blind to the group status of the teenage mothers. These assistants were trained in using the HOME with three mother-infant dyads. They achieved 93% agreement on one administration prior to the study. They each scored the same mother-infant dyads on three separate occasions to obtain a measure of inter-rater reliability and achieved 97.6% agreement.

Adult-Adolescent Parenting Inventory (AAPI). The AAPI (Bavolek, 1984) is a 32-item inventory with a 5-point Likert scale designed to assess the parenting and child rearing attitudes of adult and adolescent mothers (see Appendix F). The AAPI was developed, using literature search and interview of programs and agencies that work with abusive and violent parents, to identify parenting and child rearing practices of abusive parents. Four parenting constructs were identified and developed into four subscales. The first parenting construct is "Inappropriate Expectations" (AAPI-A) of the child. This construct measures the realistic understanding of the developmental capabilities of children, acceptance of developmental limitations, and a tendency to encourage self-growth and exploration. The second construct is "Lack of

Empathy" (AAPI-B) towards the child. It measures sensitivity to the needs of the child and the importance placed upon helping them meet their needs. "Parental Value of Physical Punishment" (AAPI-C) is the third construct and measures the degree to which parents value the use of corporal punishment. A high score on this subscale would indicate that the parent is concerned with the self-concept and well-being of the child and utilizes alternative and non-abusive means of discipline. The fourth construct is "Parent-child Role Reversal" (AAPI-D); this scale measures the parent's sensitivity to the needs of the child and the value placed upon helping the child to meet these needs. Role-reversal (low scores) occurs when the parent's needs are primary and the child is expected to help the parent meet their own needs.

The normative sample for the AAPI included 305 abused adolescents and 6,480 non-abused adolescents. The non-abused subjects were taken from the general population; their histories are unknown and some may have been abused. Both groups of adolescents were compared with nonabusive adults and adults known to be abusive. It was found that "all adolescents, regardless of sex, race, and abuse history express significantly ($p < .001$) more abusive attitudes in each of the four parenting constructs than adults, whether abusive or non-abusive" (Bavolek, 1984, p. 42).

The raw scores are converted to standard scores with the higher standard scores indicating the less abusive and more nurturing respondent attitudes. Standard scores of 1 and 2 were obtained by only 4.4% of the population and are considered high risk for abusive parent-child interactions. Standard scores of 3 and 4 were obtained by 15% of

the normative population and are low scores indicating deficiencies in parenting behavior. Scores of 5 and 6 fall about the mean, while standard scores of 7 and 8 reflect attitudes that exceed what would be expected from the "average parent". When determining risk for abuse, Bavolek suggests comparing the adolescent scores to the adult norms for known abusers. In this way, the responses of the AAPI provide an index of risk (high, medium and low) for holding abusive and neglectful parenting and child rearing attitudes.

High Scope Knowledge Scale (HSKS). The High Scope is a card sorting technique which measures the respondents' expectations of infant development during the first 2 years of life (see Appendix G). Participants were asked to sort 73 cards describing a particular need or ability of infants and toddlers according to the age they think the behavior described would first appear. Four-month intervals are used to recognize individual differences in development. Answers are coded to reflect both the direction and magnitude of incorrect estimates; thus, a tendency to consistently under or over estimate the abilities of infants and toddlers can be discerned using the High Scope.

The number of correct responses was used as a measure of the accurate knowledge teen mothers possessed and entered into the overall analysis. The percentage of early and late expectations was also compared between groups.

Battelle Developmental Inventory (BDI) - Screening Test. The BDI measures key developmental abilities in five domains: Personal-social, adaptive, motor, communication, and cognitive (see Appendix H). The BDI was developed by identifying developmental milestones or attainment of

critical skills in a particular sequence occurring between birth and 8 years of age. The developmental milestones were selected through review of tests of infant and early childhood abilities, the literature on childhood development, and review by professionals with specialties in the area (Newborg, Stock, Wnek, Guidubaldi, & Svinicki, 1984). These milestones were piloted on 500 children from birth to 8 years. The age at which a particular skill develops was determined empirically using the pilot test data. The criterion for the BDI was that approximately 75% of the children at an age possess the skill. The BDI has been standardized on a nationally representative sample of 800 children birth to 8 years of age who were selected on the basis of age, race, sex, geographic region, and subregion. The sample was carefully selected to represent the population with 75% urban, 25% rural, and a wide range of socioeconomic status with an emphasis on the middle income group.

The BDI employs multiple administration procedures. The items are presented in a structured test format using interviews with parents, observations of the child, and administration of specific tasks with the child. The BDI was administered in a natural setting (the home in this case).

It has been well documented that infant test scores, without the inclusion of supplementary information from parent report, show little relationship to later ability measures (Bayley, 1959; Honzik, 1976; Lewis, 1973; McCall, Appelbaum, & Hogart, 1973). Over the course of development, there is considerable variability in performance levels on repeated testings (e.g., McCall et al., 1973; Sameroff, 1978). Using an early form of the Bayley Scales, Werner and Bayley (1966) found 8-month-

old infants had 2 month test-retest consistency of 74%; however, the variability in item performance was high with a standard deviation of 13.7%. Horner (1988) explored infant test reliability in and around the first year of life using the Mental Scale of the Bayley Scales of Infant Development. The Mental Scale was administered twice with 1 week between administrations. Test-retest correlations for 9-month-old female and male infants was .42 and .67 respectively, and .96 and .72 for 15-month-old female and male infants, respectively. The first year of life may be marked by greater performance variability that gradually gives way to greater stability in the second year of life (Horner, 1988). Given these findings and the large number of 6 month to one-year-old infants included in the present evaluation, a screening test of developmental abilities that includes parental report in addition to observations of infant performance was selected. Furthermore, the use of a scoring criteria which takes frequency of behavioral performance into account may reduce the large variability found in other infant tests.

The items on the screening version of the BDI were selected for their good item-total score correlation (.70 or higher) and an item difficulty as near .75 as possible. The validity of the BDI Screening Test was assessed by administering it to 164 children in the norming and clinical samples prior to the administration of the full BDI. The Cognitive Domain score on the Screening Test correlated .92 with the corresponding scale on the full BDI. Otherwise, correlations between corresponding scales were at or above .96. Items of the BDI Screening Test are scored using a 3-point scale. A score of "2" is given when the

child's response meets the specified criteria. A score of "1" means the child attempted the item, but did not meet all the criteria for a correct response. Often the score of "2" represents frequent demonstration of the stated ability, while a score of "1" represents the emergence of the ability.

Total raw scores and raw scores on each of the five domains were converted to age equivalent scores. The age equivalent total score was compared to the infant's actual age (corrected for prematurity of one month or more) to generate a final score representing the degree to which the infant's score was consistent with his/her corrected age.

The Demographic Questionnaire. All participants were asked to complete a demographic questionnaire which consisted of questions related to age, family income, race, and employment status (see Appendix I). An important issue is the comparability of the two groups; therefore, fairly extensive information which addresses the risk status of each program participant was collected. Questions addressed areas of risk identified in the literature on high risk mother-infant dyads (e.g., health status of the infant, presence of substance abuse or emotional problems in the home, amount of social support available to the mother in caring for her infant).

All subjects were asked to indicate their current needs using a list of possible needs (i.e., information about how children grow and develop, on feeding schedules, locating a doctor, or assistance in applying for the Women, Infants, and Children Program).

The Welcome Baby program mothers were also given a set of questions about their relationship with the home visitor, how much they

learned and practiced new activities with their infants, reasons for missed appointments, and difficulties scheduling home visits. They were given an open-ended question about changes they would like to see in the Welcome Baby Progect.

All of the demographic information collected on the teen mothers was obtained through self-report. Self-report may be less reliable than data obtained directly from records. However, at the end of the Demographic Questionnaire, subjects were asked to indicate whether they felt comfortable enough to answer all of the questions frankly. One of the subjects left this question blank; the remaining 29 subjects all indicated that they felt comfortable enough to answer truthfully.

Home Visitor Measure. This measure was a questionnaire which asked home visitors to estimate the amount of the program received or the number of home visits the Welcome Baby teen mother had received up to the date of her evaluation, as well as the percentage of missed appointments, the percentage of misses that appeared to be due to a lack of motivation, and the frequency with which the teen mother appeared to follow through on the home visitor's recommendations (see Appendix J). This information was used to assess the amount of the program teen mothers received. The paperwork collected prior to the evaluation was used along with the home visitor's calendar and program administrator's supervision records to determine a rough estimate of the number of home visits each teen mother received.

The home visitors were also asked what emphasis was placed on each of the program goals, whether more emphasis should be placed on each goal, and how successful they believed the program was in accomplishing

that goal. They were asked about the program's strengths and weaknesses in meeting the needs of teenage mothers. The questionnaire solicited suggestions for changes in the program, information about the quality of their experience volunteering for the Welcome Baby Project, and information about the training and supervision they received as a home visitor.

Procedure

The Program participants were approached by their home visitor from the Welcome Baby Project (see Appendix K for Home Visitor Verbatim Script) and asked to participate. Potential control subjects from the original Health Department referral list were contacted by telephone and asked to participate using the Verbatim Script for Control Subjects (see Appendix L). The control subjects from Chesterfield high schools were approached by their guidance counselors and asked permission for their name and phone number to be given to the researcher (see Appendix M).

Data collection involved making a 3 hour home visit to each teen mother. The researchers used the Verbatim Script for Home Visits (see Appendix N). During the visit, participants were given a copy of the Consent for Participation in Research form (see Appendix O) and asked to sign it. They were then asked to complete the AAPI, the High Scope card sort, and the demographic questionnaire. There was a 5 to 10 minute period of free play for videotaped observation of mother-infant interaction, and a 5 minute videotaped observation of the teaching period. The home environment was observed and the mother was asked interview questions concerning daily and weekly child care environment and routine. The experimenter did an assessment of the infant using the

Battelle Developmental Screening Inventory supplemented with information from the mother as to observations she has made of her child's abilities.

Results

The principal purpose of this program evaluation was to determine whether the provision of weekly home visits to teenage mothers enhanced their ability to parent effectively and improve their infant's chances of developing optimally. Toward this end, teenage mothers who received intervention were compared with a control group of mothers who did not receive the intervention. Of central importance to the study is the degree to which these groups are actually similar prior to intervention.

The initial pool for the control group recruiting came from the 23 Health Department referrals that had not been contacted to participate in the WBP. This group had been denied services because of the limited number of Home Visitors or because they were less "at-risk" (excluding referrals who were offered the program and refused). These Health Department referred, non-contacted teenagers made up the initial pool for control group recruiting. Several characteristics of this group made it very difficult to contact them; the group was highly transient (moved multiple times within as well as between counties) and low income, hence, their phones were disconnected due to moves, non-payment of phone bills, or they had no phone in the first place. For this reason, the researcher attempted to get new phone listings, obtained an updated address and phone listing from the Health Department, and traveled to individual homes to speak in person with the teenager or to confirm the current occupant at that address. Clearly, the control subjects recruited from this later pool may not be representative of the Health Department referrals that entered the WBP. The control group members that were actually recruited are likely to be the most stable,

the best functioning, and the most motivated to provide the best care possible for their infants.

Eight of the 15 control mothers were recruited from the original Health Department referral list; one of the Health Department referred subjects was offered the program and refused to participate and a year or so later she was referred by her guidance counselor for the evaluation and she accepted. The remaining 7 control subjects were recruited through the guidance counselors and may represent less "at-risk" teen mothers. Those teenage mothers referred by their guidance counselors are less likely to be low income or to have dropped out of school (in fact, data presented below confirms these suspicions). Hence, there were two different points at which selection biases occured and may have made the control group less "at-risk" than the WBP program mothers.

Additionally, there is a selection process that makes those teenage mothers who were referred by the Health Department and offered the program potentially different with respect to "at-risk" status than the Health Department referred mothers who were not offered the program and therefore were eligible to participate as control subjects. The WBP program administrators attempt to serve those teenage mothers in their community who appear to be most "at-risk"; therefore, they offer the program first to those teenage mothers for whom significant risk factors are known (see risk factors used by WBP below). If the teenage mothers recruited for the control group are less "at-risk" than mothers in the program, this difference would make it more difficult to detect benefits derived from participating in the Welcome Baby Project.

Welcome Baby Project Guidelines for Assessment of Risk

The WBP program administrators use the following factors as indicators of high risk status to prioritize their selection/offer of the program to teen mothers: Young maternal age (15 years or less), psychiatric history or Child Protective Services history, living outside the immediate family, substance abuse history, premature birth, health risk for the mother (e.g., bedrest, high blood pressure) or the fetus/infant (e.g., failure to thrive), school drop out, known family dysfunction/distress over pregnancy (e.g., parental rejection of teenage mother), previous completed pregnancy, and low maternal intelligence (i.e., mild mental retardation or borderline intellectual functioning).

Since the evaluation began, the program administrators have responded to a perceived community need and hired someone to provide services to mothers with mental retardation. While this portion of the program was not evaluated, the long-term evaluation needs to be adapted to assess this expansion of services provided through the Welcome Baby Project.

Comparability of Groups

A number of variables were examined to establish the general similarity of the two groups of mothers and to identify any existing dissimilarities. Comparisons between the two groups indicated that the teen mothers were similar on several demographic measures and dissimilar on a number of important risk related variables; however, the two groups were statistically similar on almost all of the variables due to the small number of subjects evaluated. There were no significant differences between groups on the teen mother's age (at the birth of her

baby), race, marital status, employment status, education acquired, or the educational level of their parents. The control group mothers were slightly younger than the program mothers; however, the mean ages may be skewed due to the inclusion of two 20-year-old mothers who were considered very high risk and were 19-years-old at delivery. The mean scores are presented in Table 1.

Insert Table 1 about here

There were significant differences in total household income, t (28) = -3.28, $p < .003$. Forty percent of the program mothers lived in households with total incomes less than $10,000, while 80% of the control mothers lived in households with the total incomes of $25,000 or more. While the number of years of education (whether currently in school or not) was quite similar for the two groups (mean for program mothers = 11.1 and mean for control mothers = 11.5), the program had more mothers who dropped out of school. Eight program mothers and 4 control mothers dropped out of school before completing high school. The program and control groups each had three mothers complete high school and the program had one mother who was in her first year of college.

The sex, age, and race of the infants were closely matched between groups.

Insert Table 2 about here

Infant health risk problems were ranked on a 5-point Likert scale with scores of "5" representing health problems most likely to interfere with later growth and development and "1" representing the least health risk to future development. Ailments which received a score of "1" included the following: Allergy to milk, swallowing of stool with the need for brief hospitalization (4 days or more). Viral or bacterial infections such as flu, bronchitis, strep throat, and a stomach virus were assigned a health risk rating of "2". The most frequently reported health problem was multiple ear infections; this problem and pneumonia were assigned a score of "3". A ranking of "4" was assigned to premature infants with a birthweight between 1500 and 2500 grams. Those infants weighing less than 1500 grams at birth, requiring a respirator or mechanical feeding, and one Downs Syndrome baby with a heart defect and in need of bilirubin lights were assigned a health risk score of "5".

Insert Table 3 about here

Three program infants and one control infant were less than 2500 grams at birth and were born 4 or more weeks earlier than their due date; therefore, these infants would be considered to be premature and low birthweight. Additionally, three program mothers and no control mothers reported that their infant was hospitalized for an episodic illness.

The program mothers reported beginning prenatal care almost a full month earlier than the control mothers; however, the average number of

prenatal visits for program mothers was one fewer than the control group. Neither of these differences were statistically significant. Two program mothers reported using alcohol during their pregnancies. One of the mothers reported drinking on two occasions, the other reported having one wine cooler about once a month.

Potentially serious maternal prenatal complications (risk to mother) included high blood pressure (five mothers) and kidney infection (one mother). A total of six mothers reported one of these problems; these mothers were evenly split between the two groups.

Maternal intelligence was not measured in the program evaluation. The program administrators reported that one program mother was mildly mentally retarded and another has a borderline range IQ (information provided by referral source). Each of the control mothers appeared to the evaluator (doctoral student in clinical psychology) to have at least average intelligence; however, this estimation may be unreliable.

Another important set of variables dealt with the mental health of the adolescent mother and her family of origin. Three adolescent mothers in the program group self-reported having experienced emotional problems; whereas, none of the adolescent mothers in the control group reported such problems. Emotional problems in an immediate family member were reported by two program mothers and three control mothers. Substance abuse problems were self-reported by one program mother, who made a note that she discontinued use of substances 6 months before the birth of her baby. None of the control mothers reported abuse of substances. Substance abuse problems in a family member were reported by five program mothers and three control mothers. Thus 26% of the

program mothers self-reported some kind of mental health problem, while none of the control mothers reported any mental health problems.

Insert Table 4 about here

There were no significant differences in the adolescents' assessment of "how her family feels about the baby", of how she "felt about the pregnancy," or of how she felt about having the baby at the time of the evaluation. These items were scored on a Likert scale with "1" representing "very happy" and "5" representing "very unhappy." Group means reflect that almost all the mothers reported feeling "very happy" about having their babies and reported that their family felt "very happy" about the baby. Most of the teen mothers reported feeling "a little bit happy" when they first found out that they were pregnant.

Social support available to the mother in caring for her infant was measured in several ways. The adolescent mothers were asked to estimate the percentage of time they assume caretaking responsibility for their baby. There were no significant differences between groups.

