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Tanja G. Malone
University of Alabama at Birmingham

ADOLESCENT PARENTING INTERVENTIONS: THE ROLE OF DEPRESSION, COGNITIVE ABILITY, AND SOCIAL SKILLS IN THE EVALUATION OF PROGRAM EFFECTIVENESS

by

TANJA G. MALONE

FRED J. BIASINI, COMMITTEE CHAIR
KIRSTIN BAILEY
KRISTI C. GUEST
DAVID E. VANCE
AMANDA C. WALLEY

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ABSTRACT

Research has shown that adolescent mothers and their children face multiple negative life outcomes, and much time and resources have been directed at interventions to help these teen-led families. Most recently, efforts have been made to determine which adolescent parenting interventions or components of parenting interventions are most effective. In the present study, a school-based parent training intervention for adolescent mothers and nonpregnant/nonparenting teens called the Young Mothers Program (YMP) was analyzed to determine whether depression, cognitive ability, and social skills affected the treatment outcome of cognitive readiness to parent. Three questions were analyzed regarding the adolescents who participated in the YMP: (a) Was there a change in cognitive readiness to parent after training?, (b) Was there a change in depression after training?, and (c) Did depression, cognitive ability, and social skills effect cognitive readiness to parent?. On the basis of previous research, it was hypothesized that there would be an increase in cognitive readiness to parent and depression after intervention. It was also hypothesized that depression, cognitive ability, and social skills would affect cognitive readiness to parent.

Analyses were run on adolescent mothers who received YMP training (preg/train; $n = 21$), nonpregnant/nonparenting adolescents who received YMP training (nonpreg/train; $n = 35$) and nonpregnant/nonparenting adolescents who did not receive any YMP training (nonpreg/nontrain; $n = 37$). The results of a series of ANCOVAs indicated

that there was no change in cognitive readiness to parent or depression after intervention. The results of a series of simultaneous multiple regressions indicated that, for both of the training groups combined (preg/train and nonpreg/train), there was a trend for cognitive ability and social skills to impact posttest cognitive readiness to parent. For the nonpregnant/nonparenting adolescents (nonpreg/train), there was a significant effect of cognitive ability on cognitive readiness to parent. For the pregnant adolescents (preg/train), there were no effects of depression, cognitive ability, or social skills on cognitive readiness to parent.

The results of this study indicate that more research is needed to understand the role of maternal characteristics in treatment outcome. Possible strengths and limitations of the YMP and school-based interventions are discussed.

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DEDICATION

To Annalie and to Stephen.

"I would choose you."

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LIST OF ABBREVIATIONS

AAPI	Adult-Adolescent Parenting Inventory
AAPI-2	Adult-Adolescent Parenting Inventory-2
ANCOVA	analysis of covariance
BDI	Beck Depression Inventory
KCDI	Knowledge of Child Development Inventory
nonpreg/nontrain	nonpregnant or nonparenting adolescents who did not receive Young Mothers Program training
nonpreg/train	nonpregnant or nonparenting adolescents who did receive Young Mothers Program training
PACR II	Parental Attitudes Toward Child-Rearing Questionnaire II
preg/train	pregnant or parenting adolescents who received Young Mothers Program training
SES	socioeconomic status
SILS	Shipley Institute for Living Scale
SSRS	Social Skills Rating System
WAIS	Wechsler Adult Intelligence Scal
YMP	Young Mothers Program

INTRODUCTION

Adolescent mothers have been the subject of numerous research studies and the recipients of intervention services over the last half century. The interest in their well-being and that of their offspring has been great for several reasons. Teen pregnancy and delivery rates in the United States continue to be high, with an estimated 350,000 new births to adolescents annually (Whitman, Borkowski, Keogh, & Weed, 2001).The results of many previous studies have shown that, for the majority of teen-led families, the outlook is bleak for both mother and child. For adolescent mothers, it is now generally perceived that the negative outcomes associated with teen pregnancy stem from maternal and environmental factors other than the age of the mother at the birth of her child (Crean, Hightower, & Allan, 2001; Zimmerman et al., 2001). Most researchers focusing on teen motherhood have found that teen mothers are more likely to experience a negative life circumstance (Coley & Chase-Lansdale, 1998; Garrett & Tidwell, 1999; Horwitz, Klerman, Kuo, & Jekel, 1991; Passino et al., 1993), and the majority of these mothers will undergo multiple negative life circumstances simultaneously (Sommer et al., 2000). Teen mothers have been found to score below average on measures of IQ (Sommer et al., 1993), to have less knowledge of child development (Karraker & Evans, 1996), and to exhibit poorer child-rearing attitudes and practices (Dukewich, Borkowski, & Whitman, 1996). These young mothers have been found to complete less schooling

than their peers who do not choose to parent during adolescence (Whitman et al.), to come from areas of lower socioeconomic status (SES) (Coley & Chase-Lansdale, 1998), and to use more public assistance than nonteen parents (Trad, 1995).

The reason for the interest in research and services related to the children of adolescent mothers results from concern about both short- and long-term outcomes for the majority of these children. Children of teen mothers have been shown to have deficits in multiple areas of development, including cognitive ability (Sommer et al., 2000), language development (Coley & Chase-Lansdale), and behavioral adjustment (Coley & Chase-Lansdale, 1998). In addition, these children are more likely to suffer from abuse and/or neglect than children of nonteen parents have been found to be (Trad, 1995).

Although it is true that the majority of adolescent mothers and their children experience multiple difficulties, each adolescent mother and child is unique and does not exhibit a prescribed set of characteristics and needs. Currently, adolescent mothers are placed in parenting interventions based upon the fact that they are at-risk for difficulties because they are teenage mothers. Intervention success is assessed on the basis of treatment success for teenage mothers as a group. It is hypothesized that individual program placement and the overall evaluation of program success can be made more specific and useful if specific characteristics of adolescent mothers are considered, such as readiness to parent, depression, and social skills. Cognitive readiness to parent is a construct which has been found to differentiate adolescent and adult parents and has reliably been used to evaluate maternal behavior and predict child outcome. Previous research has shown that adolescent mothers are more likely to exhibit decreased cognitive ability, and to experience depression, with those experiencing depression exhibiting

decreased social skills, and low cognitive readiness to parent. This study aims to determine whether adolescent mothers' depressive symptomology, cognitive ability and social skills have an impact on treatment outcomes and should be considered during evaluation of program efficacy. In this study, data from a school-based parent training program were analyzed to determine whether the adolescents' depression, cognitive ability, and social skills do impact the treatment outcome of cognitive readiness to parent.

Adolescent Parenting Interventions

In an attempt to understand what interventions are helpful for adolescent-led families, multiple reviews of the adolescent parenting intervention literature have been conducted (Clewell, Brooks-Gunn, & Benasich, 1989; Coren, Barlow, & Stewar-Brown, 2003; Seitz & Apfel, 1999). In comparing and analyzing the parenting interventions, these reviewers, along with individual researchers describing their own study results, have typically defined interventions in terms of all or some of eight characteristics, or components, of interventions. These components and their descriptions are listed in Table 1.

Treatment Components

Content. The content of the intervention is the specific behavior or behaviors targeted during the intervention. The content of parenting interventions can be classified as single-behavior interventions, lifestyle interventions, or school-based interventions.

Single-behavior interventions focus on one behavior or skill for modification. These behavior-specific parenting interventions for adolescent mothers have been both

successful and unsuccessful. These interventions have included training in developing coping skills (Schinke, Barth, Gilchrist, & Maxwell, 1986), developing positive parent-child relationships, and interacting with infants in a developmentally appropriate manner (Thompson, Cappleman, Conrad, & Jordan, 1982), increasing child development knowledge (Fulton, Murphy, & Anderson, 1991), and improving mealtime communication skills (Black & Teti, 1997).

Table 1

Treatment Types

Treatment Components	Description of Treatment Components
Content (single-behavior; lifestyle)	Single: mealtime behavior; coping skills; etc. Lifestyle: housing, vocation, healthcare, parenting skills, etc. School-based: parenting knowledge, attitudes, child care, health care, etc.
Administration (group vs. individual)	One-to-one or group administration
Duration (length of training)	Short (<1 month) Medium (1 month-1 year) Long (>1 year)
Intensity	Length and frequency of training sessions
Timing (onset of training)	Prenatal/immediately after birth; postnatal
Location (where training/treatment administered)	Clinic; office; home; school
Experimental design	Experimental vs. quasi experimental
Participant characteristics	Ethnicity, SES, volunteer status

Schinke et al. (1986) implemented the Coping Skills Preventive Intervention, an example of a single-behavior intervention. The intervention targeted stressful situations in the teen mother's life, such as unwanted advice and conflict. The intervention leaders described appropriate coping skills to the teen mothers and emphasized the importance of those skills. The group leaders modeled the behaviors, and the teens practiced implementing them. The teens were given feedback and encouragement from the group leaders and their peers. The results of this study showed that, after the intervention, the teens who participated had higher levels of social support, cognitive performance, parenting ability, and specific coping skills. There continued to be significant differences at a 3-month follow-up (Schinke et al.).

Lifestyle interventions that address multiple needs simultaneously have also been found to have variable success rates. These programs often attempt to help the teen mother improve her ability to interact with and care for her child. At the same time, these interventions may assist the teen mother in locating housing, work, or necessary services while educating her on the importance of well-baby doctor visits and vaccines. One such intervention project used the Carolina Infant Curriculum to train young mothers to develop positive parent-child relationships and to interact with their infants in a developmentally appropriate manner. Thompson et al. (1982) administered the program as a monthly in-home intervention. The curriculum consists of learning activities for mothers and their children, with the children's ages ranging from newborn to 24 months. Areas of development targeted are physical, motor, perceptual, cognitive, language, and social. The information is conveyed to the mothers on one-page guide sheets in easy-to-read language with pictures. Reasons for the activity and usefulness of the skills are made

easily understandable to the young mother. Results of that project indicated that the intervention lowered the risk of cognitive delay by the time the child reached the age of 2½ years, that mother-child interactions improved, and that there was a relationship between child risk status and mother-child interactions (Thompson et al., 1982).

School-based programs are often similar to lifestyle interventions but may not address as many domains of functioning. Due to the fact that the outcomes for the adolescent mother and child are more positive for those teen mothers who complete at least their high school education, intervention programs have begun to be implemented in the school setting. Because of the many potentially positive qualities of the school-based intervention, such as length of exposure to intervention, availability of child-care, and ease of locating teen mothers for specialized services, it is important to analyze them individually.

