IMPACT OF AN INFANT SIMULATION PROGRAM ON PREVENTION OF ADOLESCENT PREGNANCY

A RESEARCH PAPER SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE MASTERS OF SCIENCE

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Chapter I

Introduction

The United States (U.S.) has the highest rate of teen pregnancy in the Western World. According to the Centers for Disease Control and Prevention (CDC) about 1 million teenagers become pregnant each year and 95% of the pregnancies are unintended. After declining steadily from 1991-2005, birth rates for the 15 to 19 year old group increased significantly between 2005 and 2006 (CDC, 2009). Teen pregnancy has become more acceptable in the U.S. culture. Therefore the problem of adolescent pregnancy, pregnant teens, and the children of teenage parents needs attention by parents, schools and communities (Encyclopedia Public Health, 2010).

According to Hoffman (2006), taxpayers’ costs (federal, state, and local) for teen childbearing were at least $9.1 billion in 2004. Most public sector costs are associated with negative consequences for children born to teenage mothers. The costs include: $1.9 billion in health care costs for children, $2.3 billion in welfare costs, $2.1 billion for incarceration, and $6.3 billion total tax revenue losses due to lower earnings of mothers, fathers and the children as adults (Hoffman, 2006, p. 2). Addressing the problem of teen pregnancy will help reduce pregnancy rates and the public cost of teenage childbearing. Reducing teen pregnancy will help reduce pregnancy rates and the public cost of teenage childbearing.
Adolescent pregnancy is a complex issue affecting young individuals, families, and communities (Klein, 2005). Teenage pregnancy is associated with medical risks, psychosocial complications for mothers, and health risks for children of adolescent parents. Promoting pregnancy prevention will help provide young teens information about delaying pregnancy, and the risks of childbearing during high school. These programs need to address risk behaviors, such as early and unprotected intercourse (Encyclopedia Public Health, 2010).

Many factors associated with adolescent lifestyles reduce the likelihood of having a healthy baby. Teens are more likely to smoke during pregnancy than older women, and as a result, are at increased risk for premature birth, low birth weight, and sudden infant death (SID). Pregnant adolescents are less likely to seek prenatal care, which puts teenage mothers at greater risk for pregnancy complications such as premature labor, anemia, and high blood pressure. Sexually active teens are at increased risk for sexually transmitted infections (March of Dimes, 2009). Any one of the lifestyle choices may potentially impact the health of the mother and unborn baby.

Along with the medical risks associated with teen pregnancy there are some psychosocial risks. Teen mothers are more likely to drop out of school. Only 40% of teenagers who have children before age 18 go on to graduate from high school. Teenage mothers are more likely to be single and remain single. As a result, teens are more likely to have low self-esteem, depression, and substance-abuse problems (As-Sanie, Gantt, & Rosenthall, 2004). The psychosocial complications, along with the potential medical risks, negatively impact the life of the pregnant adolescent.
Children of adolescent mothers are at risk for medical and psychosocial problems. The CDC reports that children of teenage mothers are more likely to have chronic medical problems such as lower cognitive and proficiency scores at kindergarten entry, exhibit behavioral problems, dropping out of school, being incarcerated at some time during adolescence, and being unemployed or underemployed as a young adult (CDC, 2009). In an attempt to eliminate health disparities of teen mothers, and children of teen mothers, it is critical to examine the effectiveness of pregnancy prevention programs. One such prevention program is Baby Think It Over. This study builds on previous research evaluating the Baby Think It Over program.

Background and Significance

Pregnancy among teenage women is not a new issue to society, but has been a social issue for centuries. In the late 19th and early 20th centuries, teen pregnancy was a family problem. The focus was on the unmarried situation of the pregnant girl rather than age. Unwed mothers were labeled as immoral. It was believed that the morally deficient tendencies of unmarried, sexually active women could be inherited (Best Start, 2007). The unwanted stigma caused girls to marry at a young age to save appearances of the family. Girls were encouraged to give up the baby, or accept the fact that no one wanted to marry a pregnant teen.

Post World War I views changed and sex delinquency was considered a cause of illegitimacy. It was at this time that beliefs shifted from social conditions, such as poverty and lack of education, to the belief that moral or psychological defects resulted in delinquent behavior and pregnancy. The public concern shifted from teenage mothers to unmarried mothers and illegitimacy. The view that unmarried, middle class teenagers
who became pregnant were delinquents continued post World War II. The attitudes of society forced many pregnant teens to marry, therefore becoming a social non-issue (Best Start, 2007).

Between 1960 and 1990 many societal views changed. Public concern of teen pregnancy increased as more pregnant girls decided to remain single. The issue of teen pregnancy shifted from a social problem to a medical problem, therefore creating increased access to birth control and abortion clinics. It was also during this time that teen pregnancy began to be discussed in terms of economic costs to society (Best Start, 2007).