Insert Table 5 about here

For the entire sample, 37% reported caring for their infant "almost all of the time," 20% reported caring for their infant "at least 75% of the time," 33% reported caring for their infant "at least 50% of the time," and 10% reported caring for their infant "at least 25% of the time." There were no significant differences between groups in the

persons who help in child care or the involvement of the baby's father. A little more than half of the fathers played with their infants, babysat, fed, and diapered their infants. Twenty-five percent helped bathe their infants. A little less than half of the fathers contributed some financial support for their infant.

The baby's father shared in the caretaking for 47% of the sample. The teen's mother or grandmother helped care for the infant in 50% of the sample. Another relative helped by taking care of the infant for 30% of the sample and a regular babysitter was used by 27% of the teens. Only 17% of the mothers reported caring for their infant without help from any of the sources mentioned above.

The adolescents' living arrangements can be considered an important indicator of the social and material support available to them. The two groups appear to be fairly similar with respect to the presence or absence of adults in the home. About one-third of each group resided with their own parents or with the parents of the baby's father. For the control group the remaining two-thirds resided with agemates (husband, boyfriend, friends, or siblings). In the program group, the remaining two-thirds was split between living with agemates and living alone; three of the program mothers lived completely on their own.

Analysis of the relative risk of program versus control group mothers showed that the WBP program mothers had more low birth weight infants, fewer babies with no health risk factors, and more emotional and substance abuse problems. More program mothers dropped out of school, lived on poverty-level incomes, and were unemployed. The

control group mothers had one more report of both emotional problems in an immediate family member and conflict at home, and they averaged five months younger than the WBP program mothers. Even though the attempt was made to find control subjects who were comparable to the group of program mothers, it appears that the program mothers were more at risk than the control mothers.

Cumulative Risk Score

Risk factors associated with biological and social-environmental characteristics are influential in the developmental process. Numerous studies support the notion that predictions of risk should combine data from multiple sources (Meisels & Wasik, 1990). Parmelee, Kopp, and Sigman (1975) held that an additive approach (presence or absence of each risk factor is tallied) to combining indices of risk is most useful given that child development is multidetermined. A combination of risk factors used in one study "resulted in a nearly three-fold increase in the magnitude of differences found among groups of children relative to the effect of most single variables" (Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987, p. 347); these variables included maternal mental health, parental perspectives, maternal anxiety, maternal interactive behavior, maternal education, occupation, minority group status, family social support, family size, and stressful life events. Others have emphasized combining measures of the individual with assessment of environmental forces that influence the range of stability (Ramey, MacPhee, & Yates, 1984).

Bright Beginnings, a grant supported (United States Department of Education, Handicapped Children Early Education Programs) demonstration

project sponsored by the Williamsburg-James City County Public Schools and Child Development Resources serves children from birth to 5 years of age and their families who are "at-risk" for developmental delays. Bright Beginnings has developed a risk factor checklist to organize information about the risk status of families to assist in determining eligibility for the program and the level of services that would best meet the needs of particular families. Risk factors associated with the child include: Prematurity (less than 37 weeks gestational age) and/or low birth weight (less than 2500 grams), history of need for life support systems, failure to thrive, chronic post-natal health problems (e.g., ear infections), questionable score on the Denver Developmental Screening Test, previous placement in an early intervention program, sibling in special education, and transient or absent caregiver. Risk factors associated with the mother include: History of mental retardation, mental illness, or other handicapping condition, undereducated mother (less than high school diploma or equivalent), history of no prenatal care until third trimester of pregnancy, prenatal problems or complications, maternal age of 19 years or less, socioeconomic problems, stressed family dynamics (history of abuse between family members, Child Protective Services involvement, history of foster care, substance abuse of family members, divorce, chronic unemployment), transient lifestyle, unsafe environment, and problems with parent-child interaction or parenting skills. The Bright Beginnings Checklist closely matches the risk factors used in selection of WBP program participants.

Unfortunately, our knowledge of risk factors and their

contribution to developmental delay or child abuse and neglect is not specific enough to quantitatively reflect the relative magnitude of their contribution to outcomes. Therefore, the cumulative risk score for this evaluation relied upon an additive approach with each risk factor scored as present (score of one) or absent (score of zero) and a total risk score was computed.

The risk factors used by the Welcome Baby Project (mentioned above), with the exceptions of the presence of a Child Protective Services history and of family distress over the pregnancy (information not available), were used to derive a cumulative risk score. Total household income less than $7,000 was also included as a risk factor as poverty-level income has consistently been found to have a significant negative impact on child development. Additionally, those teenage mothers who were behind in school as compared to their age were found to be significantly more "at-risk" than mothers who were in the grade appropriate for their age (personal communication, Marky McDowell, 1991, Program Evaluator for the Rural Infant Care Project); thus, this factor was included in the cumulative risk score. Subjects were not directly asked whether the infant participating in this evaluation was their first child; however, there were no indications on a 3 hour home visit with extensive interview that any of the mothers had a second child with the exception of one program mother for the whom the target infant was her second child (first child was present in the home during the evaluation); therefore, the t-test between groups was conducted with and without this factor included in the cumulative risk score. The two groups were significantly different without the second child factor, t

(28) = 2.10, $p < .045$, and with the second child factor, t (28) = 2.20, $p < .036$: Program mothers (M = 3.7) had more risk factors than the control mothers (M = 2.5). The difference between groups in risk status makes it far more difficult to detect program effectiveness and makes the underestimation of program impact more likely.

Major Analyses

A multivariate analysis of variance (MANOVA) was conducted on four dependent variables: The NCATS total score, the HOME total score, the AAPI total score, and the High Scope score for accurate expectations. The independent variable was group membership (intervention vs. non-intervention). The overall MANOVA was non-significant with a Wilk's lambda test (U = .92) such that F (4,25) = .53, $p < .71$. See Table 6 for group means.

Insert Table 6 about here

All of the means for the program mothers were higher than those of the control group; however, these differences were small and non-significant.

Pearson correlations were conducted between a number of variables and the dependent variables. If a measure correlated significantly with one or more of the dependent variables, it was selected as a covariate. One additional variable, household income was selected as a covariate due to the importance of this factor in "at-risk" status and the significant difference between groups. See Table 7 for a listing of significant correlations with the dependent variables.

Insert Table 7 about here

A multivariate analysis of covariance (MANCOVA) was run using the following covariates: Prematurity, birthweight, and household income. The MANCOVA was non-significant (although it approached significance) with a Wilk's lambda test (U = .72), F (4,22) = 2.16, $p < .107$. The univariate F-test for accurate expectations on the High Scope was significant such that F (1,25) = 8.20, $p < .008$; these results need to be interpreted with caution because the overall MANCOVA was not significant. This finding suggests that the program mothers have more accurate knowledge of developmental milestones than the control mothers.

A MANCOVA was conducted using two additional dependent measures, early and late expectations generated by the High Scope Knowledge Scale and the covariates described above. The MANCOVA was non-significant with a Wilk's lambda test (U = .72), F (5,21) = 1.66, $p < .187$. The univariate F-test for late expectations was significant such that F (1,25) = 4.75, $p < .038$. Control mothers had more late expectations than program mothers; however, it should be kept in mind that the overall MANCOVA was not significant.

A MANOVA was conducted using the subscales for the NCATS, the HOME, and the AAPI. This analysis also proved to be non-significant with a Wilk's lambda test (U = .56), F (16,13) = 0.64, $p < .805$. Pearson correlations were conducted using a variety of variables that might theoretically be related to these scales. Those variables generating significant correlations to the subscale scores were used in

a MANCOVA. These variables included the following: Birthweight, prematurity, maternal age at delivery, marital status, percentage of time teen spent in caring for her infant, and total household income.

Insert Table 8 about here

The MANCOVA was non-significant with a Wilk's lambda test ($U = .24$), F (16,7) = 1.40, $p < .338$.

Another dependent variable, the BDI, was not included in these analyses in order to retain the entire subject pool. One of the program mothers had a Downs Syndrome baby; therefore, the BDI could not be given as the delay would not reflect environmental influences. A t-test was used to compare the remaining 29 subjects; it was non-significant with t (20.4) = -1.08, $p < .293$.

Nursing Child Assessment Teaching Scale (NCATS)

Two measures of knowledge of child development as measured by the High Scope, accurate expectations and late expectations were significantly correlated with the third subscale of the Teaching scale, Social and Emotional Growth Fostering, r (30) = .60, $p < .001$, and r (30) = -.57, $p < .001$, respectively. Thus, the teenage mother's ability to interact with her infant in ways that are expected to foster social and emotional growth appears to be related to her accurate understanding of development.

The parent and infant subscale scores for program mothers were compared to the NCATS normative sample of adult mothers. On both the total parent and infant scales, the program mothers scored significantly

below the normative sample of adult mothers and their infants, t (14) = -3.13, $p < .007$, and t (14) = -4.06, $p < .001$, respectively. Forty-seven percent of the program mother-infant dyads scored at or below the 10th percentile for the normative sample.

The NCATS normative sample for adult mothers with less than a high school education obtained a mean of 36.3; the Welcome Baby program mothers' mean total parent score was 36.1. The total infant scores for the normative sample (M = 14.0) were significantly higher than the WBP total infant scores (M = 11.8); t (14) = -2.20, $p < .045$. In the 1979 NCAST normative sample, maternal age was correlated with the Teaching (r = .19), Feeding (r = .19), and HOME (r = .23) scales; younger mothers tended to be less competent in mother-infant interaction and tended to provide less adequate home environments. Maternal age accounted for 10% of the variance on the Teaching and Feeding scales and 12% of the variance on the HOME (Barnard, 1986).

The maternal and child contingency scale scores were not significantly different for the program and control mother-infant dyads; the maternal contingency scale mean for the program mothers was slightly higher than the mean for the control mothers and the child contingency score mean for the control infants was higher than the mean for the program infants.

Insert Table 9 about here

The program mothers' contingency scores were also compared to a sample of mother-infant dyads in the Clinical Nursing Models Project

(CNM; Barnard et al., 1989; sample of socially high-risk women with low social support who received intervention throughout their pregnancy and the first 12 months of their child's life; 40% of this sample consisted of teenage mothers). The comparison of maternal contingency scores for the WBP mothers and the CNM mothers yielded a non-significant difference. The comparison of child contingency scores were significantly different, t (14) = -4.54, $p < .001$; the WBP infants were far less contingently responsive than the CNM infants. Barnard (1986) reported that the NCATS total parent score for the CNM sample was correlated with maternal age (r = .20), accounting for 10% of the variance.

The empirical cluster scales (separated into appropriate age groups) were used to compare the control and program groups and to identify areas of strength and weakness for the program mothers. The two groups of mothers with infants 5 to 12 months of age were compared on eight cluster scales with a MANOVA which yielded a significant difference, with a Wilk's Lambda test (U = .06), F (8,5) = 9.09, $p < .013$, favoring the control group. One univariate F-test was significant F (1,12) = 8.45, $p < .013$; the expression of negative child cues was higher for the control infants as compared to the program infants. The mean scores for program mother-infant interaction was compared to the total number of items on each scale to determine the relative strength or weakness demonstrated on each scale. The program dyads did exceptionally well (achieved either all of the items or all but one item on the scale) on the "Avoidance of Punishment," "Positive Parental Response to Distress," and "Avoidance of Criticism scales."

They did very poorly (achieved half or fewer items) on the Positive Parental-Child Mutuality, Positive Feedback from Parent, Mutual Eye Contact, Cognitive Growth Fostering, and Negative Child Cues. See Table 10 for mean scores.

Insert Table 10 about here

The group of mothers with infants 13 to 24 months of age were compared for the two groups using a MANOVA on seven empirical cluster scales (one scale had no variance as both groups achieved all of the items); the analysis was not significant with a Wilk's Lambda test (U = .59) F (7,4) = .40, p < .863.

Insert Table 11 about here

The group of program mothers with infants 13 to 24 months of age did exceptionally well on the Avoidance of Punishment, Positive Parent-Child Task Focus, and Positive Mutual Task Focus, and fairly well on the Positive Parental Response to Distress, and Avoidance of Criticism. They achieved half or fewer items on the following scales: Positive Feedback for the Parent, Positive Non-Verbal Responsiveness by Child, and Negative Child Cues.

There were only four program dyads with infants aged 25 through 34 months. They did exceptionally well on four scales: Avoidance of Punishment, Positive Parental Response to Distress, Parent-Child Verbalization, and Relaxed Parent-Child Teaching. They did poorly (half

of the items or less) on Positive Non-Verbal Interaction and Mutual Eye Contact.

Insert Table 12 about here

Twenty-two abusive mothers were compared to 45 nonabusing mothers recruited from well-child clinics (Health Department sample) on mother-infant teaching interactions (Bee et al., 1981). The interactions were conducted in the mother's home, where the teaching session was videotaped. The sample was roughly similar to the WBP sample as they were 90 and 93% Caucasian and 44% of the nonabusers and 50% of the abusers had less than a high school education. However, these mothers were older with mean ages of 23 and 24 for the nonabusive and abusive groups, respectively. The results of the teaching task appropriate to the child's chronological age were compared with the WBP NCATS results (for a description of the Bee et al., 1981, study results see page 43). See Table 13 for NCATS subscale means.

Insert Table 13 about here

The comparison of subscale means reveals that the WBP sample did better than both the non-abusive and abusive mothers on the Maternal Response to Distress and Social-Emotional Growth Fostering scales. The WBP means on the Cognitive Growth Fostering and Child's Clarity of Cues scales fell below those of the nonabusive mothers and above those of the abusive mothers. However, the WBP infants demonstrated far less

responsiveness than either group on the Child's Responsiveness to Parent scale.

Home Observation for Measurement of the Environment

While there were no significant differences between the program and control mothers on the HOME, these groups can be compared with the HOME scores from other studies. It should be noted, however, that reliability in the ratings between studies has not been established. A sample of 66 adult (mean age = 24.9 years), healthy, working and middle-class women (average income in 1973 was $11,000-$12,000; 85% were Caucasian) from a Health Maintenance Organization (HMO) hospital in Seattle, Washington, who had a high school education or less were assessed using the HOME when their infant was 12 months of age; the average total HOME score for this group was 33.0 (Bee et al, 1982). The average total HOME score for our sample was 40.0. The total HOME score for our sample more closely matched the more highly educated group (more than high school education) whose mean total HOME score was 39.1.

Attitudes Toward Parenting Practices

The program and control mothers scored very similarly on the AAPI. Means for program mothers were consistently higher, yet, this small difference was non-significant.

Insert Table 14 about here

The subscale scores for this sample can be compared to those of the non-abused adolescent (adolescents from the general population) normative group. On the first subscale, Parental Expectations, the

program mothers scored within the average range and reflect the "norm" for their group. The control mothers scored in the uppermost end of the low range suggesting they may have some deficiencies in their understanding of normal child growth and development and in their expectations of developmental capabilities. Both groups scored in the uppermost section of the average range on the Empathy subscale; thus, both groups demonstrated attitudes consistent with communicating, nurturing and valuing the needs of young children. Both groups also demonstrated average commitment to the use of physical punishment. The program mothers scored in the upper end of the average range, while control mothers scored in the lower end of the average range. Appropriate family roles were endorsed by program and control mothers. Both groups scored in the upper portion of the average range suggesting they fairly accurately perceived children's needs as well as their own needs as separate and distinct. When the raw scores on the AAPI for this sample were compared to the normative sample of known abusers, they scored below average on the Expectations Construct, and in the average range for the remaining three constructs.

The Role Reversal construct was positively and significantly correlated with knowledge of developmental milestones as demonstrated on the High Scope, r (30) = .43, $p < .01$; thus, the more knowledge teens possessed with regard to development, the more appropriate were their expectations of family roles and the more likely they were to see their own needs as different from those of young children.

Knowledge of Child Development

The High Scope Knowledge Scale generates information about early

and late developmental expectations as well as accurate expectations. The program mothers were more accurate in their developmental expectations and were less likely to have late expectations than the control mothers. See Table 15 for frequency of early, late, and accurate developmental expectations by group.

Insert Table 15 about here

Early developmental expectations were more frequently endorsed by program mothers than the control mothers; however, the difference was not significant.

Amount of Intervention Received by Program Participants

The number of visits received by teen mothers ranged from 14 to 104; these were rough estimates of the number of visits. The number of visits received was significantly and positively related to the child's age, r (15) = .49, $P < .032$; note that only about 25% of the variability in the number of visits appears to be related to the length of time that Welcome Baby has been involved. The visits ranged from .70 visits per month to 4.2 visits per month. The average number of visits received by the program participants per month of the infant's age was 2.14 or slightly more than biweekly. The number of visits received by program participants was not significantly related to any of the dependent variables.

The number of visits received by the program mothers was correlated with the BDI screening test, r (14) = -.52, $p < .027$; the poorer the developmental age equivalent score compared to actual age,

the more home visits the mother-child dyad received; however, this correlation was not significant. Also, the number of visits received by the program mothers was correlated with the age of the mother with marginal significance, r (15) = -.39, $p < .077$; thus the younger mothers received more home visits than the older mothers.