Crean et al. (2001) evaluated the Early Childhood Centers for Children of Teen Parents Program, which is a school-based program for teen mothers that is designed to address maternal-education and parent-training needs and to provide child health and day care services intended to prepare the child for entering school. Teen mothers are eligible for participation if they commit to attend each of their scheduled classes 80% of the time. The program consists of basic parenting classes that the teen mothers are strongly encouraged to take annually and an on-site day care. The state-licensed day care is available for children aged 6 weeks to 3 years. The center is open during school hours and is staffed by program workers, as well as by the teen mothers during their lunch and free periods. The program staff members also act as advocates for the students in and out of school by referring the students to services in the community as needed, as well as by

providing general guidance and support. In addition, the program encourages a natural support system among the teen mothers. Support from the school administrators is considered vital in providing the flexibility that this program requires. The teen mothers participating in this program were found to attend school more often after the birth of their baby and to have a higher school graduation rate than teen mothers who did not attend the program. Crean et al. found that program participation, average amount of school attendance before the birth of the child, and age of the mother at the birth of the child all predicted graduation rates. There were no differences found in the percentage of core courses passed or in retention/suspension rates (Crean et al., 2001). These findings provide evidence that parent training paired with high-quality child care services can affect high school graduation rates. The teen mother is more likely to receive parent training and assistance if she remains in the parenting program at school, and is more likely to increase her knowledge of and ability to care for her child. Keeping the teen mother in school also allows her to complete high school, which is important because dropping out of school is one of the major impediments to finding appropriate career choices and achieving financial independence. School-based intervention is the focus of the current study.

Administration. The administration of the program specifies whether the program is administered to a group or on a one-to-one basis. Although Coren et al. (2003) stated that research has not indicated which form of administration is most beneficial for adolescent mothers, they suggested that group-based interventions may be most appropriate for adolescent mothers.

Duration. The duration of an intervention is the length of time that the intervention is administered to the participants. Program length has varied from short to long term. Previous research has shown that there has been some level of success in improving outcomes for teen mothers and their children for some short-, medium-, and long-term interventions, but not for others of each duration (Black & Teti, 1997; Osofsky, Culp, & Ware, 1988; Schinke et al., 1986). In a review of adolescent parenting literature, Reichman and McLanahan (2001) found that intervention programs that last at least one year are more likely to be successful.

Intensity. The intensity of the intervention is the frequency of program administration and includes the frequency and the length of the sessions. Program intensity has included one-time administration of a video-led program, the mailing of information bimonthly, and weekly lengthy home visits. Gomby, Culross, and Behrman, (1999) found after reviewing home-visiting programs, that families received on average half of the intended visits, regardless of the intended frequency.

Timing. The timing of the intervention is when the intervention is begun in reference to the birth of the baby. Parenting interventions are categorized as beginning prenatally/immediately after birth or postnatally. After reviewing the literature, Reichman and McLanahan (2001) stated that the most successful parenting interventions have been implemented prior to the birth of the first child or soon after birth.

Location. The location of the intervention is where the mother receives her training. Most interventions have been implemented in a health care or office/clinic setting, at the mother's home, or at school. There have been programs that have had some degree of success in each of these locations. School-based interventions, however, provide many of the treatment components that have been associated with successful interventions in the past, such as being of high intensity, having a medium-to-long duration, and beginning services prenatally or soon after birth. For this reason, the current study will analyze the effectiveness of a school-based adolescent parenting intervention.

Experimental design. Reviewers have compared the experimental design of parenting programs. Although the randomized controlled design offers the most rigorous research methodology, it is the quasi experimental design that is necessarily most prevalent in adolescent parenting research.

Participants. In terms of general participant characteristics, intervention programs of any kind have been described as being primary, secondary, or tertiary (Chisolm, 1998). These classifications distinguish which population receives a particular intervention. Primary interventions are designed to address a specific problem by targeting a large population in which some of the people may face that problem in the future. Pregnancy prevention programs conducted with all teens in a particular school, and not only with those teens who are at particular risk for becoming pregnant, are examples of primary-intervention programs. Secondary interventions target a population that is at risk for a negative life event but has not yet engaged in the targeted behavior. Parenting programs

that target child abuse and neglect and are administered to teen mothers who have not engaged in abusive behavior are examples of secondary interventions. Tertiary interventions target a population of people already engaging in the targeted behavior and have as goals remediation and the prevention of future harm. Parenting programs conducted with abusive parents are examples of tertiary interventions. Previous teen-parenting interventions have primarily been conducted with teen mothers or pregnant teens (Coley & Chase-Lansdale, 1998) or with teens who are experiencing negative life circumstances (Field et al., 2000). These previous adolescent-parenting interventions are considered secondary and tertiary interventions. In terms of specific participant characteristics included in analyzing and comparing adolescent parenting interventions, most studies have only included ethnicity, age and volunteer status.

By combining the components of interventions, it is possible to categorize the individual parenting interventions that have been implemented. As can be seen in the examples above, single-behavior interventions, those interventions that address one targeted need such as coping skills or mealtime behaviors, have typically been short or medium in duration and have been implemented in the clinic or office of the person implementing the intervention. Such interventions have been of variable intensities and are administered in group and one-to-one formats. Lifestyle interventions, or those interventions that target many of the adolescent mother's needs at once, often utilize a case manager paraprofessional or social work professional to assist the adolescent in obtaining housing or work, improving parenting skills, maintaining all health care requirements for the child, and so on. These interventions have typically been of longer duration and have been implemented in the teen mother's home. School-based programs

are most similar to lifestyle interventions implemented in the home but, by definition, are implemented in the school, are typically administered in group as opposed to one-to-one settings, have a higher intensity of intervention, and may not address as many needs as a home-based intervention does. Few interventions of any type have been evaluated with empirically rigorous, randomly controlled, experimental design.

Assessments of the results of an individual study and reviews of multiple studies have attributed program success to the above programmatic characteristics and not to individual differences among the participants. It is inappropriate to generalize from a nonrandomized sample to the greater population of all adolescent mothers; therefore, treatment success should not be based on a limited sample. While that is commonly known, decisions are still made about the overall efficacy of intervention programs without consideration of the limited sample. It is suggested that an analysis of the differences in participant depression, cognitive ability, and social skills may provide needed information to generalize results to a larger but similar group of adolescent mothers.

Although many previous adolescent parenting intervention programs have been effective in changing maternal knowledge, perceptions, or behaviors, it should not be assumed that all interventions will either help or do no harm to the participating subjects. For example, Dishion, McCord, and Poulin (1999) described situations in which some intervention environments can lead to increased negative or detrimental behaviors by the participants. These iatrogenic effects were found to occur in peer-group interventions with high-risk youth during early adolescence (Dishion et al.). Because of the high cost of implementing interventions and the lifetime stakes of failing to appropriately intervene

for both adolescent mothers and their children, it is important to clarify which interventions or intervention components have been shown to be associated with positive treatment outcomes. The current study will examine a school-based parenting intervention to determine whether it affected positive or negative treatment outcomes.

What Makes a Parenting Intervention Successful?

After analyzing previously run parent training programs, Reichman and McLanahan (2001) have listed three essential components of an adolescent parent training program that should be considered minimum requirements: (1) frequent interactive training sessions with the mother that take place at home or at another location, (2) training that begins before or soon after the birth of the child, and (3) training that encompasses at least one year. Whitman et al. (2001) agreed that interventions must be consistent and begin early and also stated that interventions need to be intensive, address educational issues, and continue through early childhood. Crean et al. (2001) emphasized the importance of providing school-based high-quality day care services as a way to enable the teen mother to utilize appropriate child care for her child, which is often not available in the community. Such day care services also allow the teen mother to continue her education and receive other school-based services. Maternal characteristics to target include cognitive preparedness for parenting, social competence, and relationship issues (Whitman et al., 2001). Interventions should also target the extended family (Pope et al., 1993).

It is suggested that the current system of program evaluation falls short of obtaining all of the information necessary to accurately evaluate and compare program

effectiveness. With the exception of day care services, all of the above recommendations are made without regard to the specific characteristics of the population served. Current comparisons of programs do not take into account the differences in adolescent mothers and the potential need for varying services to meet these varying needs. Although it is likely true that interventions that begin early, meet frequently, and last a long time will help most adolescent mothers, research has shown that, for some adolescent mothers, the fact that an intervention has these characteristics will not in itself be enough to guarantee a positive outcome. As Gomby et al. (1999) pointed out in their review of adolescent home visitation programs, "[w]ith few exceptions, existing research does not enable conclusions about which families are best suited to which home visiting models or which are best suited to home visiting versus some other service-delivery strategy" (p.); they go on to say that the research is clear that in-depth home visiting programs will not work for all adolescent-led families. Over 20 years ago, Landy, Cleland, and Schubert (1984) concluded that "little attention has been given to the need to individualize [adolescent parenting] interventions based on the psychological and sociological needs of the individual teenage client" (p. 172). It is the purpose of the present study to explore some of the individual characteristics of the adolescent mother that should be considered when program effectiveness is being evaluated. Specifically, it is proposed that depressive symptomology, cognitive ability, and social skills are factors that can help predict which families will benefit from which interventions.

An example is provided by a review article written by Seitz and Apfel (1999) in which they standardized the results of parenting interventions and were able to indicate whether the program was successful in areas such as birth outcomes, maternal life

outcomes, and child life outcomes. One of the programs Seitz and Apfel they analyzed was the New Chance program. New Chance was a national intervention program that, in addition to career and life-skills courses, provided weekly, lengthy (approximately 2 hr) parenting classes for up to 18 months. In this format, Seitz and Apfel concluded, as did Reichman and McLanahan (2001), that, although the New Chance intervention was successful in helping mothers complete their GEDs, it was unsuccessful in making improvements in the outcomes of the mothers in the areas of fertility (decreasing rapid repeat pregnancies) or welfare utilization and was associated with negative effects in the areas of increased depression and increased aggravation with their children at 42-month follow-up, presumably because the greater needs of the adolescent mothers were not addressed. In another study, Crean et al. (2001) analyzed the effectiveness of The Early Childhood Centers for Children of Teen Parents Program. As stated earlier, this program is a school-based program that provides maternal training and free child care while the mother continues her education. Crean et al. found that the program was successful in improving school attendance and graduation rates and lowering overall risk for their program participants.

What is not considered in the evaluation of these programs are the participant characteristics that potentially impact program success. The mothers participating in the New Chance program, although participating in the program voluntarily, had already dropped out of high school and were receiving public assistance in the form of Aid to Families with Dependent Children (Reichman & McLanahan, 2001). These maternal characteristics of dropping out of school and receiving public assistance were not taken into consideration in the evaluation of the intervention. These teens were exhibiting

multiple barriers to success prior to treatment in the form of nonenrollment in school and low SES.

The mothers participating in the Early Childhood Centers for Children of Teen Parents Program, in contrast, had very different participant characteristics. The enrollment process for this program included "a formal application followed by an interview to help identify those students who could best utilize the program" (Crean et al., 2001, p. 269). Potential participants were assessed in the areas of past scholastic performance, living arrangements, child care, public assistance status, and medical problems. The students were also interviewed by the school district's administrator who oversaw the intervention to determine "sincerity in working towards program goals" (Crean et al., 2001, p. 269). The potential participants were given priority status on the basis of lack of attendance problems or medical problems and the need for child care. Enrollment was approved "[for] those young mothers whom the district administrator and the school-based child care staff deem[ed] as being best suited for the program" (Crean et al., 2001, p. 269). Enrolled participants were not included in the program analyses if they were attending an alternative school for discipline problems or were receiving special education services. The participants included in the analyses of the program did not include those mothers with lower cognitive abilities, behavior problems, and educational participation problems. These maternal characteristics indicate that the participants included in the analyses for the Early Childhood Centers for Children of Teen Parents Program had significantly fewer challenges or barriers to overcome than most teen mothers. The enrollment criteria implemented for the intervention removed as many barriers to success as possible before treatment, thus including only a nonrepresentative

group of teen mothers who were most likely to do well in any situation, thus making it impossible to generalize the success of that program to a general sample of adolescent mothers.