Home visitors were asked to estimate the percentage of scheduled visits that were missed due to the teen's inability to keep the appointment. Estimates ranged from zero to 50%. The most frequent estimates included: 40% of the teens were estimated to have missed 10% of scheduled visits and 33% of the teens missed between 15% and 30% of the scheduled visits. Overall, 80% of the program mothers missed 30% or fewer scheduled visits, the remaining three teens each missed 33%, 46% and 50% of their scheduled home visits. Missed visits were not significantly correlated with the dependent variables.

Home visitors were also asked to indicate the percentage of misses that appeared to be due to a lack of interest or motivation (e.g., a poor excuse for a missed visit). The home visitors indicated that nine program mothers or 60% of the sample had almost no misses due to lack of interest. The remaining six mothers appeared to miss visits due to a lack of interest between 25% and 100% of the time. The missed appointments appeared to be due to a lack of interest 75% of the time or more for three program mothers and between 25% and 50% of the time for another three program mothers. Missed visits due to a lack of motivation was not significantly correlated with any of the dependent variables. As one might expect, the percentage of visits that were missed was highly correlated with the Home Visitor's assessment of lack

of interest, r (15) = .62, $p < .007$. 0

While the data for the Home Visitor's estimation of how often their teen mother followed through on their recommendations (e.g., for acquiring resources, for infant care techniques, or infant activities) was incomplete (this question was completed for only nine of the program mothers); most program mothers were believed to have followed through with recommendations frequently (M = 3.6). Follow through on recommendations was significantly and negatively correlated with lack of interest, r (9) = -.70, $p < .018$; thus, the lack of interest and use of recommendations appear to measure a similar construct which is likely to be related to motivation for learning.

Other Indicators of Program Effectiveness

Several self-report questions were asked to ascertain other areas of program effectiveness.

Insert Table 16 about here

The occurrence of repeat pregnancy was the same for both groups; two teens, one from each group, reported being pregnant at the time of the evaluation. Emergency room trips for accidental injury were made by four program mothers and two control mothers. The program mothers each had one emergency room trip due to an accident, while the two control mothers had two separate trips due to accidents.

Child Protective Services was given a list of all the adolescent mothers in the evaluation, separated by group, and asked to indicate the number of reports made and the number of founded cases of abuse and of

neglect. There were two reports that were founded cases of neglect and both were program mothers. There were no reports or cases of abuse in either group.

The teen mothers were asked to indicate how confident they were in their parenting ability. There were no significant differences between the two groups. Eighty-three percent of the sample indicated they felt "confident" and the remaining 17% indicated they felt "somewhat confident".

Comparison of Reported Needs Between Groups

The two groups reported similar needs (no significant differences); thus the needs assessment will be summarized for the two groups combined. On the whole the teens reported very few needs. The teenage mothers were asked whether they "would like more information on how children grow and develop." Several areas of development were specified, namely, motor, language, cognitive, self-help, and social development. Fifty-three percent of the sample felt they had never needed information about the development of motor skills. Fifty percent of the sample felt they had "never needed" information about the development of language, while 30% of the sample indicated they had some information on language development provided, but would like more. Four control mothers (13% of the sample) and no program mothers responded that they would like information on language development at this time. Information on cognitive development or "learning and problem-solving" for infants was more evenly distributed across levels of interest. Twenty-seven percent of the sample indicated they had information provided but would like more, 23% (mostly control mothers) indicated

they need this kind of information presently, and only 33% responded that they had never needed information on cognitive development. Similarly, information on self-help skills for infants (e.g., eating, dressing, toileting) was received but still sought by 27%, currently needed by 27% and has never been needed by 33% of the sample. Social skill development was never needed by 60% of the sample, while 30% felt they had this information provided and wanted more information.

Information on "how to handle my child's behavior" was never needed by 30% of the sample (seven of the nine giving this response were control subjects), 37% indicated they had this information provided but would like more (47% of the program mothers responded this way), 10% would have liked to have had more information in this area, and 17% would like this information now. There was a bimodal distribution of scores for information on feeding schedules and nutrition with 33% indicating they had some information provided but wanted more and 53% indicating they have never needed this information. First aid and emergency information had been received and was currently desired by 33% of the sample, 30% would like this information now, and 17% had never needed this type of information. Sixty percent of the sample has never needed information on a legal question or problem, while 23% would currently like such information. Information about job and educational opportunities for the teen mother was not needed by about 45% of the sample. Twenty-three percent and 17% of the sample indicated having had job and educational opportunity information, but also indicated that they wanted more information; 27% and 37% indicated they needed this kind of information at that time. Teen mothers were asked whether they

needed information about their child's medical condition or disability; 67% had never needed such information, 17% would like that kind of information, and 13% felt they had already had that kind of information available to them, but would like more.

Teen mothers were asked whether they needed assistance in locating a doctor for their baby or a doctor for themselves; eighty-three and 80% indicated they had not needed this kind of assistance. The mothers were also asked whether they needed assistance in locating a qualified babysitter or day care center; 67% never needed such assistance, 27% wanted such assistance.

Subjects were asked whether they would like assistance in applying for social service programs such as Aid to Dependent Children (ADC), Women, Infants, and Children (WIC), Supplemental Security Income (SSI), and Medicaid. For these programs, 57% to 77% of the teen mothers felt that they had never needed help in applying for these programs. Eleven control mothers reported never needing help with Medicaid application, while only six program mothers felt they didn't need help.

In response to the statement "I would like help with getting these items for my baby: Baby equipment (e.g., crib, stroller), clothes, toys, diapers, and formula," about 70% of the sample felt they "never needed" help. Twice as many program mothers as control mothers stated the current or past need for each of these items. Another area of potential need assessed was concrete assistance with clothing, heat, and food. Eighty percent of the sample responded that they have never been in need of assistance with these items. Again, those teens who reported needing clothing, heat or food were more often program mothers than

control mothers.

Counseling was another general need area assessed. Teens were asked whether they felt they would like counseling for drug or alcohol abuse, controlling their temper, marital problems, depression, or managing/budgeting their money. All 30 mothers reported never needing counseling for drug or alcohol abuse. Ninety-seven percent felt they have never needed counseling for control of their temper or marital counseling; one program mother reported needing help with her temper and one control mother reported needing marital counseling at the time of the evaluation. Counseling for depression was a reported current need of one program mother and two control mothers; the remaining 90% of the sample reported never having this need. Thirteen percent wanted counseling for managing their money at the time of the evaluation, another 13% felt they had had help but wanted more, and 70% felt they had never needed this kind of help.

Program Mothers' Evaluation of the Program

The mothers were asked to rate the degree of comfort they felt in working with their home visitor on a 5-point Likert scale with "1" corresponding to the statement "I felt very comfortable" and "2" corresponding to the statement "I felt pretty comfortable." At the far end of the scale, "5" corresponded to the statement "I felt very uncomfortable." Sixty-seven percent of the program mothers reported feeling "very comfortable", and the remaining 33% reported feeling "pretty comfortable." Forty-seven percent of the mothers responded with the most positive alternative (a score of "1"), "a lot," to the question: "How much have you learned about infant care-giving?" The

score of "2" or "quite a bit" was endorsed by 40% of the mothers and the remaining 13% said they had learned "some." None of the mothers selected "not very much" or "nothing." Program mothers were also asked to indicate on a 5-point Likert scale, how much they practiced new activities with their baby after the home visit. Thirteen percent reported practicing "a lot," 80% reported practicing "quite a bit," and 7% (one respondent) reported "not very much" practice.

Difficulty scheduling appointments can have a tremendous effect on the implementation of the program. Program mothers were asked to give their views on how difficult it was to schedule visits using a 3-point Likert scale. Seventy-three percent of the respondents acknowledged "a little trouble" and the remaining 27% reported "no trouble." The mothers were also asked to indicate the most common reasons for missed visits. The most frequent reasons given for missing appointments were "my child was sick, I had a doctor's appointment" and "my Home Visitor called to reschedule the appointment." The next most frequent responses were "I forgot the appointment" and "I had been out of the house and didn't make it back in time."

The program mothers were asked, "What changes should we make to improve the Welcome Baby Project?" Four mothers wrote "nothing" and three left it blank. The other mothers said:

1) Get young mothers together more.
2) I really enjoyed the attention that I received and all the helpful info that was provided to me. The program was wonderful and I would not recommend it change in any way. Thanks.
3) None. It's a great and wonderful program.
4) None. Keep up the great job they already do.
5) I am very pleased with the Welcome Baby Project. I was not sure at first if I wanted to get involved but once I did I was very glad.
6) More information about health needs.

7) No changes, I like it the way it is. Well, I'd like to go to picnics or birthday parties for the other WB babies -- get together with other program participants.

Home Visitor's Evaluation of the Program.

The current Home Visitors (n = 10) were asked to rate the emphasis placed on each program goal, the appropriateness of the emphasis the goal currently receives in the program, and the success the Home Visitor feels the program has in accomplishing/promoting the goal. The emphasis placed on each goal was assessed using a rating scale from "1" (very weak) to "5" (very strong). The Home Visitors felt the most emphasis was placed on helping the teen mother to feel competent as a parent (M = 4.2), teaching parenting skills (M = 4.1), and fostering mother-infant attachment (M = 3.9). The goals receiving the least emphasis, on acquiring formal and informal social support (M = 3.0), preventing unwanted, repeat pregnancy (M = 3.1), preventing developmental delay or fostering optimal development (M = 3.4), and assisting teens in providing a safe and stimulating environment (M = 3.6) were still seen as receiving at least moderate emphasis. It should be noted that one Home Visitor noted that she rated the emphasis on promoting development as "very weak" because the infant was "so active and on target there wasn't a lot of need here."

The perceived appropriateness of this emphasis was assessed by asking the Home Visitors to rate (on a 3-point scale) whether the goal should receive more emphasis (score of 1), whether it receives the proper emphasis (score of 2), or whether it receives less emphasis than it should (score of 3). The most frequent response for all of the goals was that the proper amount of emphasis was given (mode equaled 2 for

each goal). There were two dissenting opinions in favor of more emphasis for preventing developmental delay, encouraging the provision of a safe and stimulating home environment, on helping the teen mother to feel competent as a parent, and in preventing unwanted, repeat pregnancy. There were four (40%) responses favoring more emphasis on helping the teen mother acquire additional means of social support.

Home Visitors assessed the program's success in meeting its goals on a rating scale from "1" (not at all) to "5" (very successful). Home Visitors felt the program was on average "somewhat successful" in achieving its goals for five of the six goals. They felt the program was most successful in fostering attachment ($\underline{M}$ = 3.6); 40% of the Home Visitors saw the program as either quite or very successful and 60% saw it as somewhat successful. Fifty percent of the Home Visitors saw the program as quite or very successful in supporting the teen's sense of competence as a mother ($\underline{M}$ = 3.5). Teaching parenting skills ($\underline{M}$ = 3.4), encouraging safety and stimulation in the home environment ($\underline{M}$ = 3.3), preventing unwanted, repeat pregnancy ($\underline{M}$ = 3.4), and promoting optimal development ($\underline{M}$ = 3.2) received a broad range of responses; however, in all cases, except pregnancy prevention, the program was seen as successful to some degree. Twenty percent of the Home Visitors felt the program was not at all successful in preventing unwanted, repeat pregnancies. The program was felt to be the least successful in fostering social support ($\underline{M}$ = 2.7); overall the Home Visitors found the program to be only slightly successful and one Home Visitor felt the program had not been successful at all in promoting social support.

Eighty-two percent of the Home Visitors found the supervision they

received from the Welcome Baby program administrators as "very helpful" and the remaining 18% responded with "quite helpful". The Welcome Baby staff's appreciation of the Home Visitor's work was rated by 73% of the sample as "very much appreciated." The remaining 27% reported feeling their work was appreciated "quite a bit." Eighty-two percent of the Home Visitors found the staff "very supportive" and the remaining 18% gave the second highest rating of "quite supportive." The Home Visitors were asked if the frequency of supervision was sufficient; all but one reported that it was adequate (the most positive response option). One Home Visitor reported that supervision was too frequent. Comments made about supervision included:

> 1) ...always open for suggestions and discussion, readily available for problems.
> 2) ...very caring, great back-up.
> 3) I received a lot of practical suggestions and moral support when I needed it. Once in a while I couldn't contact anyone.
> 4) Everyone has been very helpful, knowledgeable, and respectful.
> 5) ...good listener, often praises my efforts, and makes appropriate and helpful suggestions.

The Home Visitors were asked to assess how comfortable they felt in working with their teen mother interpersonally and as a teacher/peer helper; 82% felt "very" or "quite" comfortable interpersonally ($\underline{M}$ = 4.1) and 63% felt "very" or "quite" comfortable in the role of teacher/peer helper, while 27% felt only "a little comfortable" in this role. The Home Visitors estimated how much of a difference they make in their teen's life. Twenty-seven percent believed they made "a little difference," 36% believed they made "some difference", 27% believed they made "quite a bit of difference," and 9% believed they made "a lot of difference."

A free response format was used to generate information about the

strengths and weaknesses Home Visitors saw in the program. Several quotes on the program strengths are included below:

> 1) Giving the teen an experienced role model to ask advice or get approval from.
> 2) It is hard to answer this because I didn't have enough time with [my teen] to really carry out the program properly. A lot of time was spent on the crisis at the moment.
> 3) These "at-risk" families need all the help they can get. Helping the teen mom make a good bond with the baby and helping her feel good about the choices she has to make is so important.
> 4) Giving teens a sense of competence and direction.
> 5) The one-to-one relationship should promote communication between the teen and the volunteer. [My teen] had a barrier to establishing a successful relationship, her mental retardation and her childhood relationship with her mother.
> 6) It improves the mother's self-esteem and competence. It gives the mother a support system. It improves interactions of mother and child.
> 7) I feel the program helps to foster independence between teen and parents (giving teen responsibilities of infant) - highly encourages use of birth control. Provides good resources for infant and parent as to health, basic daily needs (food, clothing) and development of infant.

In addition to the strengths Home Visitors commented on above, they responded to questions about the needs of teen mothers and their infants that are not addressed by the program and about areas of the program that could be altered to remediate deficiencies or improve the existing services. Weaknesses in the program were commented on as well:

> 1) Prenatal care, social support.
> 2) I am always able to make referrals and my supervisor has always been helpful in finding ways to meet her needs.
> 3) Previous relationship to her mother and her experience in receiving good parenting from her parents.
> 4) I wish we could do more to help the moms stay in school or go back to school - Money is the biggie here. Also, I would like the moms to get together for support groups - transportation is the biggie here.
> 5) I think they need to meet with other teen moms for discussion groups. It would improve their support structure.

> 6) I think problem-solving (helping the teen to problem-solve) should be addressed more. Volunteers should not jump too quick to help out or solve the teens' problems for them (stress this).

One Home Visitor commented that she feels her teen mother needed formal mental health services.

The home visitors were asked to indicate what they found rewarding about working as a Welcome Baby Volunteer. One home visitor remarked that she felt helping her teen mother feel "respected" was rewarding. Others reported the comraderie with the other volunteers and helping someone or "contributing to someone else's life" was rewarding. One of the Home Visitors commented that "...being able to promote more effective bonding between parent(s) and child and sharing my knowledge with the teens" was rewarding. Another volunteer reported that "...[getting] to the root cause of the problem instead of struggling with problems after they have occurred is gratifying - the sense of possibly helping prevent problems..." These statements suggest that the volunteers have found their experience as a WBP Home Visitor quite rewarding.

Inquiries about those aspects of working as a Home Visitor for the WBP that were not rewarding were also made. Home Visitors delineated various aspects of their work with teen mothers that they found "emotionally draining and/or frustrating." One Home Visitor replied that "...struggling to communicate with one teen mother with borderline intelligence" was difficult. Frustrations resulted from expending a great deal of time and energy and having

the teen not take your advice, from showing up for scheduled home visits and finding the teen wasn't home, and from juggling their own family lives around their teen's needs. One Home Visitor responded, "I wish I had initiated a more structured, teaching-type environment with my teen as opposed to a buddy-buddy style." Home Visitors also struggle with not seeing immediate results of their efforts and "not being able to help families work through some deep seated problems that often exist before Welcome Baby Program is implemented."

Discussion

The purpose of this evaluation was to determine whether the Welcome Baby Project has been successful in its attempts to foster more positive mother-infant interaction, to promote optimal child development, to encourage the provision of more stimulating and safe home environments, and to encourage the use of more desirable child care practices. The results of this program evaluation neither solidly confirm nor disconfirm the hypotheses of program effectiveness. The factors that contribute to this uncertainty and ambiguity are discussed. The results do suggest that WBP mothers may have realized modest benefits in important areas and clearly point to the need for continued longer-term evaluation.

The design of this evaluation centers upon a comparison of program mothers and control group mothers who were presumed to be comparable when they were recruited. Therefore, the degree to which these groups were or were not similar is of central importance. Mothers were not randomly assigned to groups and selection biases were present during both the recruitment of mothers to receive the intervention and the recruitment of mothers to participate in the control group. These biases were typical of a "real-world" program and were unavoidable. They could not be completely controlled for or eliminated.

Given the centrality of the issue of group comparability, this discussion will concentrate first upon the ways in which the two groups differed, and then proceed to an explication of program outcomes. The groups were comparable on several variables

including: Mothers' age, race, marital status, the amount of education acquired, the educational level of their parents, maternal prenatal complications, percentage of caretaking responsibility, and the social and caretaking support mothers' received from the baby's father and from the extended family. The sex, race, and age of the infants was comparable as well.