As stated earlier, the problem with the current method of evaluating and comparing teen parenting interventions for these two programs is that enrollment criteria, which include participant characteristics, are not considered when the effectiveness of the program is being evaluated. Truly evaluating and comparing the effectiveness of an intervention must involve considering both program characteristics as well as participant characteristics. It is possible that, if the New Chance project had utilized an enrollment procedure similar to that used by the Early Childhood Centers, the program results would have been more successful. It is also possible that, if the Early Childhood Centers had enrolled teen mothers who were more representative of teen mothers as a whole, this program's results would not have been as positive. Also, although it is necessary to maintain empirical requirements for evaluating program success, program evaluation and comparison should be done in the full context of participant and treatment characteristics. This procedure will allow interventions to be assessed and modified in terms of their participants and will provide the opportunity for program modification in terms of participant depression, cognitive ability, and social skills along with other potential participant characteristics. This approach yields multiple benefits. It will become clear which, if any, adolescent mothers are having their needs met through the current intervention approaches. The approach will make clear which adolescent mothers continue to require different types of intervention services and will provide the opportunity to modify current interventions on the basis of the group of adolescent

mothers served instead of discarding entire intervention models and creating new models from scratch.

Characteristics of Adolescent Mothers to be Considered When Evaluating Adolescent Parent Training Interventions

As stated earlier, it is suggested that, in addition to the general at-risk status associated with teenage motherhood, depressive symptomology, cognitive ability, and social skills may play a role in determining adolescent parenting intervention success. It is hypothesized that these individual participant characteristics will impact the teen mother's ability to respond to treatment and will therefore impact treatment success.

Depression

Depression in adolescent mothers has been shown to impact adolescent parenting and child outcomes. Studies have shown that many teen mothers exhibit symptoms that can be classified as clinical depression or as a mild form of depression known as dysthymia (Field et al., 2000; Trad, 1995; Wilcox, Field, Prodromidis, & Scafidi, 1998). Colleta (1983) found that 59% of adolescent mothers of 1-3 year olds met criteria for adult depression, and Brown et al. (1981) that teen mothers exhibit more sadness than older mothers did when their children were first graders, (as cited in Trad). Kendall and Peterson (1996) found in their sample of teen mothers treated in a school-based mental health clinic as part of the New Chance Demonstration Project that the most frequent diagnoses of the students, other than posttraumatic stress disorder, were major depression and dysthymia. Depression in adolescent mothers has also been linked to maltreatment in

their past (Thornberry, Ireland, & Smith, 2001) and to their use of illegal substances (Scafidi, Field, Prodromidis, & Rahdert, 1997; Thornberry et al.).

Adolescent maternal depression has been found to be associated with negative child outcomes such as internalizing disorders and externalizing behavior problems (Bates, Luster, & Vandenbelt, 2003; Hubbs-Tait, Osofsky, Hann, & Culp, 1994). High rates of adolescent maternal depression or depressive symptoms have been associated with parenting practices and quality of child care (Bates et al.). Bates et al. found higher quality care for a child at 3 years and 4 1/2 years of age for mothers who had lower rates of depression during an intervention conducted earlier. They determined that depressive symptomology predicted caregiving: The more depressive symptomology expressed by the mother, the less supportive her caregiving was found to be (Bates et al.).

Some intervention programs have attempted to alleviate depressive symptomology directly via multiple forms of depression therapies (Field et al., 2000), whereas others have attempted to determine whether symptomology might decrease through a general parenting intervention (Thomas & Looney, 2004). Field et al. (2000) implemented a school-based parenting intervention that, in addition to targeting parenting knowledge and behaviors, specifically targeted the adolescent mother's depression through multiple methods of interventions that have not been validated as depression treatments, such as music mood induction, relaxation, and massage therapy. The results indicated that although the teens still were classified as depressed as defined by the Beck Depression Inventory (BDI; Steer, Scholl, & Beck,1991) up to 12 months after intervention, they did not score as high on the depression inventory, their biochemistry was less impaired, their interactions with their children improved, and child outcomes

also improved (Field et al., 2000). Thomas and Looney, on the other hand, implemented a parenting intervention that did not specifically target depression. Their results indicated a small increase in the number of subjects who met criteria for the classification of depression after intervention, which did not meet statistical significance. The findings indicated that 70% of their participants met criteria for the diagnosis of depression at follow-up (Thomas & Looney). These findings, along with the increase in depression scores for the already depressed participants in the New Chance program (Reichman & McLanahan, 2001) mentioned earlier, suggest that parent training that does not include strategies to decrease stress may lead to increased anxiety and depression.

It is suggested that, in addition to the role maternal depression plays in the negative outcomes of the adolescent mother and her child, the role of depression should be considered when programmatic success is being determined. It is hypothesized that the adolescent mothers' depressive symptomology may affect treatment success through the impact that depressive symptoms have on the ability of the teen mother to participate in and to retain the information contained in the intervention. Depressive symptomology includes lack of concentration and memory deficits (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision; American Psychiatric Association, 2000), symptoms that may reduce the teen mother's ability to comprehend and retain new information.

In addition to evaluating its direct impact on treatment outcome, it is suggested that depression should be assessed among adolescent mothers in interventions due to the correlation between depression and previous maltreatment and substance abuse, issues that, if present, will impact treatment outcome and require targeted intervention

specifically. Finally, depression should be considered when evaluating adolescent parenting interventions due to the possible iatrogenic effects previous interventions have had on adolescent depression that were described earlier. It is necessary to ensure that no harm is done, however unintentionally, during the course of treatment.

In summary, research indicates that, in a group of adolescent mothers gathered for intervention, it is likely that more than half of them will be experiencing either a major depression or a minor form of depression. This depression has been associated with poor parenting skills and lowered child outcomes, previous maltreatment, and substance use. It is important to note that research has found that generalized interventions that did not specifically target depression have not been successful in decreasing depressive symptomology, and in some cases have exacerbated it. Programs that have targeted depression have seen modest improvements at best. Thus, depressive symptomology should be considered at any time that an adolescent enters an intervention; this consideration can help to determine overall program effectiveness and to ensure that no harm is being caused.

Cognitive Ability

Maternal cognitive abilities have been associated with teenage childbearing (Sommer et al., 1993) and child rearing (Bacharach & Baumeister, 1998), both directly and indirectly. In addition to the role maternal cognitive ability has in adolescent parenting, it is hypothesized to be a key maternal variable necessarily included when programmatic success is being determined. Research has shown that a large proportion of adolescent mothers have limited cognitive or intellectual abilities (Bacharach &

Baumeister; Passino et al., 1993; Sommer et al., 1993). Intelligence has been found to differentiate between adolescent and adult mothers, with adolescent mothers scoring lower on measures of intelligence (Passino et al.; Sommer et al., 1993). In addition, adolescent mothers with low cognitive abilities have been found to have less knowledge of child development and to have more punitive and less sensitive interactions with their children (Field, Widmayer, Stringer, & Ignatoff, 1980).

Subsequently, maternal intelligence has been found to be related to child intelligence (Bacharach & Baumeister, 1998) and is the best predictor of child language development (Sommer et al., 2000). Research indicates that maternal IQ influences child development directly by being passed on to the child genetically, indirectly by affecting the environment that the mother provides for the child, or through the effects of both occurring at the same time (Sommer et al., 1993). Mothers with lower cognitive abilities are more likely to have children with learning impairments (O'Callahan, Borkowski, Whitman, Maxwell, & Keogh, 1999; Sommer et al., 1993), and lower IQs (Sommer et al., 1993). Higher scores on measures of intelligence were found for children whose mothers exhibited average intellectual ability in comparison to children whose mothers had lower IQs (Sommer et al., 1993). Bacharach and Baumeister found that in addition to maternal IQ being highly correlated with child IQ, the mother's IQ mediated other factors that affect child IQ, such as marital status, income level, and home environment.

One theory concerning how maternal intelligence influences child IQ has been proposed by O'Callahan et al. (1999). This theory is a modification of Belsky's model of adult parenting (as cited in O'Callahan et al.). O'Callahan et al.'s theory includes maternal intelligence as one of the primary components of adolescent parenting. Maternal

intelligence, according to O'Callahan et al., impacts maternal parenting through the mother's cognitive readiness to parent, which is a construct used to describe a person's preparedness to parent based on the developmental information that they have and on their attitudes and perceptions about parenting (which will be described in greater detail later). O'Callahan et al. (1999) found that cognitive readiness mediates the relationship between maternal intelligence and adolescent parenting.

In addition to the role maternal intelligence has in adolescent childbearing (Sommer et al., 1993) and subsequent child rearing (Bacharach & Baumeister, 1998), maternal cognitive ability is suggested to be an important participant characteristic to assess when parenting intervention success is being determined. It is hypothesized that, because cognitive ability is related to comprehension and memory, an intervention that relies heavily on reading and writing for information transmission would show variability in program success related to participants' cognitive ability. In addition, as cognitive ability is also involved with information processing and synthesis of information, the teens with lower cognitive skills are hypothesized to be less successful in a parenting intervention unless appropriate supports were used during intervention administration (e.g., modified content presentation) and testing (e.g., extra time for testing, oral vs. pencil-and-paper tests).

In summary, maternal cognitive abilities have been associated with teenage childbearing and child rearing both directly and indirectly. Research has shown that the majority of teen mothers have been found to have lower cognitive abilities, and those lowered abilities have been associated with inappropriate maternal parenting behaviors and increased child cognitive deficits. Consequently, cognitive ability has been a primary

component of several theories of parenting (O'Callahan et al., 1999; Whitman et al., 2001) and is therefore important to consider when the effectiveness of an intervention is being discussed. Because of the effect that cognitive ability may have on treatment outcomes as a result of the impact of attention, memory, and information synthesis, cognitive ability should be considered when the effectiveness of an adolescent parenting intervention is being evaluated.

Social Skills

There is very little previous research that has looked at the role of social skills in adolescent parenting and child outcomes. Social skills have been defined as "socially acceptable learned behaviors that enable a person to interact effectively with others and to avoid socially unacceptable responses" (Gresham & Elliott, 1990, p. 3). Examples of such behaviors include cooperating with others, being polite (e.g., saying "please" and "thank you"), initiating relationships, and asserting oneself in an appropriate manner (Gresham & Elliott). In a study of depressed adolescents, Prodromidis, Abrams, Fields, Scafidi, and Rahdert (1994) found that the depressed adolescent mothers had significantly poorer social skills than the nondepressed adolescent mothers. Social skills deficits have been associated with poor academic performance and with possible future social adjustment difficulties or psychopathology (Gresham & Elliott). It is hypothesized that social skills may impact treatment success in two ways: (1) by interfering with the receiving of intervention services provided by or with other people (as compared to a noninteractive model such as the mailing home of material mentioned earlier) and (2)

through the underlying reason for the inappropriate social skills. This study will analyze whether a person's social skills will impact the effectiveness of a treatment outcome.