On the other hand, there were differences of considerable importance. For example, the program mothers had more babies with significant health risk factors, including low birth weight and episodic illnesses requiring hospitalization. Twenty-six percent of the program mothers reported having some kind of mental health concern, while the control mothers did not report any mental health problems. This finding is consistent with the impressions of the program managers that the risk status of teen mothers entering the program has increased over the past two or three years with more of their mothers having mental health problems. Other indicators of risk include the finding that twice as many program mothers had dropped out of school. Forty percent of the program mothers as compared to 7% of the control mothers lived in households with less than $10,000 yearly income, and two of the program mothers had below average intelligence. There were some areas in which the control group mothers demonstrated more risk than the program mothers; the controls had one more family member with emotional problems and one more conflictual family situation, and the average maternal age was 5 months younger than the program mothers.

These observations were confirmed by a statistically significant difference in risk status determined by comparing the two groups using a cumulative risk score. Hence, while the attempt was made to find control subjects who were comparable in demographic and risk status to program mothers; program mothers were, in fact, significantly more at risk than control mothers. The difference in the risk status of the intervention group and the comparison group threatens the assumption of comparability and makes detecting program impact more difficult. The increased risk status of the program mothers leads one to suspect that their pre-intervention performance on the dependent measures would have been poorer than that of the control subjects.

Compounding the difficulties in detecting the intervention effect is the lack of power due to the small number of subjects. The $p < .05$ confidence level has been traditionally used for psychological research to minimize the occurrence of Type I errors or false positives; yet, more rigorous confidence levels also reduce statistical power. In some kinds of research it is especially important to set a stringent confidence level; however, in other areas of research or under different circumstances more potential harm may be done by setting a too stringent confidence level and falsely concluding that a program with modest impact is ineffective. For each research or evaluation project one should weigh the relative importance of minimizing false positives (Type I errors) versus false negatives (Type II errors) and set the confidence level accordingly. Evaluators, in contrast to

researchers, tend to be more concerned about Type II errors or failing to detect a real program effect (Posavac & Carey, 1989). Type II errors can occur because the sample of program participants was small or non-representative of the whole population. Unfortunately, Type II errors occur far more often than most researchers or program administrators (agreeing to conduct an evaluation) realize. The research designs of 122 program evaluations reviewed by Lipsey et al. (1985) (cited in Posavac & Carey, 1989), were found to be too weak to detect small or even moderate sized effects. The potential negative effects of adopting an ineffective, low cost, educational program are not very serious, especially when alternative programs are not available (Rossi & Freeman, 1989, p. 239). Advice given by Posavac and Carey (1989) is applicable to this evaluation situation. They believe that:

> ...when a relationship has been predicted on the basis of solid theory or previous evaluations, then the evaluators are more justified in giving serious attention to trends supporting this relationship, even when statistical tests do not yield traditional levels of statistical significance (p. 261).

The WBP has developed comprehensive services to meet the needs of adolescent mothers and their infants in an attempt to offset the social and environmental factors that contribute to dependency on AFDC, repeat pregnancies, and attaining less than a high school education in the adolescent mother, and to lower IQ, poorer language skill development, and less adequate social and emotional development in children. The costs associated with rejecting a program that may have tremendous,

positive impact on the lives of adolescent mothers and their infants due to a Type II error far outweigh those of supporting a program that is largely ineffective. The worst possible consequence for setting a less stringent confidence level and concluding that an ineffective program has utility is that limited community resources are spent to support an ineffective, low cost program, while its recipients and managers believe it is useful. Based on these considerations, the 10% confidence level was adopted in this evaluation.

Using this less stringent confidence level, the overall analysis of the four major dependent variables approached significance when the variance attributable to birthweight, prematurity, and household income were controlled. Using a less stringent confidence level might lead one to conclude that WBP mothers did better on each of the measures than control mothers. This conclusion reflects both the difficulty and the importance of balancing the risks of Type I versus Type II errors.

Despite the lack of power and the increased risk status of the program mothers, the overall pattern of results was encouraging. While the difference in means for most of the dependent variables were not significant, the means were consistently in the predicted direction with program mothers performing somewhat better than their less "at-risk" counterparts.

The exception to this pattern was the BDI; this finding is not surprising because WBP infants had higher health risk status and this measure is closely tied to biological factors. In fact, few evaluations of early intervention efforts have been able to demonstrate developmental gains in full-term infants below the age of two.

Children's performance on standardized tests have little predictive validity until the child is 24 months of age (Bee et al., 1982).

The High Scope Knowledge Scale results differentiated the two groups: WBP mothers were more accurate in their understanding of developmental milestones and had fewer late expectations. Late expectations may hinder the mother's ability to provide developmentally appropriate stimulation or to detect developmental delay. These findings suggest that the Welcome Baby Program has been successful in providing information about developmental milestones and that the program mothers are more aware of the developmental progression their babies undergo from birth to 3 years of age. Understanding the developmental process should enable mothers to provide more appropriate stimulation for their infants.

The adolescent mother's ability to interact with her infant in ways that facilitate social and emotional growth were found to be associated with her accurate knowledge of developmental milestones. The effectiveness of the Welcome Baby Project in promoting accurate developmental expectations should contribute to the program mothers' competence in promoting social and emotional development in interactions with their infants.

Comparison of Means with Other Groups

The NCATS scores for both the program mothers and the control group mothers fell below the mean for the NCATS normative sample of adult mothers; 40% of the WBP mother-infant dyads scored at or below the 10th percentile for the normative sample. This finding is not surprising given that 10% of the variance in the NCAST normative sample

and the Clinical Nursing Models sample was attributable to maternal age alone. Furthermore, the NCAST normative sample consisted of low risk mother-infant dyads. Comparisons were also made between the adult mothers from the NCATS standardization sample who had less than a high school education since this group may be more similar in educational level to the intervention sample of adolescent mothers. Maternal education has a strong linear relationship to NCATS, Feeding Scale, and HOME scores with higher levels of education associated with better parent-infant interaction and HOME scores (Barnard et al., 1989). The Welcome Baby Project mothers' scores on the total parent and infant scales were equivalent to the NCATS normative sample of adult mothers with less than a high school education. However, the program infants' scores were much lower; the program infants provided cues that were less clear and they were less responsive to their mothers' cues than infants in the normative sample of mothers with less than a high school education. The WBP mothers' performance as measured on the NCATS parent score is quite promising when compared with mothers of similar educational level and higher socioeconomic status.

There were no significant differences between the program and control groups on the maternal and child contingency scores. The WBP mothers were similar to the CNM mothers who had received a 12 month intervention; however, the WBP infants were far less contingently responsive to their mothers than the CNM infants.

Infant development allows for increasing participation in the teaching interaction, hence, higher scores are generally attained by older infants and their mothers (Barnard et al., 1989). This correlated

change in Teaching scores (with increases in infant age) makes it difficult to find adequate comparison groups for the evaluation sample; finding comparison groups of adolescent mothers with similar economic, geographical, and racial composition is difficult enough without the added demand of securing samples that measured infants similar in age. The cross-sectional design of this evaluation adds to the difficulty in making comparisons with samples from other studies which typically design their assessment strategy based on a single age or multiple pre-determined infant ages. The infant ages for the evaluation sample ranged from 5 to 34 months. Thus, it was necessary to divide the WBP mother-infant dyads into subsets based on infant age in order to make comparisons with other study samples.

Grace (1990) studied young mothers (ages ranged from 15-23) and their infants at 3 months of age and while it is not possible to directly compare those means with the present sample (because the scores differ with infant age), these young mothers scored significantly lower across each subscale of the NCATS than the NCATS normative sample. Thus young mothers (though still a significantly older sample than the evaluation sample) were also found to have lower scores compared with the NCATS normative adult sample. Therefore, compared to the National norms the young mothers did more poorly in their mother-infant interactions.

The evaluation sample was separated into three age groups (5 to 12 months, 13 to 24 months, and 25 to 34 months) to examine the empirical cluster scales and assess the strengths and weaknesses of the WBP mothers. In the youngest infant age group, WBP infants gave fewer

negative cues than the control infants. Crittenden and DiLalla (1984) found that the number of negative behaviors exhibited by young infants (9 to 12 months) in play increased with mothers who were overly controlling. The number of negative cues decreased fairly dramatically after one year of age; negative cues comprising 95% of the infant behaviors at 12 months, fell off to 30% of infant behaviors at 15 months, and 5% of infant behaviors at 36 months. The infants replaced the negative cues given between 9 and 12 months with passive and unresponsive behavior in reaction to their mothers' controlling behavior. These findings suggest that the control group mothers may have been more controlling. Unfortunately, the NCATS does not measure this variable in the mother-infant interaction so this hypothesis cannot be further addressed here.

The two evaluation samples were similar at the 13 to 24 month age bracket and between group comparisons were not possible for the oldest age group as it consisted entirely of WBP dyads. Strengths of the WBP mother-infant dyads that were consistently found for each of the age groups were the avoidance of criticism and punishment and positive parental response to distress in the infant. The WBP mothers with toddlers also demonstrated strengths on parent-child verbalizations and in conducting a relaxed teaching period. The interaction scores for the mothers with the youngest infants were quite poor in positive parent-child mutuality, positive feedback from the parent, and cognitive growth fostering (an example of a cognitive stimulation item is: "Parent uses both verbal description and modeling simultaneously in teaching any part of the task"). Positive parent-child mutuality (examples of these items

are: "Parent smiles or touches child within 5 seconds when child smiles or vocalizes" and "Child smiles at parent within 5 seconds after parent's gesture, touch, or facial expression changes") was much better for the middle group of mother-infant dyads. Positive parental feedback was fairly low across all age ranges and may be an area which could be improved by concentrating program emphasis on rewarding competent infant behavior. Other researchers have also found that the most frequent component missing in the Teaching interactions of teenage mothers is feedback to the child (Aten, 1988). On the basis of informal observations made by the evaluator, the WBP mothers tended not to praise their infants for successfully completing the task, nor did they reinforce small accomplishments during the teaching episode. The lack of feedback prevented the mothers from setting up a pattern of successive approximations. The WBP might provide structured presentations on teaching methods that enhance the infants ability to learn. The exercise used in the training of Home Visitors to heighten their awareness of learning styles and teaching techniques might also be useful for the adolescent mothers.

Grace (1990) also analyzed the empirical cluster scores which demonstrated striking differences in the maternal provision of positive feedback and cognitive stimulation between the young mothers in her sample and the NCATS normative sample of adult mothers. The young mothers tended not to offer praise nor positive reinforcement or to clarify and present the task in a manner which promotes learning. These results are quite similar to those found for the program mothers with the youngest infants.

Similar to the Parent-Child Mutuality cluster is the concept of maternal and child contingency. The scores of the two evaluation samples were similar on these two scales. The WBP mothers also earned maternal contingency scores that were similar to those of the CNM mothers who had received a 12 month intervention. Thus the program mothers' scores were comparable to another intervention sample with more resources. However, the WBP infants were far less contingently responsive to their mothers than the CNM infants.

When compared with a sample of mothers who had documented histories of abuse of their infants, the WBP mothers achieved better scores on all of the parent subscales and the WBP infants were more clear in the cues they gave, but were less responsive than the abused groups of infants. The WBP mothers' response to child distress and ability to foster social and emotional growth surpassed that of the adult, nonabusing mothers. The WBP mothers were less proficient in their sensitivity to infant cues and in promoting cognitive growth.

The program mothers' scores on the NCATS are considerably lower than adult comparison groups, yet, when they are compared to other socially high risk populations that have received intervention and samples of adults with less than a high school education, their scores are similar. The WBP mothers' scores surpassed all of the scores for an abusive, adult sample of mothers. A puzzling finding is that the WBP infants were consistently less responsive, less contingent in their responses, and gave fewer negative cues than any of the comparison samples. The program mothers may experience more difficulty and receive less reinforcement for contingent responding due to their infants' lower

responsiveness. Crittenden and DiLalla (1984) found that intrusive and controlling behaviors from mothers tended to produce frequent negative cues before 12 months and passive and unresponsive behavior in their infants after 12 months of age. However, the WBP infants do not fit this pattern; those infants in the youngest and oldest age groups were less responsive with their mothers and gave fewer negative cues. The Parent-Child Mutuality score may have been low due to the infants' lower responsiveness. While, the WBP mothers were much more responsive than their infants as indicated by the positive maternal contingency and total parent scores discussed above, it is possible that the WBP mothers have learned the contingent response skills and demonstrated these in the videotaped teaching session, but fail to use these skills in their daily mother-infant interaction. In this case, the low level of feedback or reinforcement for the infant's expression of attachment behavior may create passivity and unresponsiveness in the WBP infants. The WBP mothers may find the expectation that they use these skills all the time overwhelming or they may not stop and think about their interactions. Perhaps the WBP mothers could be encouraged to spend frequent, brief periods with the infant on a daily basis for the express purpose of practicing synchronous interactions. This kind of daily practice would be likely to make reciprocal responding more automatic and the increased responsiveness of their infants would be rewarding in and of itself. Even if this proposed scenario were true and WBP mothers were not using these skills on a regular basis, the results clearly suggest that the WBP mothers were capable of responding contingently to their infants' cues. This hypothesis cannot be confirmed without

consecutive measures of mother-infant interaction beginning early in the infancy period. Other possibilities for the low infant scores remain. These results may in part be due to the greater difficulty in establishing reliability on infant measures; videotaped observations can make it difficult to see subtle infant facial expressions (personal communication, Marky McDowell, Research Coordinator, Parent-Infant Program).

The HOME evaluates both the quality and quantity of supports available to young children in the social, emotional, and cognitive domains. HOME scores have been found to be sensitive to maternal education; yet, the HOME scores of the program and control mothers were comparable to the more highly educated portion of a healthy, adult sample of mothers and infants (from similar economic backgrounds to that of the program mothers; sample from Bee et al., 1982, results of a 4 year longitudinal study), than on the less well educated portion of that sample. The adolescent mothers in our evaluation sample received higher HOME scores than mothers with qualities typically associated with higher scores, namely, maternal age and education. These are very encouraging results suggesting that the entire evaluation sample of program and control mothers had home environments characterized by appropriate stimulation, stability, and nurturance.

The WBP mothers have exhibited good HOME scores, more appropriate developmental expectations than the control group, and NCATS scores that are somewhat less positive but compare favorably with other high risk samples. These results are promising given that the quality of the home environment (using the HOME), of mother-infant interaction (using the

NCATS), and the mother's knowledge of child development have been found to predict later IQ and language skills at 4 years of age (Bee et al., 1982).

Scores on the AAPI results were quite similar for the two groups, although program mothers scored slightly higher than control mothers on the total score and on each of the subscales. The entire sample demonstrated beliefs about parenting practices which fell within the average range using the adolescent normative sample. This finding is encouraging given that socially high risk groups also tend to have less positive attitudes toward parenting practices.

The accurate understanding of developmental milestones (measured by the High Scope Knowledge Scale) was related to more appropriate expectations of family roles and a greater likelihood that the adolescent mothers saw the needs of young children as separate and distinct from their own (AAPI Role-Reversal Construct).

The scores from the evaluation sample were compared with the normative sample for adults who were known abusers. The attitudes of the adolescent mothers in this sample fell within the average range for the sample of abusive adults for three of the parenting constructs including: "Inability to be Empathically Aware of Children's Needs", "Belief in Corporal Punishment", and "Family Role-reversal." Thus the program mothers' beliefs about parenting practices in these areas are consistent with those of abusive adults. While they may value the use of physical punishment, the WBP mothers did not criticize or punish their children during the teaching interactions. The evaluation sample scored below the average range for abusive adults on the construct

"Inappropriate Expectations of Children." Low scores on this construct indicate that parents expect children to achieve at levels which exceed their developmental capability and may perceive their children's less competent performance as an indication of their own inadequacy as a caregiver. This finding suggests that the program and control mothers had a large number of inappropriate, early developmental expectations. However, there were fewer inappropriate, early developmental expectations in the program sample than in the control sample and the program mothers erred in the late expectation direction almost twice as often as in the early expectation direction. Additionally, the results imply that the adolescent mothers may feel inadequate in their mothering role when they hold this set of beliefs. In fact, adolescent mothers have been found to feel less competent than adult mothers (Mercer et al., 1984). However, 83% of the evaluation sample indicated that they felt "confident" (the most extreme positive response choice) in their parenting ability. These findings are difficult to reconcile. The measures may be tapping different types of infant/child behavior. Examination of the individual items on the AAPI "Inappropriate Expectation" scale reveals a focus on the child's ability to demonstrate self-sufficiency, while the High Scope focuses primarily on the emergence of sensory and motor skills. The WBP mothers may have more accurate understanding of concrete skills but may not translate their knowledge of developmental milestones into expectations for day-to-day child behavior. The tendency for teenage mothers to see young children as more self-sufficient than they actually are may be related to discomfort with the dependency of their infants. At any rate these

findings suggest that the program mothers may be at some risk for abuse and neglect.

Attitudes about child development may be more difficult to change than the cognitive understanding of developmental progression. Some suggestions to address the beliefs held by the WBP mothers are included. Perhaps presentation of developmental milestone charts and discussion of development could include explicit examples of how these emerging skills translate into daily behaviors for the infant. The WBP mothers might benefit from discussions of the infant's point of view; informal exercises where the teenager imagines the extent of her infant's dependency needs as well as the specific interests and abilities the infant is likely to possess at particular stages of development (e.g., the experience of the initial transition from limited vision to normal adult vision in the first week of life, or the baby's change in perspective as they learn to crawl and the interest and enthusiasm associated with being able to explore). Perhaps pointing out the benefits to the mother for using positive parenting techniques (e.g., babies whose mothers are responsive to their needs and cues in their earliest months tend to cry less later in their first year) may give the teen mother more incentive to try putting knowledge about parenting practices into use. Emphasis on the negative side effects of physical punishment may be presented to mothers along with demonstrations of redirecting the infant (without the use of punishment) in a mother's group.

Information about the occurrence of cases of reported and founded abuse and/or neglect were obtained from Chesterfield Child Protective

Services. The finding that the program mothers had two founded cases of neglect is discouraging. There were, however, no reports of abuse which is at least somewhat more encouraging. The fact that WBP mothers were participating in a parenting program suggests that they may have been more involved with and accessible to other social service agencies and therefore more likely to be reported for neglect.

Another possible indicator of program effectiveness, repeat pregnancy, was the same in the intervention and control groups. Unfortunately, the participants in the evaluation were not asked whether or not this second pregnancy was planned. Furthermore, there is no supporting information about the level of sexual activity, the knowledge of birth control use, or the actual use of birth control which would be necessary to fully understand the program's impact. Without more detailed and longer-term follow-up, the effectiveness of the program in preventing unwanted, repeat pregnancy can not be assessed.

Program Delivery

The extent to which the program is implemented (an important but secondary focus of this evaluation) in accordance with the program's goals and objectives remains in question due to the limited data collected during the program's development phase. Some aspects of program delivery can be examined in this evaluation.

The WBP staff clearly responded well to the unique needs of program participants. Those infants who did more poorly on the BDI, thus, demonstrating potential mild developmental delay, received more visits than those infants who were acquiring new skills appropriate to their age level. The younger mothers also received more visits than the

older mothers. It may be that these mothers were perceived as needing more support or guidance, or it may be that the younger mothers were more open and interested in receiving assistance than the older mothers. Most program mothers attended and participated in the program regularly but the number of visits received varied widely. A little over a third of the program mothers missed 10% or less of the scheduled home visits and a little less than a third of the program mothers missed one in three scheduled visits. Most of the program mothers did not receive nearly as many home visits as the WBP staff aspired to provide.

The Home Visitor Measure and the program participants' reports generated information about the perceived causes of missed appointments or difficulty scheduling appointments. The Home Visitors reported that the most common reasons for missed appointments were that the teen's infant was sick and that the teen forgot the appointment. Another fairly frequent response was that appointments were missed because the teen had been out of the house and didn't make it back in time for the appointment. These findings reflect the difficulties in providing services to adolescents of high to moderate risk and with little access to resources and transportation. Osofsky et al. (1988) reported that there seemed to be "takers" and "non-takers" within their intervention groups; some mothers who were interested and motivated and others who accepted the offer of intervention but lacked motivation and did not fully participate. Similarly, 60% of the Welcome Baby Project mothers had no misses that the Home Visitors attributed to a lack of interest or motivation. The remaining 40% appeared to have varying degrees of motivation.

The teen mothers reported that missed appointments were most frequently due to their child being sick and to their home visitor calling to reschedule the appointment. The second most frequent responses were "I had been out of the house and didn't make it back in time" and "I forgot the appointment". The responses of the program participants and Home Visitors are fairly similar. While each group may have minimized their own cancellations, both the Home Visitors and the teen mothers agreed that illness and medical appointments for the infant were the major causes of missed appointments. Both groups also perceived that the teens' tendency to forget appointments and/or not return home in time for the appointment interfered with home visits. Spietz (1986) called these "not home visits" in her discussion of the resistance, ambivalence, and inconsistency she experienced in her work with teenage mothers and how these characteristics can interfere with early intervention efforts; all of the teenage mothers in her high risk sample missed appointments. Spietz (1986) found that direct answers to direct questions often resulted in resistance or defensiveness; ambivalence on the part of the teenage mother resulted in an unwillingness to complete activities; and the lack of initiative and accountability resulted in inconsistency in their participation in the project. The home visitor is often perceived as an authority figure and the adolescent who struggles to be independent will often resist accepting direct suggestions or advice; thus offering several choices and inquiring as to what the teen thinks tended to decrease this sort of resistance and teaches the teen to problem-solve. The adolescent mother needs acceptance and understanding of her ambivalent feelings in order

to work through them more effectively. Teen mothers respond well to encouragement, clear communication of expectations, and most of all to frequent positive feedback. These qualities appear to be related to the adolescent's own development and require time consuming, albeit valuable relationship-building. These qualities were also the source of a great deal of frustration for the WBP Home Visitors. The importance of building a trusting relationship with the adolescent mother is necessary to the successful implementation of early intervention programs. The WBP Home Visitors were quite successful in establishing comfortable working relationships with the WBP mothers. Even though the Home Visitors experienced a lot of frustration with the inconsistency and resistance encountered with their adolescent mothers, they managed this crucial first step successfully.

The number of visits received by program mothers and the measures of motivation did not correlate with the dependent variables. It is possible that the number of visits does not account for variability in the measures of program effectiveness. On the other hand, the information needed to establish that the activities and teaching delivered on home visits was essentially equivalent across Home Visitors and teen mothers is not available for this phase of the evaluation. The WBP mothers may have received exposure to different program content. Additionally, the number of visits used in calculating dosage were estimates and may not accurately reflect the actual number of visits received. This is an important question to address in the long-term evaluation after more thorough information about program implementation and dosage (or the number, nature, quality, and length of visits

received) are available.

This phase of the evaluation also relied heavily on self-report for demographic and risk factor information and may be inaccurate due to the problems associated with social desirability. Additionally, the longer-term evaluation will use pre-post measures and compare the gains program mothers achieve over the course of the program.

The program mothers may have been more honest in their self-reports due to the belief that the Home Visitors had documentation about them. On the other hand, the program mothers were specifically told that the information being collected would not be shared with their Home Visitors and that the evaluation materials would not be connected with their name. Twenty-nine of the 30 mothers who participated in the evaluation indicated that they felt comfortable enough to answer all of the questions honestly.

Additionally, another source of variance in the dependent variables is that teen mothers do not provide 100% of the care for their infants and that other family members or fathers may be involved in caretaking. However, the teen mothers did report that they are responsible for infant care for a large percentage of the time. Fifty-seven percent of the sample reported being responsible for infant caretaking 75% of the time or more, and 17% of the sample reported caring for their infants entirely on their own. One-third of the sample resided with the their own parents or the parents of the baby's father. While the evaluation did not address the involvement and caretaking by the infant's father, the program includes fathers in their intervention effort in those cases where the fathers have a high level of

involvement.

Needs Assessment

The WBP mothers and the control mothers were asked (on the demographic questionnaire) whether they were interested in receiving information or assistance in a number of areas. The teen mothers reported having very few needs regardless of group status. The wide distribution of responses suggests that these resources may be best delivered on an individual and an "as needed" basis. Surprisingly few mothers were interested in receiving information about the development of social, language, and motor skills. The teens expressed more interest in cognitive development and self-help skills (eating, dressing, toileting). Approximately half of the program mothers were interested in receiving information on handling their child's behavior. More emphasis on behavioral management techniques in the program may be indicated. There was very little interest in assistance with locating a doctor, qualified babysitter, or day care center. Very few teens felt they needed counseling services. There were some notable differences in stated needs between the two groups; 60% of the program mothers and only 27% of the control mothers reported needing assistance in applying for Medicaid. Program mothers felt they needed help getting material assistance such as baby equipment twice as often as control mothers. Needs for clothing, heat, and food were more often endorsed by program mothers than control mothers. These differences appear to be related to the lower income of program mothers as compared to the control mothers.

Program Mothers' Evaluation of the Welcome Baby Project

Program mothers reported feeling very comfortable with their Home

Visitors and felt they had learned "a lot" about infant caregiving. Half of the program mothers responded with the most positive response, 40% felt they had learned "quite a bit", and only 13% had learned "some." None of the mothers felt negatively about their experience. The majority of mothers reported practicing new activities they learned from home visits "quite a bit"; very few reported not practicing very much.

The program mothers' responses to the question about changes they would like to see in the WBP were very positive and indicated a high level of satisfaction with the program. One mother wanted more information on "health needs" and a couple of mothers commented that they would like to get together with other program mothers and their babies. The program mothers may be feeling quite isolated and some have indicated they would benefit from the opportunity to interact with other young mothers.

Home Visitor's Report

Program Goals. The Home Visitors appeared to feel that all of the program goals received at least a moderate emphasis. And there was ample agreement that the emphasis placed on each goal was adequate. Furthermore, the emphasis placed on each goal is likely to vary between teen mothers. The program administrators attempted to address the unique needs of each teen mother in their program. One Home Visitor commented that the "very weak" emphasis placed on promoting child development was due to a precocious infant who tended to be "very active and on target" developmentally. While the program managers have a general sense of the relative importance of each goal (reflected in the

order of presentation in the program model), the program seeks to be flexible and to take into account the unique strengths and weaknesses of each mother-infant dyad. One area that many Home Visitors felt the program failed to adequately address was social support. It may be that many of the program mothers were isolated and lonely. Additional support for this need comes from the request for organized social activities by program mothers. The other notable finding was that 20% of the visitors (probably the two whose teen mothers indicated they were pregnant at the time of the evaluation) felt the program was "not at all successful" in preventing unwanted, repeat pregnancy. The frequency of repeat pregnancies between the two groups was the same which may suggest that the program has been unsuccessful in intervening to prevent subsequent pregnancies.

Quality of Home Visitor Supervision. The supervision received by Home Visitors from the WBP program managers was considered helpful and practical. The Home Visitors felt their efforts were appreciated and supported by the Welcome Baby staff. Their informal comments were overwhelmingly positive. The warmth, support, respect, and information available to the Home Visitors through the supervision and training process is likely to be reflected in the ability of the Home Visitors to deliver services in a sensitive and caring manner. The quality of supervision and the Home Visitor's satisfaction with their supervision are likely to contribute in dedication and commitment to the Welcome Baby Project and to the low turnover experienced in the WBP. The WBP Home Visitors stay with the program well over a year and some stay to work with a second teen mother after their first one "graduates"; while

the average length of stay for volunteers in other programs tends to be about one year. The trusting relationship WBP volunteers establish appears to be necessary to the success of the program. Unfortunately, Home Visitor attrition is likely to cause disruption of the relationship when the Home Visitor leaves the program before her teen mother has completed the program. Perhaps the criteria for selection in the program should be a commitment of 2 years or until her teen mother completes the program.

The Home Visitors felt more comfortable interacting with their teens on an interpersonal level than in the role of teacher/peer helper; nearly a third of the Home Visitors felt just "a little comfortable" in this role. The Home Visitors come into the WBP program with experience as a mother and some understanding of the needs of infants. They also receive a fairly intensive initial training, monthly supervision, a monthly meeting with other Home Visitors (where home visit reports are given and discussed), and periodically receive supplemental training. Yet, some reported feeling only "a little comfortable" in their role. Further inquiry into the low comfort level reported among the Home Visitors would be necessary to adequately address this issue. The information produced in a follow-up with the Home Visitors in their individual supervision or in the monthly supervision meeting to understand the nature of any insecurities they may experience and to generate possible avenues for addressing these concerns might prove to be worthwhile.

With regard to the amount of difference they believed they made in the teens' lives, there was a wide range of responses. This variation

may reflect the degree of motivation of individual teens. It was apparent that the Home Visitors would like to see the impact of their efforts more immediately and dramatically than they do. At times, they find the WBP experience frustrating and emotionally draining through largely unavoidable aspects of the experience, but the support and availability of the program staff help make the experience a positive one. Overall, the Home Visitors found the experience quite rewarding.

Evaluation's Contribution to the Program

This program evaluation was conducted with a focus on utilization; program evaluations are more likely to have an impact on the program if the evaluator(s) involve the program administrators at various levels of the agency, in each step of the process (Patton, 1986). The involvement of program administrators in the articulation of the program model, the selection of questions asked in the evaluation, and formulation of the evaluation design led to a sense of ownership and investment in the evaluation as well as a willingness to ask difficult and meaningful questions and to see real answers. In this way the evaluation process created an open and honest context in which well validated and rigorous measures were selected and questions were asked about both program strengths and weaknesses. The program managers have commented that they found the collaborative nature of the evaluation both satisfying and a valuable learning experience.

In addition to providing information to the program managers about the impact and utility of the Welcome Baby Project, the evaluation process has stimulated program development. The evaluator worked closely with the WBP managers to clarify and articulate the program

goals. The "rethinking" of the goals and objectives for the program and the desired outcomes for the adolescent mothers lead to the articulation of a theory of action and provided direction to program planning. One program manager commented that the evaluation process added a 'crispness to the management of the program; and that the decision-making process has felt more intentional and organized through the evaluation process.' The Home Visitors were delighted to receive copies of the program model (see Appendix A) and found the structure helpful in guiding their home visit agenda. The new forms for record keeping not only generated useful information about how the program is implemented but also helped the Home Visitors to focus on introducing material using multiple modalities (e.g., modeling interactions with the infant, coaching the mother in her own interactions with the infant, and providing reading material). The program managers have placed more emphasis on the documentation of program implementation and dosage. The evaluation stimulated dialogue among the program managers and Home Visitors about the strengths and weaknesses of the program, the satisfaction and frustrations inherent in their work, and ways in which the program could be improved.

Conclusions

The ultimate goal of any primary prevention program is to decrease the likelihood that individuals will later develop emotional and behavioral difficulties. The Welcome Baby Project has a dual purpose of providing both a primary prevention program for the children of adolescent mothers and a secondary prevention program for the adolescent mothers themselves.

The Welcome Baby Project supports adolescent mothers in addressing most of the infant's primary needs through support, guidance, and teaching of parenting skills. A strong emphasis is placed on attachment or the bonding between the mother and her infant. The WBP mothers demonstrated the ability to interact with their infants in a contingent and positive manner. They tended to forego using criticism or punishment. They also tended to miss opportunities to reward their infants and to provide them with feedback on their performance. The stability, safety, nurturance, and stimulation available in the home environment is a central feature of the program. The WBP mothers were found to provide home environments possessing these qualities. The adolescent mothers were encouraged to notice the developmental changes in their infant's abilities. This awareness resulted in a better understanding of the development of young children by the WBP mothers than for a non-intervention comparison group. This knowledge is likely to be translated into more appropriate and sensitive caregiving as well as provision of activities which stimulate development. The attitudes about caregiving practices appear to have been less amenable to change and it appears to be too early to begin to see gains in child development.

While, the WBP mothers may have derived only small gains over the comparison mothers, the significantly higher health risk status of program infants and higher environmental and social risk status of the program's adolescent mother-infant dyads are conditions that contribute to underestimating program impact. The finding that the program mothers had similar and at times higher mean scores than control mothers is

promising. It is also notable that there were no significant differences that favored the comparison mothers. Although, it is not possible to conclude with complete assurance that the program has been successful due to the limitations inherent in this evaluation, the results are very encouraging and warrant continued and longer-term evaluation efforts. Mother-infant interaction, the quality of the home environment, and knowledge of developmental milestones are important, empirically validated predictors of positive child outcomes for socially high risk populations; the WBP mothers' performance in each of these areas suggests that the short-term impact of the WBP has been positive and sets up the expectation that longer-term follow-up of the WBP "graduates" will be still more encouraging.

The secondary prevention goals of promoting continuation of education, the setting of goals for employment, and the prevention of repeat, unwanted pregnancy received less emphasis in this evaluation. These questions may become more of a focus for the longer-term evaluation.

The high level of satisfaction and overwhelmingly positive support given by the adolescent mothers in their own assessment of the program speaks to the quality of the program being delivered by the Chesterfield Prevention Services Department.

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Table 1

Standard Demographics by Group

Variable	Group: Program Mothers n = 15	Group: Control Mothers n = 15
Age at Birth of Baby (years)		
M	17.07	16.60
SD	1.28	1.18
16 & Under	5	7
17-20	10	8
Adolescent Mother's Race		
White	13	12
Black	2	3
Marital Status		
Married	7	5
Employment Status		
Employed (full or part-time)	7	7
Unemployed	1	2
Unemployed, Seeking Employment	7	6

Table 1 (con't)

Standard Demographics by Group

Variable	Group: Program Mothers	Group: Control Mothers
Total Household Income*		
Less than $10,000	6	1
$10,000-$24,999	5	2
$25,000 or more	4	12
M	1.93	2.73
SD	.83	.59
Educational Level of Adolescent's Parents		
Maternal Grandmother		
M	11.92	11.60
SD	2.43	2.92
Paternal Grandfather (*n* = 13)		
M	10.54	12.15
SD	2.11	2.79

Note: Income entered from a 3-point scale with 1 representing the lowest income level and 3 representing the highest.

Table 1 (con't)

Standard Demographics by Group

Variable	Group: Program Mothers	Group: Control Mothers
Mothers in School (current grade)		
Number in School	4	8
M	9.80	11.75
SD	4.97	.71
Mothers out of School (grade completed)		
Dropped out of School	8	4
M	11.55	11.14
SD	2.81	.90
Highest Grade Completed		
9th	2	0
10th	3	2
11th	3	2
12th (graduated)	3	3

Note: Variable with an asterisk was significant ($p < .005$).