THE PRESENT STUDY

Research has shown that adolescent mothers are likely to experience depression and to have lower cognitive ability. Although there has not been as much research done on the social skills of adolescent parents, evidence has been found that shows that poor social skills are also a problem for some adolescent mothers. It is suggested that these three personal characteristics associated with adolescent parenting are likely to interfere with the success of an adolescent parenting intervention program. By looking at treatment outcomes in terms of participant depressive symptomology, cognitive ability, and social skills, a more complete understanding of treatment success can be made, thereby facilitating the appropriate modification or termination of intervention services. It is believed that, if successful, conceptualizing adolescent parenting interventions in terms of the characteristics of the adolescents will improve the services provided to adolescent parents by fitting them with a program most suited to meet their individual needs. It is also believed that such a conceptualization will allow for a more efficient use of intervention dollars by helping to minimize mismatched adolescent needs and programs. A third benefit would be that new attention can be directed at modifying current programs or developing new programs for those teen mothers who have not yet been successfully helped.

Cognitive Readiness to Parent

Cognitive readiness to parent is a construct created from the compilation of three parenting characteristics: knowledge of child development, parenting attitudes, and parenting style. Cognitive readiness to parent has been linked to maternal and child outcomes (Miller, Miceli, Whitman and Borkowski, 1996; Sommer et al., 2000; Sommer et al., 1993). When looking at the components of the construct individually, researchers have found that teen mothers have less accurate knowledge of developmental milestones than adult mothers (Karraker & Evans, 1996; Sommer et al., 1993; Whitman et al., 2001). Karraker and Evans reported that teen mothers were more likely than adult mothers to underestimate the age at which typical infants would achieve various developmental milestones such as crawling, walking, and talking. Teen mothers were also more likely to underestimate their own child's ability to complete these developmental tasks than adult mothers were found to be. This underestimation of their child's abilities was associated with the younger mothers' lack of knowledge of developmental milestones, suggesting that knowledge of child development affects maternal expectations of the child's behavior.

Additionally, maternal child-rearing attitudes and practices have been related to negative child outcomes for the children of teen mothers (Zimmerman et al., 2001). Sommer et al. (1993) found that teen mothers had less desirable parenting attitudes than did adult mothers, such as believing that children are supposed to take care of their parents and that good children always obey their parents (Bavolek & Keene, 1999). Whitman et al. (2001) proposed a theory of teen parenting in which maternal child-rearing attitudes play a significant role in the adolescent mother's parenting skills, which

then affect child development. One study (Dukewich et al., 1996) found that a combination of knowledge and attitudes about children was directly related to abuse potential for adolescent mothers. Mothers with less knowledge of child development and with poor child-rearing attitudes displayed a higher potential for child abuse.

Parenting style is most commonly defined using Baumrind's (1991) four styles of parenting: indulgent parenting, authoritarian parenting, authoritative parenting, and uninvolved parenting. Each style is a relationship between the parent's demandingness and responsiveness. It has long been found that the authoritative parenting style that is categorized by appropriate, consistent, age appropriate demands paired with responsiveness and warmth is the most appropriate parenting style and has been found to correlate with positive child outcomes.

When knowledge of child development, parenting attitudes, and parenting style have been combined into a construct of cognitive readiness to parent, the composite has been found to distinguish between adolescent and adult mothers, with adolescents displaying less cognitive readiness to parent (Whitman et al., 2001) for both Caucasian and African American teen mothers (Karraker & Evans, 1996). Results have also shown that lower levels of cognitive readiness were associated with less adaptive parenting styles and more maternal stress in teen parents (Sommer et al., 2000). At the age of 3 years, the children of mothers who were less cognitively prepared had lower IQs (Miller et al., 1996), had a tendency to have poorer language skills (Miller et al), expressed more internalizing problems, and showed a trend toward more externalizing behavior problems and aggressive behaviors (Miller et al., 1996). The children of mothers who were more cognitively prepared to parent exhibited fewer internalizing and externalizing behavioral

problems and had higher scores on cognitive development measures (Miller et al., 1996). For African American children, maternal cognitive readiness was associated with healthy socioemotional functioning and fewer adjustment problems (Sommer et al., 2000). Overall, cognitive readiness to parent predicts more outcomes of 3 year old children than any other maternal variable does, is the only maternal variable that predicts adaptive behavior, and predicts child outcomes almost as well as maternal IQ (Whitman et al).

Cognitive readiness to parent is important for multiple reasons when parenting interventions for adolescent mothers are being discussed. While teen mothers have been found to be less cognitively prepared to parent than older mothers have been found to be; readiness to parent is something that can be modified, whereas maternal cognitive abilities may not change with remediation. Therefore, cognitive readiness to parent provides both predictive information on how well the infant or toddler of a teen mother will develop skills and the means to alter and improve the pathway for that child.

Aims

This study aims to analyze the effects of depression, cognitive ability, and social skills on a treatment outcome, defined here as cognitive readiness to parent, thereby laying a foundation for a means to facilitate the modification of current programs and the development of new programs designed to meet the most pressing needs of the adolescent family. The Young Mothers Program (YMP), an urban school-based adolescent parent training intervention, served as the general intervention program for the adolescents in the treatment group. First, the effect the YMP had on cognitive readiness to parent will be analyzed. Then, due to the possible negative effects on depression of a

parenting intervention on adolescent mothers, the effects of the YMP on depressive symptomology will be analyzed. Finally, analyses will be run to determine the impact that depressive symptomology, cognitive ability, and social skills have on the treatment outcome of cognitive readiness to parent for the YMP.

Aim 1: To Assess the Impact of the YMP Curriculum on Cognitive Readiness to Parent

Previous research has shown that adolescent mothers score lower on measures of cognitive readiness to parent than adult mothers (Whitman et al., 2001) and that cognitive readiness is associated with negative maternal behavior (Sommer et al., 2000) and poor child outcomes (Miller et al., 1996) for teen parents. Previous research has also shown that school-based parenting interventions have been successful in decreasing at-risk status for adolescent mothers (Crean et al., 2001). Based on that research, it is hypothesized that, after training, there would be an increase in cognitive readiness to parent for the adolescents who received training (Hypothesis 1). To analyze the impact of the YMP on cognitive readiness to parent, a series of ANCOVAs were run. For these analyses the independent variable was the group or groups of adolescents analyzed. The dependent variable was the cognitive readiness to parent posttest score, and the covariate was the cognitive readiness to parent pretest score.

Aim 2: To Assess the Impact of the YMP Curriculum on Depression

Previous research that has shown that lifestyle adolescent parenting interventions that did not directly address depressive symptoms of the participants were not successful in decreasing those depressive symptoms (Thomas & Looney, 2004) and, in some

instances, increased depressive symptomology for those adolescents who were depressed at the beginning of treatment (Reichman & McLanahan, 2001). Research has also shown that programs that addressed depressive symptomology aggressively were only modestly successful (Field et al., 2000). Based on that research, it is hypothesized that depressive symptomology would increase after the YMP intervention as it was not directly addressed in the curriculum (Hypothesis 2). To analyze the effect that the YMP had on symptoms of depression, a series of ANCOVAs were run. For these analyses the independent variable was the group or groups of adolescents analyzed. The dependent variable was the Beck posttest score and the covariate was the Beck pretest score.

Aim 3: To Determine Whether Depressive Symptomology, Cognitive Ability, and Social Skills Have an Impact on Intervention Success

Previous research has shown that adolescent mothers are more likely than nonparenting adolescents to experience depression (Bates et al., 2003), and cognitive impairment (Sommer et al., 1993), and that depressed adolescent mothers are more likely to have poor social skills (Prodromidis et al., 1994). On the basis of DSM-IV-TR (2000) criteria for depression which may include difficulty with concentration and memory, it is hypothesized that depressive symptomology will impact treatment outcome, defined in this study by a change in the teen's cognitive readiness to parent. On the basis of DSM-IV-TR criteria for decreased cognitive abilities, which may also include attention, retention, and synthesis problems, it is hypothesized that intellectual ability will interfere with treatment success. Additionally, it is hypothesized that poor social skills will interfere with program success on the basis of research that has shown that poor social skills can be associated with developmental, psychological, or behavioral difficuties

(Gresham & Elliott, 1990). It is hypothesized that the greater the depressive symptomology of the adolescent mother, the lower her treatment success will be, while lower intellectual and social skills will lead to less success in cognitive readiness to parent (Hypothesis 3). To analyze the effect of depression, cognitive ability, and social skills on cognitive readiness to parent after training, a series of simultaneous, or entered, multiple regressions were run. For these analyses, there were two levels of independent variables. Step 1 was the pretest cognitive readiness to parent composite score. Step 2 was made up of the Wechsler Adult Intelligence Scale (WAIS) equivalent score and the Social Skills Rating System (SSRS) and Beck pretest scores, which were put into the equation simultaneously. The dependent variable for each of the analyses was the posttest cognitive readiness to parent composite score. The analyses were run three times on separate groupings of the adolescents.

METHODS

Participants

The intervention used to evaluate the effect depression, cognitive ability and social skills have on adolescent parenting treatment outcome is the YMP. Although there are many programs for teen mothers in the United States that have this name, this specific program was originally developed in one urban city school system in 1979 as an academic alternative for teen mothers. In 1986, on-site child care and additional services for teen mothers were added. Currently, this YMP is a parent-training program for adolescents that follows the Alabama curriculum for parenting, with an additional infant care course in which adolescent mothers enroll voluntarily. The program's curriculum (see Table 2) offers classes in two city schools. Pregnant students from any of the other city schools who do not attend the two provider schools are allowed to participate in the YMP classes if they volunteer to enter the program and receive permission to attend from the school administrator of their home school. The pregnant students who do attend one of the provider schools are allowed to participate in the YMP classes if they volunteer to enter the program.

The teen mothers enter the YMP the first semester after they become pregnant and remain in the program until the end of the semester during which they deliver their baby. Consequently, students are in the program for one or two semesters. It is highly

recommended that the adolescent mothers in the program take a minimum of two classes in the YMP curriculum. The students continue taking the rest of their high school classes at the YMP school until they complete the program. If a student transfers from her home school to participate in the YMP, she will also take her regular high school classes at the provider school.

Table 2

Classes in Young Mothers Program

Name of class	Duration of class in semesters
Child care and elderly services	2
Parenting with laboratory	2
Parenting and careers[a]	1
Infant care	1

[a] Day care component.

Once the teen mother delivers her baby and as long as she is in the YMP, she can bring her baby to the on-site nursery located at each school. The infants are cared for throughout the day by part-time staff workers called foster grandmothers and by one full-time aide. The mothers work with their babies in the nursery as part of their class curriculum.

Along with the teen mothers taking the YMP classes, any student attending the provider schools is allowed to take the YMP courses as electives in his or her regular high school curriculum. Both boys and girls participate in every part of the YMP curriculum with the teen mothers.

The interest in the YMP exists for multiple reasons. The YMP includes each of the characteristics of effective parenting interventions listed by Reichman and

McLanahan (2001). The classes meet on a block schedule system in which classes meet 2 or 3 days a week for 2 hr per session. This schedule enables the students to interact with the YMP teachers and staff for as many as 6 hr per week, which is well beyond what a home-based intervention can provide. The mothers are able to visit with their children during portions of these sessions. In addition, one of the YMP courses partners with a nearby day care center. Students in that course spend time every week caring for and receiveing feedback about their care of the children at the day care center. The training period begins before the birth of the child and can last for as long as one year.

The YMP has additional features that make it important to study. The program curriculum targets educational and vocational issues for the mother, as well as the cognitive readiness to parent components of knowledge of child development and attitudes and perceptions about parenting. In addition, by allowing nonpregnant, nonparenting teens to participate in the YMP courses, the program becomes both a primary and a secondary intervention as it targets both a primary, general population (teens who are not pregnant) and a secondary, at-risk population (teen mothers). In addition to being evaluated for its effectiveness in terms of the general participant characteristics of at-risk status, the YMP provides an appropriate place to evaluate the individual participant characteristics of depression, cognitive ability, and social skills.

In addition to the students taking YMP classes, nonpregnant and nonparenting students enrolled in a health class at two high schools adjacent to the YMP district were recruited as nonpregnant and nonparenting comparisons. The recruitment and data collection procedures were completed in the same way for the comparison students.

Pregnant or Parenting Students in the YMP (Preg/Train)

Twenty-one of 60 (35%) pregnant or newly parenting students who participated in the YMP were included in the current study. Due to the prolonged data collection (over 2 weeks pretest and 2 additional weeks posttest), many students did not complete all of the study measures. Students were included in the analyses if they had completed both pre- and posttest measures for all of the measures included in the analyses. The decreased sample size is therefore a function of the research protocol and not necessarily of attrition from the YMP. This qualification holds true for each of the three groups included in the analyses. Although males participated in the YMP classes, only females were included in the present study.

The pregnant or parenting students who received training (preg/train) ranged in age from 14 to 18 years, with a mean age of 16.10. These students were slightly but significantly older than the nonpregnant students who did not receive training (no training comparison group; nonpreg/nontrain) (see Table 3) and were African-American (100%) and of a low SES, as determined by the school system where they were enrolled. The mean education level achieved by at least one parent was "some college education". Most stated that their grades were Bs and Cs. On average these students had 5 people living in their home, 90.5% had taken a parenting course previously, and most perceived that they had had a lot of experience with children prior to the YMP intervention. The majority took one YMP class (77%).

Nonpregnant/Nonparenting Students in the YMP (Nonpreg/Train)

Thirty-five of 98 (36%) female students who were neither pregnant nor parenting but were enrolled in the YMP courses as electives were included in the present study as the training comparison group. These students volunteered to take the classes and attended one of the YMP provider schools regularly. These students were not required to take a minimum number of YMP classes.

The nonpregnant/nonparenting students who received YMP training (nonpreg/train) ranged in age from 14 to 19 years, with a mean age of 15.71. They were African-American (100 %) and of low SES. The mean education level achieved by at least one parent was "some college education". Most stated that they typically get Bs and Cs in school. On average they had 5 people living in their home, 82.9% had taken a parenting course previously, and most perceived that they had had a lot of experience with children prior to taking a YMP class. The majority (91%) took one YMP class.

Nonpregnant/Nonparenting Students Who Did Not Receive YMP Training (Nonpreg/Nontrain)

Thirty-seven of 80 (41%) female students who were neither pregnant nor parenting and who were attending two urban high schools located outside but adjacent to the YMP school district comprised the no-training comparison group. Students included in the analyses completed both pre- and posttest measures for all of the measures included in the analyses. Of the 80 total females in this group, 9 were pregnant and parenting and were not included in the analyses for that reason. The rest were not included due to incomplete data.

The nonpregnant/nonparenting students who did not receive YMP training (nonpreg/nontrain) ranged in age from 14 to 17 years, with a mean age of 15.39. They were primarily African-American (86.5%) and of low SES. Most reported that they had at least one parent who "had a college degree". Most stated they typically received Bs and Cs in school. On average they had 4 people living in their home, 27% had taken a parenting course previously, and most perceived that they had had a lot of experience with children.

Demographic variable descriptives are displayed in Table 3. Prior to training the groups were different on age, $F(2, 88) = 3.365, p=0.04$. The adolescent mothers (preg/train) were slightly but significantly older than the nonparenting teens who did not receive any training (nonpreg/nontrain) $F(1, 55) = 9.487, p = 0.00$. Otherwise, there were no significant differences in age between any of the other groups.

Prior to training the groups were also different on the highest level of education achieved by either parent of the teen mother, $F(2, 86) = 3.084, p = 0.05$. The nonpregnant/nonparenting teens who did not receive any training (nonpreg/nontrain) had a parent who achieved a slightly higher level of education than the parents of the nonpregant/nonparenting adolescents who did receive training (nonpreg/train) $F(1, 69) = 5.798, p = 0.02$. Otherwise, there were no significant differences between any other groups.

There was also a significant difference between the groups on having taken a parenting class prior to the YMP classes, $X^2(2, n = 93) = 33.018, p = 0.00$, with more of both the pregnant adolescents (preg/train), $X^2(1, n = 58) = 21.573, p = 0.00$ and the nonpregnant/nonparenting adolescents who received training (nonpreg/train), $X^2(2, n =$

72) = 22.582, $p = 0.00$ having taken a previous parenting class than the nonpregnant/nonparenting adolescents who did not receive training (nonpreg/nontrain). There were no other significant differences between the groups.

Table 3

Demographic Characteristics for Participants Included in Analyses (n=93)

Variable	Preg/Train (*n*=15-21)	Nonpreg/Train (*n*=30-35)	Nonpreg/Nontrain (*n*=28-37)
Age (yr) *M*(range)	16.10 (14-18)[a]	15.71 (14-19)	15.39 (14-17)[a]
Ethnicity (%)			
African-American	21 (100%)	35 (100%)	32 (86.5%)
Caucasian	0 (0%)	0 (0%)	4 (10.8%)
Other	0 (0%)	0 (0%)	1 (02.7%)
Lunch price (%)			
Full price	7 (38.9%)	19 (57.6%)	11 (31.4%)
Reduced	2 (11.1%)	2 (06.0%)	3 (08.6%)
Free	9 (50.0%)	12 (36.4%)	21 (60.0%)
PrevParentClas[b] (%)			
Yes	90.5%[a]	82.9%[a]	27.0%[a]
No	09.5%[a]	17.1%[a]	73.0%[a]
#LiveinHome[c] *M*(range)	5 (0-10)	5 (2-10)	4 (2-10)
HighParentEd[d] *M*(range)	6.11 (4-8)	5.94 (2-8)[a]	6.58 (4-9)[a]
Grades[e] *M*(range)	1.73 (1-3)	1.90 (1-3)	1.71 (1-3)
PercExperience[f] *M*(range)	8.90 (5-10)	8.17 (5-10)	8.27 (1-10)

Note. [a]Statistically significant at $p > 0.05$.
[b]Having taken a parenting class previously (PrevParentClas).
[c]The number of people living in the home (#LiveinHome).
[d]Highest education level of at least one parent (HighParentEd): 1 = elementary school, 2 = junior high school, 3 = 10th grade, 4 = 11th grade, 5 = 12th grade, 6 = some college, 7 = college degree, 8 = master's degree, 9 = doctoral degree.
[e]Grades: 1 = *A*s and *B*s; 2 = *B*s and *C*s; 3 = *C*s and *D*s; 4 = *D*s and *F*s.
[f]The amount of experience that the student stated that she had had with children (PercExp): 1 (*None*) to 10 (*Very Much*)

Procedure

The YMP students were contacted in their YMP classes and the nontraining comparisons were contacted in their health class at the beginning of the 1999-2000 school year. On the first day of the pretest phase, a researcher or research assistant went into each class to present the research study and to explain the students' right to choose to participate or to refuse. On the next day of class, the same researcher or research assistant returned to present the consent forms and to begin the administration of the measures, which were administered to the group. Due to the length of time required to complete all of the measures in the protocol and because of the limited amount of time available during each class period, two measures, on average, were administered each day. As scheduling permitted, the same researcher or assistant would administer the measures assigned for that day. At the completion of the measures for that day, the students were given their choice of a "thank-you" gift (e.g., candy). The testing session was conducted essentially the same way each day. The process was repeated at the end of the semester for each of the measures that required postscores. Both pre- and posttesting took place over a 10-day period each.

Measures

Demographic Questionnaire

The demographic questionnaire created for this study included the topic areas and question format as follows:

Ethnicity/Culture. Participants were asked to identify their race by checking from choices of races or filling in their race next to "Other".

Age. Participants were asked to write in their age.

SES. Participants were asked to indicate the lunch program in which they were enrolled. The students checked one of three choices: pay full price for lunch; pay reduced rate for lunch; or free lunch.

Number of people living in the house. Participants were asked to write in the answer to "Number of people living in your home".

Previous academic achievement. Participants were asked to answer the following question:"What kind of grades do you make in school?" choices listed were: a.) "mostly A's and B's"; b.) "mostly B's and C's"; c.) "mostly C's and D's"; d.) "mostly D's and F's". The participants circled their response.

Highest education achieved by at least one parent. Participants were asked to circle the highest level of education completed by both their mother and father. Choices listed were (a) "elementary school", (b) "junior high school", (c) "10th grade", (d) "11th grade", (e) "12th grade", (f) "some college", (g) "college degree", (h) "master's degree", and (i) "doctoral degree".

Previous parenting class. Participants were asked to answer with a "yes" or "no" whether they had ever taken a parenting class before.

Perceived experience with children. Participants were asked, "On a scale from 1 (*none*) - 10 (*very much*), rate the amount of experience you feel you have had with children".

Participant Measures

Beck Depression Inventory
(BDI; Steer, Scholl, & Beck, 1991)

The BDI is a 21-item questionnaire used to evaluate affective, cognitive, motivational, and vegetative symptoms of depression. For each question, participants indicate which of four statements most accurately reflects how they feel, (i.e., "I don't get more tired than usual"; "I get tired more easily than I used to"; "I get tired from doing almost anything"; "I am too tired to do anything"). The measure is scored by ranking each answer from 0 (*least symptomatic*) to 3 (*most symptomatic*). The scores are added for a total score. The clinical cutoff for depression is a total score of 16. This instrument has been found to be appropriate for use with adolescents as young as 13 years of age (Scafidi et al., 1997). The BDI has been found to have internal consistency ratings of .80-.90 with adolescents and to also have adequate test-retest reliability and validity with adolescents (Wilcox et al., 1998).

Shipley Institute for Living Scale
(SILS; Bowers, T. L., Pantle, M. L., 1998)

The Shipley Institute for Living Scale (SILS) is a two-part timed measure that screens for overall intelligence. The measure is divided into vocabulary and performance sections, each of which is administered in a 10-min time block. The first part of the measure consists of 40 synonyms. The participant reads the first term and circles the one word of four words listed that is most similar to the original term. The second part consists of 20 logic questions (e.g., "1 2 3 4 5 ___") in which the individuals fill in the blanks to indicate what they believe is the next letter/number in the sequence. The SILS also provides a WAIS IQ equivalent, which has a norm of 100, with a standard deviation of 15. The SILS has been shown to correlate with the Kaufman Brief Intelligence Test (r = .77 and .83) with populations of college students and a forensic group, respectively.