Table 2

Infant Variables by Group

Variable	Group: Program Mothers n = 15	Group: Control Mothers n = 15
Sex of Child		
Female	7	8
Male	8	7
Age of Child (months)		
M	16.73	13.60
SD	9.68	6.93
Race of Child		
White	12	11
Black	3	4
Timing of Delivery		
Born on Time	11	12
Premature (4 or more weeks early)	3	1
1-3 Weeks Early	1	2

Table 3

Prematurity, Low Birthweight, and Infant Health Risk by Group

Variable	Group	
	Program Mothers	Control Mothers
Normal Weight at Birth (ounces) (n=30)	12	14
Low Birth Weight	3	1
Prenatal Visits (n=30)		
M	10.60	11.07
SD	4.47	4.61
Month Began Prenatal Care (n=30)		
M	2.33	3.20
SD	1.45	1.94
Reported Use of Alcohol During Pregnancy	2	0
Hospitalization for Episodic Illness	3	0
Infant Health Risk (n=30)		
No Infant Health Risk Factors	4	8
Lowest Risk (Score of 1)	1	0
Score of 2	2	1
Score of 3	5	4
Score of 4	0	1
Highest Risk (Score of 5)	3	1

Table 4

Mental Health Indicators for the Adolescent Mother and her Family of Origin by Group

Variables	Group	
	Program Mothers	Control Mothers
Emotional Problem		
Adolescent	3	0
Family Member	2	3
Substance Abuse Problem		
Adolescent	1	0
Family Member	5	3
Adolescent's Report of Conflict in the Home	3	4

Table 4 (con't)

Mental Health Indicators for Adolescent Mother and Her Family of Origin by Group

Variables	Group: Program Mothers	Group: Control Mothers
Adolescent's Assessment of How Her Family Feels About the Baby		
M	1.33	1.53
SD	.72	.83
How Adolescent Felt About Pregnancy		
M	2.20	2.60
SD	1.37	1.64
How Adolescent Felt About Having the Baby at Time of Evaluation		
M	1.33	1.27
SD	1.05	.46

Note: These items were scored on a Likert scale with 1 representing "very happy" and 5 representing "very unhappy". None of the variables were significant.

Table 5

Social Support Available to Adolescent Mother by Group

Variable	Group: Program Mothers n = 15	Group: Control Mothers n = 15
Shared Caretaking Responsibility		
M	3.87	3.80
SD	1.06	1.08
Assumes Caretaking Responsibility		
25% of the Time	1	2
50% of the Time	6	4
75% of the Time	2	4
Almost all of the Time	6	5
Living Arrangements		
Live with Parents (His or Hers)	5	6
Live with Friends or siblings	7	9
Live Alone	3	0

Table 5 (con't)

Social Support Available to Adolescent Mother by Group

Variable	Group: Program Mothers n = 15	Group: Control Mothers n = 15
Caretaking Involvement of Baby's Father		
M	2.67	2.87
SD	2.72	2.42
Caretaking Involvement of Baby's Father con't.		
Financial Support by Father	8	10
Feeds Infant	7	8
Changes Diapers	7	7
Babysits	8	7
Bathes Infant	5	3
Plays with Infant	8	10

NOTE: There were no significant differences between groups.

Table 6

Dependent Variable Means by Group

Dependent Variables	Group: Program Mothers n = 15	Group: Control Mothers n = 15	t-value n = 30
Nursing Child Assessment Teaching Scale	47.9	46.4	2.50
Home Observation for Measurement of the Environment	40.2	39.7	1.55
Adult-Adolescent Parenting Inventory	25.6	22.7	.33
High Scope Knowledge Scale			
Correct Responses*	29.4*	26.3*	8.20
Late Expectations*	28.6*	33.2*	4.79
Early Expectations	15.0	13.5	.73
Battelle Developmental Inventory Screening Test (n = 29)	-1.07	.07	-1.08

NOTE: While the overall MANOVAs and MANCOVAs were not significant, the univariate F-tests were significant at the $p < .05$ level for those variables marked with an asterisk.

Table 7

Pearson Correlation Coefficients, NCATS, HOME, AAPI, High Scope, and BDI Scales with Covariates, Both Groups

	Covariates		
Dependent Variables	Prematurity	Birthweight	Income
NCATS (n = 30)	-.12	.14	.35*
Home Observation for Measurement of the Environment (n = 30)	-.32*	.44**	.18
Adult-Adolescent Parenting Inventory (n = 30)	-.17	.02	-.43*
High Scope Knowledge Scale (n = 30)			
Correct Responses	-.45**	.19	.12
Late Expectations	.39*	-.28	-.03
Early Expectations	-.17	.28	-.07
Battelle Developmental Inventory Screening Test (n = 29)	-.16	.11	.00

NOTE: Correlation coefficients marked with an asterisk are significant at the $p < .05$ level and two asterisks are significant at the $p < .01$ level.

Table 8

Pearson Correlation Coefficients, AAPI, HOME, and NCATS Subscales with Covariates, Both Groups

	Dependent Variable			
Covariates	AAPI-A	AAPI-B	AAPI-C	AAPI-D
Percentage Responsibility for Caretaking	.04	-.05	.31*	-.11
Birthweight	-.14	.03	.03	.15
Prematurity	.13	-.11	-.27	-.26
Mother's Age at Birth	-.28	-.02	-.36*	-.10
Marital Status	.01	.02	.25	.02
Total Household Income	-.35*	-.42**	-.40*	-.20

Note: AAPI-A corresponds to Inappropriate Expectations scale, AAPI-B to Lack of Empathy, AAPI-C to Parental Value of Physical Punishment, and AAPI-D to Parent-Child Role-Reversal.

Table 8 (con't)

Pearson Correlation Coefficients, AAPI, HOME, and NCATS Subscales with Covariates, Both Groups

	Dependent Variable					
Covariate	HOME1	HOME2	HOME3	HOME4	HOME5	HOME6
Percentage Responsibility for Caretaking	-.21	-.53**	-.17	-.05	.02	-.19
Birthweight	.06	.34*	.52**	.27	.23	.42**
Prematurity	-.07	-.36*	-.42**	-.23	-.19	-.11
Mother's Age at Delivery	.32*	-.07	-.28	-.50**	.19	.16
Marital Status	-.17	.13	-.02	.12	-.17	-.48**
Total Household Income	.20	.28	.25	.10	-.03	-.20

Note: HOME1 corresponds to the Emotional and Verbal Responsivity subscale, HOME2 to Avoidance of Restriction and Punishment, HOME3 to Organization of Environment, HOME4 to Provision of Appropriate Play Materials, HOME5 to Maternal Involvement with the Child, and HOME6 to Opportunities for Variety in Daily Stimulation.

Table 8 (con't)

Pearson Correlation Coefficients, AAPI, HOME, and NCATS Subscales with Covariates, Both Groups

	Teaching Subscales					
Covariates	1	2	3	4	5	6
Percentage Responsibility for Caretaking	-.36*	-.12	-.53**	-.15	-.13	-.06
Birthweight	-.06	-.04	.42*	.18	.03	-.05
Prematurity	-.02	.15	-.32*	-.09	.01	-.11
Mother's Age at Delivery	-.18	.30	.04	.08	-.27	-.08
Marital Status	.14	-.33	-.16	-.16	-.09	.03
Total Household Income	.33*	.18	.48**	.26	.19	.22

NOTE: Correlation coefficients with one asterisk are significant at the $p < .05$ level and coefficients with two asterisks are significant at the $p < .01$ level. The Teaching Subscales listed as 1 through 6 correspond to the following: (1) Maternal Sensitivity to Cues, (2) Responsiveness to Distress, (3) Social-Emotional Growth Fostering, (4) Cognitive Growth Fostering, (5) Clarity of Infant Cues, and (6) Responsiveness to Parent.

Table 9

Comparison of NCATS Maternal and Child Contingency Scale Scores for the Welcome Baby Project Mothers, Controls, and the Child Nursing Model Intervention Groups

Comparison Groups	Maternal Contingency	Child Contingency
Welcome Baby Project Mothers		
M	7.60	3.87
SD	3.11	2.23
Control Mothers		
M	7.47	4.67
SD	3.12	1.59
Clinical Nursing Model		
M	7.66	6.48
SD	3.45	3.22

Table 10

Welcome Baby Mean Scores on the NCATS Empirical Cluster Scales for Infant Ages 5 to 12 Months

Cluster Scales	WBP Dyads n - 7	Number of Items
Positive Parent-Child Mutuality	4.0	8
Positive Feedback from Parent	1.0	6
Avoidance of Punishment	5.0*	5
Negative Child Cues	2.4	8
Mutual Eye Contact	2.7	6
Positive Parental Response to Distress	4.4*	5
Avoidance of Criticism	3.9*	4
Cognitive Growth Fostering	1.6	4

NOTE: Means marked with an asterisk were interpreted as indicating exceptionally good scale scores.

Table 11

Welcome Baby Mean Scores on the NCATS Empirical Cluster Scales for Infants Ages 13 to 24 Months

Cluster Scales	WBP Dyads n = 4	Number of Items
Negative Child Cues	4.3	9
Positive Parent-Child Mutuality	5.5*	6
Avoidance of Punishment	4.0*	4
Positive Parental Response to Distress	4.8	6
Positive Feedback from the Parent	3.0	6
Positive Nonverbal Responsiveness by Child	2.0	5
Avoidance of Criticism	4.5	6
Positive Mutual Task Focus	5.3*	6

NOTE: Means marked with an asterisk were interpreted as indicating exceptionally good scale scores.

Table 12

Welcome Baby Mean Scores on the NCATS Empirical Cluster Scales for Infants Ages 25 to 34 Months

Cluster Scales	WBP Dyads n = 4	Number of Items
Avoidance of Punishment	9.8*	10
Negative Child Cues	3.5	6
Positive Parental Response to Distress	5.0*	5
Parental-Child Verbalization	3.3*	4
Positive Feedback from Parent	4.8	6
Positive Nonverbal Interaction	2.0	4
Relaxed Parent-Child Teaching	6.5*	7
Mutual Eye Contact	1.5	5

NOTE: Means marked with an asterisk were interpreted as indicating exceptionally good scale scores.

Table 13

Comparison of the Teaching Subscale Scores for the Welcome Baby Program Mothers, Nonabusing Mothers Group, and Abusing Mothers

Teaching Subscales	WBP n = 15	Non-Abusive n = 45	Abusive n = 22
Mother's Sensitivity to Infant Cues	8.20	8.69	7.64
Mother's Response to Child Distress	10.67	9.62	8.73
Social-Emotional Growth Fostering	7.53	6.87	5.64
Cognitive Growth Fostering	9.73	11.49	9.41
Child's Clarity of Cues	7.33	7.98	7.00
Child's Responsiveness to Parent	4.07	9.29	7.59

NOTE: All of the Abusive and Non-Abusive means with the exception of Mother's Response to Child Distress were significantly different at the $p < .05$ level.

Table 14

The Adult-Adolescent Parenting Inventory - Subscale Means with Non-Abused Adolescent Norms and Abusive Adult Norms by Group

	Group	
Variable	Program Mothers n = 15	Control Mothers n = 15
Non-Abused Adolescent Norms		
Inappropriate Expectations	5.3	4.6
Lack of Empathy	6.9	6.1
Physical Punishment	6.2	5.4
Role Reversal	6.9	6.5
Abusive Adult Norms		
Inappropriate Expectations	4.7	4.1
Lack of Empathy	6.1	5.2
Physical Punishment	6.1	5.3
Role Reversal	5.3	5.0

Standard scores 1 through 4 represent high risk, 5 and 6 are average scores, and 7 through 10 represent low risk.

Table 15

High Scope Knowledge Scale - Frequencies of Early, Accurate, and Late Developmental Expectations by Group

	Group	
Variable	Program Mothers n = 15	Control Mothers n = 15
Early Expectations	225	203
Accurate Expectations	441*	394
Late Expectations	429	498*

Note: Frequencies marked with an asterisk were significantly higher than those of the other group.

Table 16

Other Indicators of Program Effectiveness

Variables	Group: Program Mothers n = 15	Group: Control Mothers n = 15
Repeat Pregnancy	2	2
Emergency Room Trips for		
Accidental Injury	4	2
No. of Accidents Requiring		
Emergency Room Visit per mother	1	2
Child Protective Service Reports		
Reports	2	0
Founded Cases of Neglect	2	0
Founded Cases of Abuse	0	0
Confidence in Parenting Ability		
Confident	12	13
Somewhat Confident	3	2
Unsure	0	0

Appendix A

Welcome Baby Program Model

Program Mission: To promote optimal child development and a positive relationship between "at-risk" mothers and their infants and to prevent disorders of attachment, child abuse and neglect, and unwanted, repeat pregnancies.

Goal #1 To facilitate healthy attachment between mothers and their infants.

Objective 1) Mothers will find their infants enjoyable.

A. Home visitors will encourage the mother to take pride in her infant and herself as a parent.
B. Home visitors will reinforce all positive parenting skills.
C. Home visitors will praise the infant.

Objective 2) Infants will demonstrate attachment behaviors in the presence of their mothers.

A. Home visitors will note degree of attachment infant demonstrates and report signs of good attachment to the mother.
B. Home visitors will demonstrate, explain, and encourage frequent eye contact and secure physical closeness with the infant during early weeks of the infant's life.

Objective 3) Mothers will become increasingly adept at reading and responding to their infants' cues.

A. Home visitors will discuss infant temperament with the mother.
B. Infant cues will be cited and discussed during home visits.
C. Mothers will learn to identify baby's different needs, emotions, preferences (including different ways parent can respond).

Objective 4) Mothers will spend time providing warmth and nurturance on a daily basis.

A. Home visitors will encourage and reinforce the mother for holding her infant closely and looking at her/him, especially while feeding.
B. Home visitors will teach games like "pat-a-cake" and "this little piggy", that facilitate close interaction between mother and infant.

Goal #2 To prevent developmental delay in infants by educating mothers about the developmental needs and abilities of their babies.

Objective 1) Mothers will learn to identify specific developmental milestones as they are attained by their infants and develop appropriate expectations for their infants.

A. Home visitors will educate mothers on development through discussion, observation, and use of supplemental reading.
B. Home visitors will share milestone charts with mothers for their use in recording the growth of their infants.
C. Home visitors will monitor the infants' developmental progress, identify infants whose development appears delayed, and make referrals as necessary.
D. Home visitors will note changes in infants' abilities and discuss expected developmental progress.

Objective 2) Mothers will provide developmentally appropriate activities for stimulating infants' cognitive development.

A. Home visitors will model game-playing with infants and encourage mothers to practice new games.
B. Home visitors will assist mothers in providing opportunities for exploration and exposure to different stimuli for their infants.

Objective 3) Mothers will provide developmentally appropriate activities for stimulating the infants' development of speech and language.

A. Home visitors will talk directly to infants and will encourage mothers to talk to their infants frequently and positively (not exclusively for control, criticism or discipline).
B. Home visitors will take books and encourage mothers to read to their babies (in the presence of home visitors).
C. Home visitors will comment on infants' progress with receptive and expressive language.

Objective 4) Mothers will provide developmentally appropriate activities for stimulating the infants' development of motor skills.

A. Home visitors will demonstrate and encourage mothers to use simple exercises that encourage the use of large motor skills.
B. Home visitors will help mothers provide toys in a safe environment that facilitates small and large motor development.

Objective 5) Mothers will provide developmentally appropriate activities for stimulating the infants' sensory development.

A. Home visitors will discuss importance of sensory development and describe different ways of stimulating the five senses.
B. Mothers will demonstrate use of activities that stimulate touch, hearing, seeing, tasting, and smelling.

Goal #3 To teach mothers to provide an environment conducive to growth and development of their infants.

Objective 1) Mothers will provide a physically safe environment.

A. Home visitors will discuss nutrition and proper storage of milk and baby foods.
B. Home visitors will discuss securing cabinets containing dangerous materials such as cleaning fluids and medications.
C. Home visitors will encourage mothers to provide consistent supervision of their babies.
D. Home visitors will encourage safety proofing of at least one room for play and physical freedom of the baby.

Objective 2) Mothers will arrange for and follow through on Well Baby examinations as well as seek additional medical attention when their infants are ill.

A. Home visitors will discuss signs of illness and the use of thermometers and over the counter remedies.
B. Home visitors will discuss options for seeking medical care when needed.

Objective 3) Mothers will provide opportunities for exploration and mastery of new skills.

A. Home visitors will encourage the mother to allow her baby to explore and move about freely during supervised play periods on a daily basis.

Objective 4) Mothers will provide play materials appropriate to their baby's developmental level.

A. Home visitors will assess the toys available to babies and suggest additional toys babies may enjoy.
B. Home visitors will recommend use of various household objects for play.

Goal #4 To educate mothers about parenting skills.

Objective 1) Mothers will learn about effective techniques of child management.

A. Home visitors will discuss principles of behavioral management; supplemental reading may be given to mothers.
B. Home visitors will demonstrate and model different behavioral management techniques.

C. Home visitors will strongly reinforce mothers' use of effective behavioral management techniques.

Objective 2) Mothers will learn to use nonphysical means of discipline.

A. Home visitors will discuss, model, and encourage mothers to ignore undesirable behavior, redirect infants' attention to more constructive activity, and provide timeouts for inappropriate behavior.

Objective 3) Mothers will learn techniques for increasing desirable infant/child behavior.

A. Home visitors will discuss, model, and encourage use of praise, attention, and rewards.

Objective 4) Mothers will learn to adapt their parenting techniques to the child's developmental stage.

A. Discussion and modeling will be used to illustrate parenting techniques appropriate to infants' developmental stages.
B. Home visitors and mothers will plan activities for future weeks based on infants' changing abilities.

Goal #5 To help mothers view themselves as competent parents and to feel better prepared to meet the demands of caring for their infants.

Objective 1) Mothers will establish linkages with appropriate community supports (e.g., social services, mental health, and educational institutions).

A. Home visitors will inquire about needs and services mothers are currently receiving; they will provide information and referrals for additional sources of support as appropriate.
B. Home visitors will praise all signs of competency in the mother.

Objective 2) Mothers will seek out informal social support by involving their parents, boyfriends, friends, or neighbors in the care of their infants.

A. Home visitors will involve interested family members and friends in the Welcome Baby visits.
B. Home visitors will plan occasional Welcome Baby group activities.

Objective 3) Mothers will discuss goals for their future and develop plans for achieving those goals.

A. Home visitors will help mothers assess their goals and will encourage continued educational/vocational training.

Goal #6 To assist mothers in taking steps to prevent unwanted, repeat pregnancies.

Objective 1) Home visitors will discuss reasons to delay another pregnancy.

Objective 2) Mothers will learn about different methods of contraception.

A. Home visitors will provide information about birth control methods.

Objective 3) Mothers will use a reliable method of birth control to prevent unwanted, repeat pregnancies.

A. Home visitors will make referrals for birth control or family planning when necessary.

Appendix B

Home Visit Time Analysis

Minutes	0-15	15-30	30-45	45-60
Observing, encouraging parent-child interaction	____	____	____	____
Modeling activities with infant for mother	____	____	____	____
Direct Interaction with infant	____	____	____	____
Specific discussions with mother	____	____	____	____
Relationship building (general discussions with mother)	____	____	____	____
Interaction with other family members	____	____	____	____
Time spent waiting for mother or infant to be ready	____	____	____	____
Other (specify) _____	____	____	____	____

_____

Total Length of Visit _____

Appendix C

HOME VISIT ACTIVITY CHECKLIST

Encouraged, praised positive mother-infant interaction (holding baby, eye contact, playing games)	none	a little	a lot
Discussed infant temperament, infant cues	none	a little	a lot
Discussed, charted developmental milestones	none	a little	a lot
Engaged baby in an activity, game, or in exploration of the environment	none	a little	a lot
Assisted mother in trying a new activity	none	a little	a lot
Encouraged, praised, modeled activity stimulating the baby's:			
motor development	none	a little	a lot
sensory development	none	a little	a lot
language development (talked to baby, read to baby, etc.)	none	a little	a lot
Discussed nutrition	none	a little	a lot
Discussed home safety practices	none	a little	a lot
Discussed baby's physical health, well baby check-ups	none	a little	a lot
Discussed, demonstrated developmentally appropriate play with toys (store bought and homemade)	none	a little	a lot
Made or loaned toy for baby	none	a little	a lot
Gave mother reading material and discussed it	none	a little	a lot
Helped mother identify, access specific resources available to her (which ones_____)	none	a little	a lot
Discussed child management techniques (including discipline)	none	a little	a lot
Discussed infant's changing needs and parent's response to new stages	none	a little	a lot
Praised parent for something	none	a little	a lot
Involved other family members in activities, discussions	none	a little	a lot

Helped mother establish goals for self:

Discussed mother's social support system.....	none	a little	a lot
Discussed future living arrangements.....	none	a little	a lot
Discussed employment outside of the home.....	none	a little	a lot
Discussed going to school..... (returning to complete high school, getting a G.E.D. etc.)	none	a little	a lot
Discussed planning for/preventing future pregnancies.....	none	a little	a lot

Appendix D

Nursing Child Assessment Teaching Scale

Instructions included the following statements: "I'd like to have you teach X to learn to do one or two things. I'll explain exactly what I'd like to have X do, and you can help him/her learn it any way you want. You may arrange the materials in any way you like, change your position or X's position, do whatever feels comfortable, and take as much time as you like. Just let me know when you're done." A task was described to the mother and the materials provided.

Some sample items include:

1. Sensitivity to Cues: "Parent pauses when child initiates behaviors during the teaching episode."
2. Response to Distress: "Makes positive, sympathetic, or soothing verbalization."
3. Social-Emotional Growth Fostering: "Parent praises child's efforts or behaviors broadly (in general) at least once during the episode."
4. Cognitive Growth Fostering: "Parent uses explanatory verbal style more than imperative style in teaching the child."
5. Clarity of Cues: "Child changes intensity or amount of motor activity when task material is presented."
6. Responsiveness to Parent: "Child attempts to engage parent in eye-to-eye contact."

Appendix E

Home Observation for Measurement of the Environment

Instructions to the mothers were as follows: "I would like to ask you some questions about yourself and your child. Some of the questions may be of a personal nature and you are free not to answer certain questions. Most of the questions are about your observations of your child and how he/she is growing and developing. We believe parents are important and know the most about their child since they are with them on a day-to-day basis. These observations will help give us a more complete picture of mother-infant interaction during our brief visit in your home."

Some sample items include:

1. Emotional and Verbal Responsivity of Mother: "When speaking of or to the child, mother's voice conveys positive feeling."
2. Avoidance of Restriction and Punishment: "Mother neither slaps nor spanks child during visit."
3. Organization of Environment: "Child's play environment appears to be safe and free of hazards."
4. Provision of Appropriate Play Materials: "Child has push or pull toy."
5. Maternal Involvement with Child: "Mother tends to keep child within visual range and to look at him often."
6. Opportunities for variety in Daily Stimulation: "Mother reads stories at least three times weekly."

Appendix F

Adult-Adolescent Parenting Inventory

Sample items include the following:

A. Inappropriate Expectations: "Children should be expected to verbally express themselves before the age of one year".

B. Lack of Empathy: "Children will quit crying faster if they are ignored".

C. Parental Value of Physical Punishment: "Parents should teach their children right from wrong by sometimes using physical punishment".

D. Parent-Child Role Reversal: "Young children should be expected to comfort their mother when she is feeling blue".

Appendix G

High Scope Knowledge Scale

Introduction: In this part of the interview, I want to get your ideas about when babies need and do certain things. I know you realize how important it is to love and care for your baby. That's something all babies need right from the beginning. But there are lots of other things that babies need, or can begin to do for themselves, which many people, especially if they haven't been around babies, may not know about. Even the "experts" sometimes disagree about the age at which babies begin to need or do different things, especially since different babies grow up in such different ways.

I'm going to read you a list of questions from these cards, one at a time, asking the age when you think most babies begin to need, or do, certain things. After I read each card, I'll give it to you and ask you to put it in one of six piles ranging in age from birth up to 24 months (2 years) or older. Remember, this isn't a test. Because babies are different, we want to get your ideas about the average age when each of these things is likely to happen with babies.

(Set out six pieces of paper in chronological order.) Here are the six ages that I'll ask you to use in sorting out the cards (Point to the top of each page as you read the ages): Birth to 1 month; 1 month to 4 months; 4 months to 8 months; 8 months to 12 months; 12 months to 18 months; and 18 months to 24 or more months.

(Show respondent set of cards.) Here are the cards, each of which asks: "when do most babies begin to . . ." do or need what the card describes. After I read you the card, you put it in whichever of these six piles you think is generally true for babies. We'll leave the cards in the piles until we're finished, so that you can switch any of the cards into a different pile at any point. Do you have any questions before we begin?

Administration: "Okay, here's the first one (read from the card): "When do most babies begin to explore things that an adult gives them by putting the into their mouths?" (Hand the card to the respondent and ask her to place it on the piece of paper corresponding to the age she chooses. Proceed this way, remembering to read the questions from the cards, until the respondent has sorted all 73 Items. If necessary, repeat the reassurance that we want to know what she thinks about babies.

The age ranges were: 0-1, 1-4, 4-8, 8-12, 12-13, and 18-24.

Knowledge Scale card sort items.

WHEN DO MOST BABIES BEGIN TO...

01 ...explore things that an adult gives them by putting them into their mouths?
02 ..."startle" at a sudden light or noise?
03 ...say their first real word, that is correctly name a person or thing?
04 ...use their fingers to explore their own faces?
05 ...be ready to start toilet training?
06 ...know whether or not their parent is in a good mood?
07 ...sit without any support?
08 ...watch a ball as it disappears behind a box and then push the box aside in order to retrieve the ball?
09 ...recognize their own name?
10 ...recognize a familiar voice, like their parent's?
11 ...first settle on their own pattern of eating and sleeping, even though this pattern will keep changing later on?
12 ...throw toys or food on the floor because they need to show their independence?
13 ...turn and suck on a nipple, either their mother's breast or a bottle?
14 ...play with their own voices, repeating and trying out sounds to themselves?
15 ...stop eating because they want to play?
16 ...be aware that they can fall off things?
17 ...turn their heads from side to side to look at pictures taped inside their cribs?
18 ...play peek-a-boo as a way of learning that people come back even if they go away for a while?
19 ...feed themselves with a spoon?
20 ...cry because they are bored, and not just hungry or wet or tired?
21 ...feed themselves food, like dry cereal or bits of cheese, with their fingers?
22 ...imitate and try to be like a grownup, like imitating the way a parent wipes off the table?
23 ...turn their heads in the direction of a sound?
24 ...understand when an adult says "No"?
25 ...transfer a toy back and forth from one hand to the other?
26 ...fight the diaper change because they are having too much fun moving around and exploring?
27 ...dress themselves?
28 ...take out small objects and put them back into a bigger container (like blocks in a tin can) over and over again?

29 ...play by themselves (like in their cribs when they wake up) and keep their attention for as much as one hour?
30 ...understand simple statements like "Bring me the shoe"?
31 ...quiet down if wrapped up or held closely when they are upset?
32 ...play a game of give and take, by repeatedly giving a toy to another person and then taking it back again?
33 ...sleep through the night, that is about 8 hours at a stretch?
34 ...act differently with different people?
35 ...walk without any support?
36 ..."tune out" of something disturbing (like a loud noise) that bothered them the first time they heard it?
37 ...lift their chests up off the ground when lying on their stomachs?
38 ...hold out their arms to be picked up or held?
39 ...watch and understand television programs as more than just lights and sounds?
40 ...grasp something like a finger when it is placed in the palm of their hands?
41 ...need the physical closeness while being fed for cuddling and learning as well as for food?
42 ...have a sense of humor, that is recognize that something a little different from the usual (like a silly face) can be funny?
43 ...first creep (with stomachs touching) and then crawl (with stomachs off) along the floor?
44 ...look for a special toy until they find it, without being distracted by other things along the way?
45 ...turn from their stomachs onto their backs?
46 ...learn that a certain kind of cry will get their parent's attention?
47 ...smile at their own reflections in the mirror?
48 ...cry when their parent leaves them alone with a strange person?
49 ...put their hands in their mouths to suck?
50 ...imitate and make faces back and forth with another person?
51 ...point to pictures of things in a book as an adult names them?
52 ...learn a simple gesture like waving "bye-bye"?
53 ...follow a slow moving bright object, like a mobile, with their eyes?
54 ...touch a mobile hanging above them with their hands or feet?
55 ...drop a toy deliberately so the mother will have to pick it up and make a "game" of it?
56 ..."tune into" just one thing (like a bright object) out of many things going on at the same time?
57 ...show an attachment to a "love object" like a security blanket?

58 ...have the sense when left on their own to not do something dangerous like poking a finger in a socket?
59 ...need a child-proof house so they aren't in danger of things like falling down stairs, swallowing poisons, or poking their fingers into electrical sockets?
60 ...show their own individual personality?
61 ...show whether or not their mothers took good care of themselves while pregnant?
62 ...start a game with an adult?
63 ...drink from a cup with some help?
64 ...shake their heads and say "No"?
65 ...smile socially, that is smile into the face of another person?
66 ...cry at regular periods each day, no matter what you do, just to release some tension?
67 ...stop playing for a little while just to make sure a parent is nearby?
68 ...imitate simple sounds (like ooh or aah) that another person makes to them?
69 ...bat at a mobile or wiggle their legs purposely to make a mobile move?
70 ..."cruise", that is pull to a stand and walk sideways while holding on to furniture?
71 ...make gurgling and cooing noises to "talk" to someone else?
72 ...eat solid foods, like rice cereal or mashed banana?
73 ...keep their heads upright and steady without any support?

Appendix H

Battelle Developmental Inventory - Screening Test

Sample items for each domain at the six to 11 month age range are given below:

1. Personal-Social Domain: "Plays peekaboo". "Responds to his/her name".
2. Adaptive Domain: "Holds or supports bottle to feed self". "Feeds self bite-size pieces of food".
3. Motor Domain:

   Gross Motor - "Moves three or more feet by crawling".

   Fine Motor - "Picks up raison with several fingers opposed to thumb (partial finger prehension)".
4. Communication Domain:

   Receptive - "Associates spoken words with familiar objects or actions".

   Expressive - "Produces one or more single-syllable consonant-vowel sounds".
5. Cognitive Domain: "Uncovers hidden toy". "Searches for removed object".

Appendix I

Demographic Questionnaire

DEMOGRAPHIC QUESTIONNAIRE

Subject Number _____
How old are you? _____ When were you born? ___/___/____
When was your baby born? _____/_____/____
How old were you when your baby was born? _____ years

Prenatal and Postnatal Information

Are you pregnant right now? Yes _____ No _____

Have you made any trips to the Emergency room for an accidental injury to your baby?
Yes _____ No _____
IF Yes, how many times in the last year? _____ times.

Has your baby been hospitalized for episodic illness (diarrhea, pneumonia)? Yes _____ No _____
IF Yes, how many times? _____ Please name the illness or describe the symptoms.
_____
_____

How many Well Baby visits to your doctor or nurse have you made to date? _____

How many months pregnant were you when you started receiving medical care? _____
How many visits to the doctor did you have while you were pregnant? _____

Did you use alcohol or drugs while you were pregnant? Yes _____ No _____
How many days a week did you use alcohol? _____ How much per day? _____
How many days a week did you use drugs? _____ How much per day? _____

Did you have any health problems during your pregnancy? Yes _____ No _____
IF Yes, please describe _____

Was your baby premature? Yes _____ No _____ IF Yes, how many weeks early? _____
How long did your baby stay in the hospital after being born? _____ days
How much did your baby weigh at birth? _____

Was your baby considered small for his/her age at birth? Yes _____ No _____

Did your baby have any need for an incubator, respirator ("breathing machine") or other life support systems? Yes _____ No _____ IF Yes, what?
_____

Did you or your child have any problems during or after the baby's birth?
Yes _____ No _____ Please describe _____
_____

Has your baby had any difficulties with growth or gaining weight?
Yes _____ No _____ Please describe _____
_____

Has your child had any chronic health problems (for example, ear infections....)? Yes _____ No ___
IF yes, what? _____
_____

Has your baby been referred to a specialist because of any problems with growth and development?
Yes _____ No _____ Please describe _____
_____

Parental Information

What grade are you in school? _____ If you are no longer in school: what is the highest grade you finished? _____

What is the baby's father's level of involvement with you?

1) Visits, but not very often
2) Visits, occasionally
3) Visits to see the baby occasionally
4) Visits to see me
5) We still date, but he doesn't spend time with the baby
6) Doesn't visit but calls occasionally
7) He doesn't call or visit
8) He doesn't know he has a child
9) Married and lives with the baby and I

Does the father (of the baby) contribute to supporting you or your baby?

1) He sends money
2) We share the bills
3) He occasionally spends some money on the baby
4) He brings the baby clothes or toys
5) He doesn't contribute to supporting the baby
6) He supports the baby and I
7) We support the baby and ourselves

What is the baby's father's level of involvement in caretaking? Please circle all that apply.

1) plays with the baby
2) feeds the baby
3) bathes the baby
4) changes diapers
5) contributes financial support
6) babysits so I can get away

Are you married? Yes _____ No _____ If YES, How long? _____
To the baby's father? Yes _____ No _____

What is your race or ethnic group?

1) White or Caucasian
2) Black or Afro-American
3) Hispanic
4) Asian or Oriental
5) American Indian (Native American)
6) Other (please name) _____

At this time (right now), with whom do you live? (Check all that apply)

a) with the baby's father
b) with your parents
c) with his parents (baby's father)
d) with siblings or non-parent relatives
e) with friends
f) alone

Have there been any problems in the home/family that have made it difficult for you and your baby?
Yes _____ No _____ IF Yes, Please describe _____

_____

_____

Employment Status: a) part time b) full time c) unemployed
d) currently applying for jobs e) unemployed, but planning future employment

Total household income (be sure to include income from all contributing members of the household:

1) under $7,000
2) $7,000-$9,999
3) $10,000-$14,999
4) $15,000-$24,999
5) $25,000-$34,999
6) $35,000 or more

What was the highest grade of regular school or college that your parents completed? Circle the grade your mother completed. Place an "X" on the grade your father completed.