Social Skills Rating System
(SSRS; Gresham & Elliott, 1990)

The SSRS is a multirater assessment that measures social behaviors. The system has student, parent, and teacher rating scales that assess three content areas: Social Skills, Problem Behaviors, and Academic Competence. For the current study only the student scale for the Social Skills component was utilized. The SSRS is a 39-item measure. The format utilizes two types of ratings for each question: frequency and importance. The person filling out the questionnaire reads a statement. They then circle how often they engage in that behavior (0 = "Never", 1 = "Sometimes", 2 = "Very Often"), and then circles how important they believe that behavior to be (0 = "Not Important", 1 = "Important", 2 = "Critical"). Scores divide into four subscales (Cooperation, Assertion,

Empathy, Self-Control), which when combined make up the total Social Skills score. The SSRS provides norms for boys and girls ages 3 - 18 years and is intended to be used to facilitate intervention services. The Social Skills scale and subscales have internal consistency ratings that range from a coefficient alpha reliability rating of .67 for Assertion to a rating of .77 for Empathy. The overall coefficient alpha reliability rating for males and females combined is .83 (females only = .82). Test-retest reliability is .52-.66 for the student form.

Cognitive readiness to parent

Three measures were combined to establish the cognitive readiness to parent composite scores. The measures addressed the three dimensions of cognitive readiness: knowledge of child development, parenting attitudes, and parenting style.

Knowledge of Child Development Inventory.
(KCDI; Larsen & Juhasz, 1986)

The KCDI is a 56-item multiple-choice questionnaire that assesses knowledge in the areas of emotional, physical, and social development of children from birth to the age of 3 years. A norm of 37.85 with a standard deviation of 5.98 was found for a sample of adolescents and adults. The inventory has a Fry Reading Index of 8.0, indicating a reading level of Grade 8. Cronbach's alpha coefficient for reliability of internal consistency was .93. Content validity ranged from excellent (37 items) to adequate (6 items). The completeness of question coverage was rated excellent. Criterion validity yielded a .80 correlation with a standardized criterion measure.

Parental Attitudes Toward Child-Rearing Questionnaire II (PACR II; Easterbrooks, 1981).

The PACR II consists of 48 items ranked on a 6-point Likert scale and phrased in the first person that describes child-rearing attitudes, behaviors, and values. The results yield three constructs describing parental attitudes and perceptions. Each construct yields an individual subtest. Table 4 provides a description of each construct and how it is measured. In this study, participants received written instructions indicating that they were to complete the questions according to "how you think you will feel when you are a parent." Cronbach's alphas of internal consistency ranged from .69 to .89.

Table 4

Parental Attitudes Toward Child-Rearing Questionnaire II Subtests

Name of construct	Description	Sample item
Warmth	Expressing love and affection	"I express affection by hugging, kissing and holding my child"
Strictness	Establishment and enforcement of rules	"I have strict, well-established rules for my child"
Conflict	Tension between child and parent	"I am easy going and relaxed with my child"

Adult-Adolescent Parenting Inventory-2. (AAPI-2; Bavolek & Keene, 1999).

The AAPI-2 is the revision to the Adult-Adolescent Parenting Inventory (AAPI), which was developed and normed from 1978 to 1980. The AAPI-2 is designed to evaluate the parenting and child-rearing attitudes of parenting and nonparenting adolescents and adults. Like the AAPI, the revision contains Form A and Form B, each of

which consists of 40 items. Each question is rated on a 5-point Likert scale from 1 (*strongly agree*) to 5 (*strongly disagree*). The AAPI-2 has new items for the original four constructs and has an additional fifth construct. Each construct yields an individual subtest. Table 5 describes each construct and how it is measured. The revised inventory contains updated norms for adult parents without parent training, adolescent nonparents without parent training, and adolescent parents. The AAPI-2 has reliability ratings for each subtest that range from .83 to .93 for Form A and from .81 to .93 for Form B.

Table 5

Adult-Adolescent Parenting Inventory-2 Subtests

Name of construct	Description	Sample item
Inappropriate expectations	Ability to accurately perceive skills and abilities of children	"Good children always obey their parents"
Empathy	Being aware of and prioritizing children's needs and feelings	"Children should keep their feelings to themselves"
Corporal punishment	Preference for the use of physical punishment	"Never hit a child"
Role reversal	Appropriate understanding of role of children	"A good child will comfort both parents after they have argued"
Power and independence	Facilitation of child independence	"Children need to be allowed freedom to explore their world safely"

Cognitive Readiness to Parent Composite

The cognitive readiness to parent composite was formed by following the structure used by Whitman et al. (2001). Whitman et al. created a composite score for cognitive readiness to parent by combining measures that addressed the core concepts of knowledge of child development, parenting attitudes, and parenting style. For knowledge of child development, Whitman et al. took questions from a measure that they created to assess knowledge of child development; to that list they added questions taken from the Inappropriate Expectations subtest of the Adult-Adolescent Parenting Inventory. For parenting attitudes and style, questions were taken from parts of the AAPI subtests of Role Reversal, Corporal Punishment, and Empathy. Scores for the individual questionnaires were tallied, standardized, and summed to create one weighted measure of cognitive readiness to parent.

For the current study, questions tapping the same three concepts of knowledge of child development, parenting attitudes, and parenting style were collected. For knowledge of child development, the KCDI was used and was combined with the Inappropriate Expectations subtest from the AAPI-2. For parenting attitudes, the Role Reversal, Corporal Punishment, and Empathy subscales from the AAPI-2 were used along with the Conflict subtest from the PACR II. For parenting style, the Independence/Power subtest from the AAPI-2 was used along with the Strictness and Warmth subtests from the PACR II.

Since a tally and summation of the subtests for the three concepts would yield a cognitive readiness to parent composite that was weighted heavily in the direction of attitudes and perceptions as opposed to knowledge (attitudes and perceptions, 7 subtests;

knowledge and expectations, 2 subtests), a weighted composite was created. After the scoring of each subtest, the score for each of the subtests of the AAPI-2 was divided by 5 (for the 5 subtests in the AAPI-2). The score for each of the subtests of the PACR II was divided by 3 (for the 3 subtests in the PACR II). No change was made to the score for the KCDI since there was only one overall test. These scores were then transformed to *z* scores with higher scores reflecting better cognitive readiness to parent. The *z* scores were then summed, yielding one total composite score in which each subtest had an equal weighting. This weighted composite was used in subsequent analyses; however, the unweighted composite was also analyzed and yielded similar findings to the weighted composite. Due to the logical appeal and unbiased weighting, analyses will be reported using the weighted composite.

RESULTS

Preliminary Analysis

Of the 238 female students who completed some portion of the study, 93 completed both pre- and posttest measures for all of the primary measures (KCDI, AAPI-2, PACR-II, SSRS, SILS, BDI). Only these 93 were included in the analyses. There were no differences between the 93 students included in analyses and the larger group of 238 on pretest measures of depression, $F(1, 200) = 0.000$; social skills, $F(1, 186) = 1.645$; cognitive abilities, $F(1, 215) = 0.009$; or cognitive readiness to parent, $F(1, 180) = 0.328$; $ps > 0.05$. There were also no differences between the two groups on the demographic variables of age, $F(1, 230) = 1.235$; ethnicity, $X^2(3, n = 238) = 0.746$, $p > 0.05$, SES $X^2(2, n = 238) = 2.195$, $p > 0.05$, number of people living in the home, $F(1, 233) = 1.608$; highest education completed by parent of the teen mother, $F(1, 225) = 1.636$; previous grades in school, $F(1, 188) = .776$; perceived experience with children, $F(1, 236) = 0.320$, or having previously taken a parenting class, $X^2(1, n=238) = 2.283$, $ps > 0.05$. These results indicate that the 93 in the analyses are representative of the larger sample.

As stated earlier, the remaining 93 students were classified into one of three groups: pregnant/parenting students who received YMP training (preg/train); nonpregnant/nonparenting students who received YMP training (nonpreg/train); and nonpregnant/nonparenting students who did not receive YMP training

(nonpreg/nontrain). Relevant variable descriptives are displayed in Tables 6 and 7. The groups were different prior to training on their cognitive readiness to parent. The nonpregnant/nonparenting participants who received training (nonpreg/train) were significantly more cognitively prepared to parent before training than the nonpregnant/nonparenting adolescents who did not receive training (nonpreg/nontrain) $F(1, 70) = 4.374, p < .05$. There was a trend for the pregnant adolescents who received training (preg/train) to be more cognitively prepared to parent than the nonpregnant/nonparenting adolescents who did not receive training (nonpreg/nontrain) $F(1, 56) = 3.056, p = 0.09$. There were no other differences between the groups included in the analyses prior to training.

Primary Analysis

Hypothesis 1

It was hypothesized that after training there would be an increase in cognitive readiness to parent for the adolescents who received training.

To analyze the impact the YMP program had on cognitive readiness to parent, a series of ANCOVAs were run. For these analyses the independent variable was the group or groups of adolescents analyzed. The dependent variable was the cognitive readiness to parent posttest score, and the covariate was the cognitive readiness to parent pretest score. Using the pretest score as a covariate allowed an adjustment for a difference between the groups in cognitive readiness prior to treatment. In addition, the resulting analysis was capable of reflecting a change in cognitive readiness to parent that takes into account how cognitively prepared each group was prior to treatment. The first analysis compared the change in cognitive readiness to parent for the pregnant adolescents who

Table 6

Raw Scores for Measures Used in Multiple Regression (n=93)

Variable	Cutoff[a] /Norm[b]/ Percentile[c]	Preg/Train Pre (n=21)	Nonpreg/Train Pre (n=35)	Nonpreg/Nontrain Pre (n=37)	Preg/Train Post (n=21)	Nonpreg/Train Post (n=35)	Nonpreg/Nontrain Post (n=37)
BDI *M*(*SD*)	16	9.67 (5.41)	11.89 (8.08)	9.46 (7.12)	8.52(4.74)	9.14 (5.71)	8.78 (7.75)
(<16) (%)		18 (86%)	28 (80%)	31 (84%)	19 (91%)	30 (86%)	32 (87%)
(≥16)		3 (14%)	7 (20%)	6 (16%)	2 (9%)	5 (14%)	5 (13%)
SILS *M*(*SD*)	100	88.38(10.49)	88.97 (8.29)	89.35 (9.99)	--	--	--
(<100)(%)		19 (90%)	32 (91%)	33 (89%)	--	--	--
(≥100)		2 (10%)	3 (9%)	4 (11%)	--	--	--
SSRS SS[c](*SD*)	[d]	98.95(18.44)	97.51 (13.27)	99.24 (13.72)	102.52(18.3)	102.83 (13.51)	102.27 (13.11)
CRtoP[e]	--	.439(2.30)	.285 (1.40)[f]	-.519 (1.82)[f]	.551(1.34)	.187 (1.61)	-.489 (1.72)

Note. [a]Clinical Cutoff
[b]Norm
[c]SS = Standard Score
[d]Percentile Rank (Gresham & Elliott, 1990): Standard Score (% Rank): (97, 42); (99, 47); (102, 55); (104, 61)
[e]CRtoP: cognitive readiness to parent
[f]$p < .05$.