Elementary	High School
01 1st grade	09 9th grade
02 2nd grade	10 10th grade
03 3rd grade	11 11th grade
04 4th grade	12 12th grade
05 5th grade	
06 6th grade	College & Graduate/Professional School
07 7th grade	13 1 year
08 8th grade	14 2 years
	15 3 years
	16 4 years
00 No formal schooling	17 5 years
19 I don't know	18 6 years or more

Has anyone in your immediate family ever had emotional problems?
Yes _____ No _____ IF Yes, please name relation to that individual (for example, mother, sister, father, self) _____
_____

Has anyone in your immediate family ever had substance abuse problems?
Yes _____ No _____ IF Yes, please name relation to that individual (for example, mother, sister, father, self) _____
_____

Please indicate below how you felt about being pregnant when you first found out you were pregnant. Circle the number that is closest to how you felt.

1	2	3	4	5
Very Happy	a little bit Happy	O.K.	a little bit Unhappy	Very Unhappy

Please indicate below how you feel about having a baby now. Circle the number that is closest to how you feel.

1	2	3	4	5
Very Happy	a little bit Happy	O.K.	a little bit Unhappy	Very Unhappy

Please indicate below how your family feels about your having a baby. Circle the number that is closest to how you think they feel.

1	2	3	4	5
very Happy	a little bit Happy	O.K.	a little bit Unhappy	Very Unhappy

Infant/child care plans: Circle all that apply.

1) I assume all of the caretaking responsibility
2) I share the caretaking responsibility with my mother or grandmother
3) I share the caretaking responsibility with another relative
Please name _____(aunt, sister, father)
4) I share the caretaking responsibility with my baby's father
5) I share the caretaking with a regular babysitter

If the caretaking is shared, how much of the time do you care for the baby?
1) less than 1/4 of the time
2) about 1/4 of the time
3) about half the time
4) about 3/4 of the time
5) almost all the time

Please use the following scale to indicate the degree to which you have confidence in your ability to be a good mother.

1	2	3	4
confident of my ability	somewhat confident of my ability	unsure of my ability	sure I lack ability

.....

What are your current needs? Please use the following letters to indicate your needs. You should feel free to use more than one letter for each need.

A - Have had, but would like more.
B - Would have liked to have had.
C - Would like now.
D - Have never needed.

I WOULD LIKE MORE INFORMATION....

1. About how children grow and develop, specifically in these areas:
_____ a. Motor (small and large muscle movements)
_____ b. Language (talking and understand2ing).
_____ c. Cognitive (learning and problem solving)
_____ d. Self-help (eating, dressing, toileting).
_____ e. Social (smiling, playing with parent).

_____ 2. On how to handle my child's behavior.

_____ 3. On feeding schedules or good nutrition for my baby.

_____ 4. On first aid procedures and emergency phone numbers.

_____ 5. On a legal question or problem.

_____ 6. On programs available for my child's recreation.

_____ 7. On job opportunities available.

_____ 8. On educational opportunities available.

_____ 9. Reading material about my child's medical condition or disability.

10. I WOULD LIKE ASSISTANCE...
_____ a. Locating a doctor for my baby.
_____ b. Locating a doctor for myself.
_____ c. Locating a qualified babysitter or day care center.

11. Knowing how to apply for assistance programs such as:
_____ a. Aid to Dependent Children (ADC)
_____ b. Supplemental Security Income (SSI)
_____ c. Women, Infants, and Children (WIC)
_____ d. Medicaid.

What are your current needs? Please use the following letters to indicate your needs. You should feel free to use more than one letter for each need.

A - Have had, but would like more.
B - Would have liked to have had.
C - Would like now.
D - Have never needed.

I WOULD LIKE HELP WITH...

12. Getting these items for my baby:

_____ a. Baby equipment (crib, stroller).
_____ b. Baby clothes/blankets.
_____ c. Toys.
_____ d. Diapers.
_____ e. Formula.

13. For my family in these areas:

_____ a. Clothing.
_____ b. Heat.
_____ c. Food.

_____ 14. In getting together to talk with other young mothers.

15. I WOULD LIKE COUNSELING FOR...

_____ a. Drug and alcohol abuse.
_____ b. Controlling my temper.
_____ c. Marital problems.
_____ d. Depression.
_____ e. Managing my money/budget.
_____ f. Other _____

These questions have raised some sensitive issues. Have you felt comfortable enough to answer all of the questions frankly? Yes _____ No _____
If not, it would help us if you could tell us which ones you were unable to answer frankly?

Welcome Baby Program Information

This information is confidential. It will not be connected to your name or shared with your home visitor. We will use the information to make improvements in the program.

How comfortable do/did you feel working with your home visitor?

1	2	3	4	5
I felt very comfortable	I felt pretty comfortable	O.K.	I felt pretty uncomfortable	I felt very uncomfortable

How much have you learned about infant care-giving?

1	2	3	4	5
a lot	quite a bit	some	not very much	nothing

How much have you practiced new activities with your baby after the home visit?

1	2	3	4	5
a lot	quite a bit	some	not very much	not at all

When you missed appointments with your home visitor, what were the most common reasons? Check all that apply.

_____ I forgot the appointment
_____ I remembered the wrong day or time
_____ My child was sick, I had a doctor's appointment
_____ I was on vacation
_____ I had to work
_____ I had been out of the house and didn't make it back in time
_____ my home visitor forgot the appointment
_____ my home visitor called to reschedule the appointment

Did you and your home visitor have any difficulty scheduling appointments?

1	2	3
a lot of trouble	a little trouble	no trouble to speak of

Would you recommend this program to a friend?
Yes _____ No _____

What changes should we make to improve the Welcome Baby Project?

Appendix J
Home Visitor Measure

VOLUNTEER COMPLETES

Date of Evaluation _____
Your Name _____
Teen's Name _____
Date of First Welcome Baby Contact
(month/year)_____

Please give your best estimate of the number of home visits your Welcome Baby teen mom had received up to the date of her evaluation. (Discuss with your supervisor to get the most accurate estimate.) _____

Please give your best estimate of the percentage of times that your teen mom was not home/missed a scheduled visit. (Circle one).

10% 20% 30% 40% 50% 60% 70% 80% 90%

What percentage of these misses appeared to be due to a lack of interest or motivation/a poor excuse for missing? (Circle one).

0%	25%	50%	75%	100%
almost none	a few	some	quite a few	almost all

Considering the above question, provide some examples of how your teen responded or failed to respond to your interventions. Use the back if necessary.

Did you and your teen mom have any difficulty scheduling appointments?
(Circle one)

1	2	3
a lot of trouble	a little trouble	no trouble to speak of

When you and your teen mom missed appointments, what were the most common reasons? Check all that apply. Star the two most frequent reasons.

_____ my teen mom forgot the appointment
_____ I forgot the appointment
_____ my teen's child was sick or they had a doctor's appointment
_____ my own child was sick or had a doctor's appointment
_____ my teen was on vacation
_____ I was on vacation
_____ my teen mom had to work
_____ I had to work
_____ my teen mom had been out of the house and didn't make it back my teen mom didn't answer the door (but appeared to be home)
_____ my teen mom was out of town unexpectedly
_____ other (specify)

The following questions relate to the Welcome Baby program goals and objectives, keep these in mind as you answer the questions. Please circle the answer of your choice. If you have any comments, please feel free to put them on the back.

1) In your work with your teen and her baby, what emphasis was placed on promoting mother-infant attachment?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

Should attachment receive more emphasis, less emphasis, or does it receive the proper emphasis?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

How successful was the program in fostering healthy attachment between your teen mother(s) and their infant(s)?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

2) In your work, what emphasis was placed on preventing developmental delay and fostering optimal development?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

Should child development have received more emphasis, less emphasis, or did it receive the proper emphasis?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

How successful was the program in preventing developmental delay and in fostering healthy development with your teen's infant(s)?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

3) In your work, what emphasis was placed on helping your teen mom to provide a home environment conducive to growth and development (one that is safe and provides adequate opportunity for stimulation)?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

Should the home environment have received more emphasis, less emphasis, or did it receive the proper emphasis?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

How successful was the program in promoting a healthy home environment for the teen's infant(s)?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

4) In your work, what emphasis was placed on teaching parenting skills?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

Should parenting skills have received more emphasis, less emphasis, or did they receive the proper emphasis?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

How successful was the program in promoting positive and effective parenting practices?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

5) In your work, what emphasis was placed on helping your teen mom to feel competent as a parent?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

...On acquiring formal and informal social support?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

Should a sense of competence as a parent have received more emphasis, less emphasis, or did it receive the proper amount?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

...should acquiring social support have received more emphasis, less emphasis, or did it receive the proper amount?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

How successful was the program in helping your teen mom to feel competent as a parent?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

...in helping your teen mom establish a support network?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

6) In your work, what emphasis was preventing unwanted, repeat pregnancies?

1	2	3	4	5
very weak	weak	moderate	strong	very strong

Should preventing unwanted pregnancies have received more emphasis, less emphasis, or did it receive the proper emphasis?

1	2	3
more emphasis	proper amount of emphasis	less emphasis

How successful was the program in preventing unwanted, repeat pregnancies?

1	2	3	4	5
not at all	slightly successful	somewhat	quite successful	very successful

*** ***

What are the strengths of the Welcome Baby Project in meeting the needs of teen mothers?

What needs of teen moms or their infants does the program not address?

In what areas and in what ways might the program remediate deficiencies or improve the existing services?

How helpful to you was the supervision you received from the Welcome Baby staff?

1	2	3	4	5
not at all	slightly	somewhat	quite	very helpful

Comments:

How could it be more helpful?

What have you found rewarding about working as a Welcome Baby Volunteer (community recognition for being part of the program, making a contribution to someone else's life, the comraderie with other volunteers, getting out of the house, learning more about infant care)?

What has not been rewarding in working as a Welcome Baby Volunteer?

How much does your supervisor appreciate your work?

1	2	3	4	5
not at all	slightly	somewhat	quite a bit	very much

How supportive of you is the Welcome Baby staff?

1	2	3	4	5
not at all	a little	somewhat	quite	very supportive

Comments:

Has the frequency of supervision been sufficient?

1	2	3
too infrequent	adequate	too frequent

How comfortable do/did you feel working with your teen mom?

1. interpersonally

1	2	3	4	5
not at all	a little comfortable	somewhat	quite comfortable	very comfortable

2. as a teacher/peer helper

1	2	3	4	5
not at all	a little comfortable	somewhat	quite comfortable	very comfortable

How often did your teen follow through on your recommendations (for resources, stimulating activities, infant care techniques)?

1	2	3	4	5
almost never		sometimes		almost always

What factors discourage or prevent teen moms from following through on your suggestions/interventions as a home visitor?

All in all, how much of a difference do you make in your teen's life?

1	2	3	4	5
almost none	a little	some	quite a bit	a lot

Appendix K

Verbatim Script for Home Visitors to Use with Welcome Baby Program Participants

We are interested in evaluating the Welcome Baby Program to see how well the program works and to find out how we might improve it. You are a valuable source of information for us since you can tell us the ways in which the program has helped you in caring for (name of baby) and areas in which the program could be more helpful than it has been.

Susan Murdock from the College of William and Mary is conducting the evaluation under the supervision of Dr. Joseph Galano. Participation in the study would require 2-3 hours of your time. I would schedule a time for Susan and her assistant to visit you in your home. During the visit, they would spend some time asking you some questions about your baby and about yourself. They would also like to videotape you and your baby doing a playful activity. There are three questionnaires that ask questions about your educational and family background, the health history of your baby, and about being a parent. Some questions ask about your attitudes concerning parenting and child development. Do you have any questions about the evaluation?

The researchers would like to offer you $10 and a gift for your baby as a thank you for your participation. Please keep in mind, your decision whether or not to participate will not affect the services you currently receive from Welcome Baby.

I want to assure you that all of the information we collect will be kept completely confidential. That means we will not connect your name to any of your responses or to the videotape. We will only use a number assigned to you, to identify your materials. You may refuse to answer any questions should you find them personally objectionable, and you may stop taking part at any time in the session. Even at the conclusion of the session, you will still have the opportunity to withdraw permission for your data to be included. Do you have any questions about the study? Any concerns about participating? Would you like to participate? Wonderful! Let's set up a time for Susan's visit.

Appendix L
Verbatim Script for Control Subjects

Hello, My name is Susan Murdock. I am a graduate student at the College of William and Mary. I am doing a study under the supervision of Dr. Joseph Galano, that looks at how young children and their mothers interact. The Chesterfield Health Department gave us the names of mothers who have had babies in the last couple of years. We believe that the mother-child relationship is very important and want to learn more about how mothers teach and encourage their babies. How many children do you have? How old is/are your child/children? I am sure that with a _____(e.g., 2 year old) you could tell us a lot about _____(your baby's first words).

The information we collect in this study will assist programs in helping mothers and their young children. If you decide to participate in this study, you will have the opportunity to see what your baby can do. Lots of mothers find this activity interesting, fun and informative. We try to make it a positive experience for you and your baby. We are also offering mothers who participate, ten dollars for their time and a gift for their baby.

Are you interested in hearing more about the study? If you agree to participate in the study, it would require 2-3 hours of your time. I would schedule a time to visit you in your home, during which myself and an assistant would spend some time asking you some questions about your baby and about yourself. We would like to videotape you and your baby doing a playful activity and we would ask you to fill out several questionnaires. Do you have any questions about what you are being asked to do? This should be a relaxed time, a time to do some things you don't usually do.

I want to assure you that all of the information we collect will be kept completely confidential. That means we will not connect your name to any of your responses or to the videotape. We will only use a number assigned to you, to identify your materials. You may refuse to answer any questions should you find them personally objectionable, and you may stop taking part at any time in the session, without losing the gifts you will have received for participating. Even at the conclusion of the session, you will still have the opportunity to withdraw permission for your data to be included.

Do you have any questions about the study? Any concerns about participating? Would you like to participate? Wonderful! Let's set up a time for my visit.

Appendix M

Verbatim Script for Introducing the Study to Students

I thought you might be interested in a study that Susan Murdock, from the College of William and Mary is doing. The study looks at how young children and their mothers interact. The researcher believes that the mother-child relationship is very important and wants to learn more about it.

Participation in the study would require 2 to 2 1/2 hours of your time. Susan would schedule a time to visit you in your home during which she would spend some time asking about your baby and about yourself. If you decide to participate, you will have an opportunity to see what your baby can do. Susan is also offering mothers who participate, ten dollars for their time and a gift for their baby.

You do not need to decide whether or not you want to participate right now. If you are interested in finding out more about the study, I can give her your name, address, and phone number and she will contact you to tell you more about this opportunity.

Appendix N

Verbatim Script for Home Visit

Hello, I am Sue Murdock. We arranged to meet today to talk with you about your baby and about being a parent. You are about to participate in a study conducted by myself and Dr. Joe Galano. I would like to introduce _____, she is helping me with the study. _____ is also a student at William and Mary. As a thank you for your willingness to participate, you will receive $10 and a gift for your baby. I have a consent form that is required for all students at William and Mary to present. It guarantees that the study has been explained to you and that you know your rights. I would like for you to read and sign the form. It says the following: EXPERIMENTER WILL READ THE CONSENT FORM.

Do you have any questions? Are you willing to sign the consent form and continue with the study?

We would like to start off by getting to know you and your baby. We will ask some questions. Then we would like to do the videotaping. If you would like to watch the videotape at the end, you are welcome to do so. Then we will ask you to fill out a couple of questionnaires, while I work with your baby to see how your baby learns and how he/she likes to play. Feel free to ask any questions or express any concerns you may have.

Appendix O

Consent for Research

Psychology Department, College of William and Mary
The research being conducted by Susan Murdock and Dr. Joseph Galano on mother-infant relationships has been described to me. I understand that during this home visit I will be asked about my educational and family background, the health history of my baby, and about being a parent. I also understand that I will be asked to answer and complete two questionnaires on my attitudes about parenting and child development. In addition, I will be asked to teach my baby a new game while being videotaped.

I will receive $10 and a gift for my baby as a Thank You for my participation in this study. I also know that my responses will be identified by number, and that my name will not be placed on any of the questionnaire or interview materials. I further understand that my responses will be confidential and that my name will not be associated with any results of this study. My name will only appear on this consent form, and it will not be connected with my responses. I understand that if my discussion of child care reveals any instances of child abuse, Virginia law requires that the researchers report those instances to the appropriate social services agency.

I know that I may refuse to answer any questions that I find personally objectionable, and that I may stop taking part in the session at any time without losing the gifts I will have received for participating. I understand that even at the conclusion of the session I will still have the opportunity to withdraw permission for my data to be included. I am aware that I may report dissatisfactions with any aspect of this study to the Psychology Department's Research Ethics Committee. My signature below signifies my voluntary participation in this study.

_____ _____
Date Signature

_____ _____
Date Witness

Autobiographical Statement

Susan Ann Murdock was born in Fairfax, Virginia on October 26, 1962. She was awarded a Bachelor of Arts degree in Psychology from the College of William and Mary in May, 1985. She entered the Masters of Arts program in Psychology the following year and completed the coursework for this degree in May, 1987.

During her graduate training at the Virginia Consortium for Professional Psychology, Ms. Murdock was awarded fellowships and research assistantships for three years by the College of William and Mary, and a clinical assistantship from Chesterfield Community Services Board. She completed a specialization in Community Mental Health including Prevention and Clinical Services. Ms. Murdock received her predoctoral internship training at the Indiana University School of Medicine - Psychology Internship Consortium in Indianapolis.