Table 7

Raw Scores for Subtests of Measures used in Cognitive Readiness to Parent Composite (n=93)

Variable	Norm[a]	Norm[b]	Preg/Train Pre (*n*=21) *M* (*SD*)	Nonpreg/Train Pre (*n*=35) *M* (*SD*)	Nonpreg/Nontrain Pre (*n*=37) *M* (*SD*)	Preg/Train Post (*n*=21) *M* (*SD*)	Nonpreg/Train Post (*n*=35) *M* (*SD*)	Nonpreg/Nontrain Post (*n*=37) *M* (*SD*)
AAPI-2A[d]	18-19	18-19	18 (3.41)	18 (3.18)	17 (3.80)	20 (2.74)	19 (3.77)	20 (3.84)
AAPI-2B	36-38	34-36	35 (7.18)	37 (5.29)	33 (4.62)	38 (5.15)	39 (6.22)	36 (6.70)
AAPI-2C	34-37	29-33	32 (7.42)	32 (5.06)	31 (5.10)	34 (8.11)	33 (4.91)	30 (4.98)
AAPI-2D	20-22	21-22	19 (4.08)	19 (4.22)	18 (3.89)	20 (4.06)	18 (4.81)	18 (3.68)
AAPI-2E	17-18	17-18	18 (2.61)	18 (2.36)	17 (2.91)	17 (2.96)	17 (2.65)	18 (2.11)
PACRIIA[e]			104 (14.5)	105 (10.35)	97 (11.47)	109 (9.59)	106 (12.09)	97 (13.73)
PACR IIB			67 (11.1)	67 (6.41)	64 (7.50)	67 (8.02)	65 (5.35)	63 (8.89)
PACR IIC			30 (8.23)	31 (6.55)	34 (6.27)	31 (9.25)	31 (5.13)	34 (5.73)
KCDI	38[c]		31 (7.54)	29 (6.29)	28 (7.52)	30 (8.47)	30 (8.22)	27 (7.91)

Note. [a]Norms for "Adolescent Parents", (Bavolek & Keene, 1999).
[b]Norms for "Adolescent Non-Parents Without Parenting Training", (Bavolek & Keene, 1999).
[c]Norm 37.85 (*SD* 5.98); includes adolescent and adult non-parents (Larsen & Juhasz, 1986).
[d]Adult-Adolescent Parenting Inventory-2 (AAPI-2): A Inappropriate Expectations; B Empathy; C Corporal Punishment; D Role Reversal; E Power/Independence.
[e]Parental Attitudes Toward Child-Rearing II (PACR II): A Warmth; B Strictness; C Conflict.

received training (preg/train) with that found for the nonpregnant/nonparenting adolescents who received training (nonpreg/train). There was no significant difference in cognitive readiness to parent, $F(1, 53) = 0.742$, $p > 0.05$ (adjusted *Ms* 0.51 and 0.21, respectively).

The second analysis compared the combined groups who received YMP training (preg/train and nonpreg/train) to the adolescents who did not receive YMP training (nonpreg/nontrain). An ANCOVA using pretest cognitive readiness to parent scores as the covariate found that there was no significant difference in cognitive readiness to parent after training, $F(1, 90) = 1.654$, $p > 0.05$; (adjusted *Ms*: 0.14, and -0.21, respectively).

The third analysis compared the two groups of nonpregnant adolescents (nonpreg/train vs. nonpreg/nontrain). The results indicated that there was no significant difference in cognitive readiness to parent, $F(1, 69) = 0.226$, $p > 0.05$ (adjusted *Ms*: -0.084 and -0.233, respectively). The results of all three analyses indicate that there was no change in cognitive readiness to parent after training for the adolescents who received training, and is contrary to the stated hypothesis.

Hypothesis 2

It was hypothesized that after YMP training there would be an increase in depressive symptomology as the intervention did not directly address depressive symptoms in the curriculum.

To analyze the impact that the YMP program had on symptoms of depression, a series of ANCOVAs were run. For these analyses the independent variable was the group

or groups of adolescents analyzed. The dependent variable was the Beck posttest score, and the covariate was the Beck pretest score. Using the pretest score as a covariate allowed an adjustment for a difference between the groups in depression prior to treatment. In addition, the resulting analysis was capable of reflecting a change in depression that takes into account how depressed each group was prior to treatment. The first analysis compared the change in depressive symptomology for the pregnant adolescents who received training (preg/train) with that found for the nonpregnant/nonparenting adolescents who received training (nonpreg/train). There was no significant difference in depressive symptomology, $F(1, 53) = 0.003, p > 0.05$ (adjusted *Ms*: 8.96 and 8.88, respectively).

The second analysis compared the combined groups who received YMP training (preg/train and nonpreg/train) to the adolescents who did not receive YMP training (nonpreg/nontrain). An ANCOVA using pretest depressive symptom scores as the covariate found that there was no significant difference in depressive symptomology, $F(2, 90) = 0.178, p > 0.05$ (adjusted *Ms*: 8.66 and 9.17, respectively).

The third analysis compared the two groups of nonpregnant adolescents (nonpreg/train vs. nonpreg/nontrain). The results indicated there was no significant difference in change of depressive symptomology, $F(2, 69) = 0.216, p > 0.05$ (adjusted *Ms*: 8.61 and 9.29, respectively). The results of these three analyses indicate that there was no change in depression after training for the adolescents who received training. These results are contrary to the stated hypothesis but reflect a more positive outcome for the YMP.

Hypothesis 3

It was hypothesized that depressive symptomology, cognitive ability, and social skills would impact treatment success as defined in this study by the teen's cognitive readiness to parent immediately after treatment. It was hypothesized that the greater the depressive symptomology of the adolescent mother, the lower her treatment success would be, while lower intellectual and social skills would lead to less improvement in cognitive readiness to parent.

To analyze whether cognitive ability, depressive symptomology and social skills impacted the teens cognitive readiness to parent of those adolescents who received YMP training, a series of simultaneous, or entered, multiple regressions were run. For these analyses there were two levels of independent variables that act as covariates. Using the pretest scores as covariates allowed an adjustment for a difference between the groups in depression, cognitive ability, social skills, and cognitive readiness to parent prior to treatment. In addition, the resulting analysis was capable of reflecting a change in cognitive readiness to parent that takes into account how cognitively prepared to parent each group was prior to treatment. Step 1 was the pretest cognitive readiness to parent composite score. Step 2 was made up of the WAIS equivalent, and the SSRS and Beck pretest scores, all of which were put into the equation simultaneously. The dependent variable for each of the analyses was the posttest cognitive readiness to parent composite score.

The first analysis run combined the two groups that received YMP training (preg/train and nonpreg/train). For Model 1, which held the pretest cognitive readiness to parent score constant, a significant model emerged, $F(1, 54) = 27.015$, $p = .00$; adjusted

R^2=.321. For Model 2, which held cognitive ability, depression, and social skills constant, a significant model also emerged, $F(4, 51) = 9.823$, $p = .00$; adjusted R^2=.391. All variables with their significance are listed in Table 8. Pretest cognitive readiness to parent significantly impacted cognitive readiness to parent after training. There was a trend for cognitive ability and social skills to impact cognitive readiness to parent after training.

The second analysis run was on the pregnant adolescents who received training (preg/train) alone. For Model 1, which held the pretest cognitive readiness to parent score constant, a significant model emerged, $F(1, 19) = 9.014$, $p = .01$; adjusted $R^2 = .286$. For Model 2, which held cognitive ability, depression, and social skills constant, a trend emerged, $F(4, 16) = 2.697$, $p = .07$; adjusted $R^2 = .253$. All variables with their significance are listed in Table 9. Pretest cognitive readiness to parent significantly impacted cognitive readiness to parent after training.

The third analysis run was on the nonpregnant/nonparenting adolescents who received training (nonpreg/train) alone. For Model 1, which held the pretest cognitive readiness to parent score constant, a significant model emerged, $F(1, 33) = 24.947$, $p = .00$; adjusted $R^2 = .413$. For Model 2, which held cognitive ability, depression and social skills constant, a significant model also emerged, $F(4, 30) = 11.488$, $p = .00$; adjusted $R^2 = .552$. All variables with their significance are listed in Table 10. Pretest cognitive readiness to parent and cognitive abilities significantly impacted cognitive readiness to parent after training. These results only moderately supported the hypothesis.

Table 8

Summary of Entered Regression Analysis for Variables Predicting Outcome on Posttest Cognitive Readiness to Parent for Pregnant or Parenting Adolescents and Nonpregnant/Nonparenting Adolescents Who Received YMP Training (n = 56)

Variable	*B*	*SE B*	Standardized *B*
Step 1			
Pretest cognitive readiness	.481	.093	.577*
Step 2			
Pretest cognitive readiness	.369	.099	.443*
Cognitive ability	.034	.019	.211[a]
Depression	-.008	.023	-.040
Social skills	.020	.011	.210[b]

Note. $R^2 = .333$ for Step 1; Adjusted $R^2 = .391$ for Step 2 ($ps < .05$). Young Mothers Program (YMP).
*$p < .05$.
[a]$p = .08$.
[b]$p = .06$.

Table 9

Summary of Entered Regression Analysis for Variables Predicting Outcome on Posttest Cognitive Readiness to Parent for Pregnant or Parenting Adolescents who Received YMP Training (n = 21)

Variable	*B*	*SE B*	Standardized *B*
Step 1			
Pretest cognitive readiness	.305	.102	.567*
Step 2			
Pretest cognitive readiness	.292	.122	.543*
Cognitive ability	.000	.028	-.004
Depression	.018	.048	.081
Social skills	.019	.013	.277

Note. $R^2 = .322$ for Step 1 ($p < .05$); Adjusted $R^2 = .253$ for Step 2 ($p > .05$). Young Mothers Program (YMP).
*$p < .05$.

Table 10

Summary of Entered Regression Analysis for Variables Predicting Outcome on Posttest Cognitive Readiness to Parent for NonPregnant/NonParenting Adolescents Who Received YMP Training (n = 35)

Variable	*B*	*SE B*	Standardized *B*
Step 1			
Pretest cognitive readiness	.753	.151	.656*
Step 2			
Pretest cognitive readiness	.581	.144	.506*
Cognitive ability	.070	.024	.360*
Depression	-.002	.025	-.012
Social skills	.021	.015	.173

Note. $R^2 = .431$ for Step 1; Adjusted $R^2 = .552$ for Step 2 ($ps < .05$). Young Mothers Program (YMP).
*$p < .05$.

DISCUSSION

The current study analyzed the effect depression, cognitive ability, and social skills had on cognitive readiness to parent for a group of adolescents taking YMP classes. The first hypothesis analyzed whether training produced a change in cognitive readiness to parent. The results of this study indicated that there was no overall change in cognitive readiness to parent immediately after the intervention. There are several possible explanations for this finding. The three groups of adolescents analyzed in this study were different in their cognitive readiness to parent prior to the YMP. Both of the training groups had greater cognitive readiness to parent than the adolescents who did not receive any training. The nonpregnant adolescents in the YMP (nonpreg/train) had significantly more cognitive readiness to parent than the nonpregnant/nonparenting adolescents who were not in the YMP (nonpreg/nontrain). The pregnant adolescents had a trend toward more cognitive readiness, but it is possible that the trend did not reach significance due to the small number of participants in the pregnant group and the resulting low power; as this group's cognitive readiness to parent was not statistically different from that of the nonpregnant/nonparenting adolescents who received training. Another difference between the adolescents who participated in the YMP classes (preg/train and nonpreg/train) and the adolescents who did not participate in the YMP classes was prior exposure to a parenting class. Most of both the pregnant or parenting adolescents

(preg/train) and the nonpregnant/nonparenting adolescents (nonpreg/trian) who participated in the YMP had previously taken some form of a parenting class (90.5% and 86.5%, respectively). In comparison, the majority of the adolescents who were not enrolled in the YMP classes had no previous parenting information (73%). It is possible that the adolescents who had received training previously had already made the basic advances in cognitive readiness to parent that were addressed in the YMP.

A previous study (Malone, 2005) that examined the individual subtest scores of the AAPI-2 and PACR-II and at the total KCDI for the YMP included this same group of adolescents as a subset of the students included in that analysis. Those results indicated that there were slight changes in empathy, warmth, conflict, and knowledge of child development immediately after training. A possible reason for the discrepancy in the findings between the individual subtests and the overall cognitive readiness composite may be that the gains made in the individual subtests were not large enough to be maintained once the scores were weighted and combined. It was evident, however, that modest improvements were made in the parenting attitudes of empathy, warmth, and conflict and in knowledge of child development.

The other possible explanations for a lack of change in cognitive readiness to parent were addressed through the second and third hypothesis questions. To determine whether depression, cognitive ability, and social skills impacted cognitive readiness to parent, and because of the chance of exacerbation of depressive symptomology during intervention, it was necessary to determine how depressed the adolescents who received training were prior to treatment, and whether that changed over the course of treatment. These results showed that, prior to treatment, there were no differences in depressive

symptomology between the adolescents who received treatment and those who did not receive treatment. There was a low incidence of depression for each group (14% for preg/train, 20% for nonpreg/train, 16% for nonpreg/nontrain) prior to training. In comparison to previous studies that have found rates of depression for adolescent mothers closer to 60% (Prodromidis et al., 1994), the current study revealed that the rates of depression for this population of adolescent mothers were low. It is not clear why this population of adolescent mothers exhibited such low levels of depression. It is possible that the previous parent training had in some way increased their perceived sense of parenting ability and therefore decreased their stress associated with parenting. It is also possible that because most of the study population had 5 people living in their home, they perceived that they would have support and help from the people in their home. It is possible that this perceived support decreased parenting stress and affected subsequent feelings of depression. The results of these analyses indicated that there was no change in depression after treatment. Based on the previous research that showed an increase in depression after treatment, it was hypothesized that depression would increase after treatment. These results are counter to the hypothesized results and represent a more positive result of the YMP than predicted.

The third hypothesis analyzed the question of the effect of depression, cognitive ability and social skills on cognitive readiness to parent. For both of the groups which received training combined, there was a trend found for cognitive ability and social skills to impact the improvement of cognitive readiness to parent immediately after intervention, with participants with higher cognitive ability and social skills showing more improvement in cognitive readiness to parent. When the two training groups were

analyzed individually, there was a significant effect of cognitive ability on cognitive readiness to parent for the group of nonpregnant/nonparenting adolescents who received the YMP training. There was no effect on cognitive readiness to parent by any of the variables for the pregnant adolescents (preg/train).

There are several possible reasons for these findings. As stated above, the majority of the adolescents who received training were not depressed. The means for both groups were, on average, 5 points lower than the clinical cutoff for depression. Due to these low rates of depression and depressive symptomology it was not possible to determine whether there was an impact of depression on cognitive readiness to parent.

For the nonpregnant/nonparenting adolescents who received training (nonpreg/train), there was a significant relationship between cognitive ability and posttest cognitive readiness to parent. Although the adolescents who were not parenting participated in the YMP classes, they did not receive equal intervention services. The YMP teachers and staff have interactions with the pregnant adolescents that they do not have with the nonpregnant/nonparenting adolescents related to their pregnancy, the care of their child, medical issues, and so on. It is possible that, through these additional interactions, the teachers focus more attention on the parenting students and modify the intervention for those adolescents more than they do for those who are not parenting. These limited interactions may result in unaddressed cognitive difficulties playing a role in treatment outcome. It is also possible that the slightly increased sample size for the nonpregnant/nonparenting adolescents was enough to detect an effect.

As far as cognitive ability and social skills for the pregnant adolescents (preg/train) are concerned, it is possible that the YMP already does what this study

proposes; which is to take into account individual differences when administering intervention services. The finding that the nonpregnant/nonparenting adolescents (nonpreg/train) did show an effect of cognitive ability seems to point in that direction. For the nonpregnant/nonparenting adolescents, those with greater cognitive ability demonstrated more growth in cognitive readiness to parent after training. For the pregnant adolescents, greater cognitive ability was not associated with changes in cognitive readiness to parent, indicating that the YMP staff adjusted for differences in cognitive ability through their interactions with the students.

Other findings of this study included the replication of the cognitive ability for adolescent parents found by Whitman et al. (2001). The adolescent mothers in the current study had cognitive ability scores that were negatively skewed toward lower IQs, with very few scoring above 100 (see also Whitman et al.). An interesting finding in the current study is that both groups of nonpregnant/nonparenting adolescents (nonpreg/train and nonpreg/nontrain) also demonstrated the same negative skewness, with few scoring above 100.

Similar results were found for the social skills of the pregnant/nonpregnant adolescents. Since very little previous research has been done with adolescent parents and social skills, this study represents the first time that social skills for this population have been recorded over time. These findings indicated that all three groups of adolescents (preg/train, nonpreg/train, and nonpreg/nontrain) scored almost identically before and after treatment, with an increase of 8 or more percentile points over the course of the study. Although these numbers do not reflect a dramatic clinical change, they do show that the pregnant adolescents were equivalent to the nonpregnant/nonparenting

adolescents. The study also showed that all three groups scored near the average rating of other adolescents on their social skills, suggesting that, for each group, their social development needs were being met.

There are several limitations to the present study. The small sample size for each of the groups used in the analyses restricted variability, limited the ability to find significant differences, and ultimately limited the ability to generalize the findings. It is suggested that future research include larger groups of participants in studies of the effects of depression, cognitive ability, and social skills on treatment outcomes. This will require a data collection procedure that enables a large amount of data to be collected over the shortest amount of time from each participant. A second limitation involves the limited groups of comparison in this study. An effort had been made during the original protocol to collect information from a group of adolescent mothers who were not receiving training. Referrals were received from area public health clinics that had collected names and contact information from adolescent mothers who agreed to be contacted for participation in a research study. The majority of these adolescents were not in school. Of the numerous referrals received, only a small portion could be contacted, and an even smaller number agreed to participate and arrived to complete the protocol. It became clear early on that the resources were not available to complete that portion of the study, and that portion was halted. Although other researchers have had more success in reaching the population of adolescent mothers who are not enrolled in school, it is evident that there are particular needs that are unique to that population and that require forethought and resources to address.

In terms of the nonpregnant/nonparenting adolescents used as a comparison in the present study, there were still differences between the groups prior to training. Although the groups were equivalent on race, SES, and volunteer status, the nonpregnant comparisons (nonpreg/nontrain) were different from the nonpregnant adolescents who received training (nonpreg/train) in highest education of a parent, prior parenting training, and cognitive readiness to parent and were different from the pregnant adolescents in pregnancy status, age, prior parenting training, and cognitive readiness to parent. Although statistically adjusting for differences makes the groups statistically equivalent, it is not known clinically all the ways in which those differences impact the results.

A final limitation of the present study that serves as a mild warning regarding school-based interventions involved the implementation of the YMP the year that these study data were collected. As stated earlier, the YMP is a school-based program administered in a low SES, urban school system. During the particular school year in which the data for this project were collected, the school system was embroiled in administrative difficulties that did not pertain to the YMP. As a result, the YMP curriculum was required to be modified. Although students attended their scheduled YMP classes, only a small percentage of the YMP curriculum was administered. This modification may explain the limited change in cognitive readiness to parent and the lack of change in depression scores (if increases in depression are associated with a strenuous parenting intervention). Although such drastic interferences with the YMP have not taken place since that time, overall school limitations are a reality and need to be considered in discussion of school-based interventions in school systems that have multiple problems that may impact treatment implementation.

A great deal of time and resource dollars have been spent over the last fifty years in an effort to stop the cycle of poverty, abuse, and other negative outcomes associated with adolescent parenting. Research has shown that many of the negative consequences of teenage parenting have been successfully modified, albeit inconsistently, in the past (Seitz & Apfel, 1999). Most recently, research efforts have been focused on determining what makes an adolescent parenting intervention successful. Attention has been directed toward determining which components of interventions are most frequently associated with positive outcomes, without taking into consideration the strengths and needs of the particular adolescents served in the intervention. It had been hypothesized here that overall program effectiveness cannot be determined without taking into account the personal characteristics of the intervention participants. Differences in a sample of adolescent mothers who receive treatment in maternal characteristics may make a difference in how effective a program appears. The results of this study did not demonstrate a clear effect of depression, cognitive ability, and social skills on cognitive readiness to parent for the YMP during the year it was analyzed. However, there is still reason to believe that more tailored interventions can provide a greater benefit for adolescent mothers. Due to the significant effect of cognitive ability and the trend for social skills to impact cognitive readiness to parent, these results indicate that more research is needed to better understand the role of maternal characteristics in general and of depression, cognitive ability, and social skills in adolescent parenting interventions for both adolescent mothers and nonpregnant/nonparenting adolescents. It is suggested that including the individual characteristics of the intervention participants into the assessment of program effectiveness results in three benefits: (a) Parenting interventions

can adjust in feasible ways to meet the individual needs of their participants; (b) program placement can be made to best address individual needs; and (c) programs can be evaluated more accurately, and generalizations can be made to a larger population of adolescent mothers who are similar to the adolescents who participated in the intervention.

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APPENDIX

INSTITUTIONAL REVIEW BOARD FOR HUMAN USE APPROVAL

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Institutional Review Board for Human Use

Form 4: IRB Approval Form
Identification and Certification of Research Projects Involving Human Subjects

UAB's Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The UAB IRBs are also in compliance with 21 CFR Parts 50 and 56 and ICH GCP Guidelines. The Assurance became effective on November 24, 2003 and the approval period is for three years. The Assurance number is FWA00005960.

Principal Investigator:	MALONE, TANJA G
Co-Investigator(s):	
Protocol Number:	**X011205011**
Protocol Title:	*The Short-Term Efficacy of the Young Mothers Parent Training Program*

The IRB reviewed and approved the above named project on 09-02-05. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This Project will be subject to Annual continuing review as provided in that Assurance.

This project received EXPEDITED review.

IRB Approval Date: 9/2/05

Date IRB Approval Issued: 09-02-05

Marilyn Doss

Marilyn Doss, M.A.
Vice Chair of the Institutional Review Board for Human Use (IRB)

Investigators please note:

The IRB approved consent form used in the study must contain the IRB approval date and expiration date.

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

470 Administration Building
701 20th Street South
205.934.3789
Fax 205.934.1301
irb@uab.edu

The University of Alabama at Birmingham
Mailing Address:
AB 470
1530 3RD AVE S
BIRMINGHAM AL 35294-0104