In 1995, President Clinton’s “State of the Union” speech challenged parents and leaders to come together in a national campaign addressing teen pregnancy (Clinton, 1995). As a response to this challenge numerous programs were developed, and existing programs revised. The programs vary from abstinence education programs, knowledge-based programs, clinic-focused programs to peer counseling programs.

In the past decade teen pregnancy continued to be characterized as a social problem. Research supports an association between socioeconomic disadvantage and high rates of teen pregnancy. At risk youths now have greater access to high school education, employment, and mentoring opportunities. While teen pregnancy remains stigmatized by a large part of society to a certain extent, teen mothers are becoming more assertive in demanding respect and support (Kelly, 2007).

Today, however, increased rates of teen pregnancy with physical, emotional and financial burdens have become a significant societal problem. In many ways the semantics may have changed, but the underlying ideology remains pervasive and essentially unchanged (Kennedy, 2008).
One of the most controversial pregnancy prevention programs is the abstinence-only program. The focus of this program is to advocate that abstinence is the only certain way to avoid unwanted pregnancy, Sexually Transmitted Diseases (STDs), and associated health problems. Abstinence-only programs promote postponing sexual activity until marriage, or until participants are mature enough to handle the responsibilities resulting from sexually active behavior. According to Kirby, studies of abstinence-only programs failed to show significant improvement in self-reported rates of intercourse and pregnancy (Kirby, 2001).

Knowledge-based programs address human physiology, information about contraceptives, including abstinence as prevention. According to the U.S. National Library of Medicine and the National Institutes of Health, research indicates that knowledge-based programs do reduce pregnancy rates. Abstinence-only programs, without information about contraception, do not decrease pregnancy rates (U.S. National Library of Medicine and the National Institutes of Health, 2009). Therefore, providing information about contraception as well as abstinence is an effective approach.

Clinic-focused programs provide access to information and counseling by health care providers, and to contraception services. Some school-based programs are clinic-focused programs. Family physicians and other health professionals are encouraged to advocate for effective programs such as youth development, sex education, contraceptive programs and research to effectively promote abstinence (Realini, 2004).

Another type of program for pregnancy prevention is peer counseling. This involves older teens working with younger teens to resist peer and social pressures to become sexually involved. This personal approach deals with feelings as well as
understanding risks. Peers teach negotiation skills to manage relations, as well as how to obtain and use contraceptives (U.S. National Library of Medicine and the National Institutes of Health, 2009). Therefore, a peer program equips teens with the necessary tools to navigate compromising situations.

An effective growing program is Baby Think It Over. Baby Think It Over is a science-based parenting program referred to as the Realityworks Parenting Program. Participants carry the BTIO simulation doll (baby) for 24-72 hours. The BTIO doll provides realistic infant care experiences such as feeding, burping, rocking, and diaper changing. Random cries that vary in frequency and intensity simulate realistic infant-care experiences. Adolescents that participate in the program receive information and that helps make informed choices, including the decision to delay parenthood until adults. Several authors (Barnett & Hurst, 2004; Didion & Gatzke, 2004; Out & Lafreniere, 2001; Price, Robinson, Thompson, & Schmalzried, 2000; Somers & Fahlman, 2001; and Tingle, 2002) completed studies that used the program. Collectively the authors found that the Baby Think It Over program is effective in increasing awareness of problems related to teen pregnancy.

De Anda, (2006) conducted a study to evaluate the BTIO program. Three hundred and fifty three students at a Los Angeles County high school participated in the BTIO intervention. The author found that BTIO did impact adolescents' academic and social life, the effect of adolescent parenthood on other family members; and the increase in the recognition of emotional risks accompanying adolescent. This study is based on de Anda’s work.
Statement of Problem

Adolescents girls participate in risky sexual behaviors resulting in pregnancy. Adolescents often underestimate the care required for a baby (de Anda, 2006). Caring for a simulation doll (baby) may give the adolescent a more realistic view of the responsibilities of parenting infants during high school, thereby decreasing the chance of an unwanted pregnancy.

Purpose of the Study

The purpose of this study is to: (a) evaluate the impact of the Baby Think It Over (BTIO) Intervention Program on academic and social life, on emotional risks and cultural values, and on family members, and (b) to identify adolescents planning to postpone pregnancy following the BTIO intervention. This is a partial replication of de Anda’s (2006) study.

Research Questions

1. What is the impact of BTIO on academic and social life?
2. What is the impact of BTIO on emotional risks and cultural values?
3. What is the impact of BTIO on other family members?
4. Will teens who participate in BTIO postpone pregnancy until a later age?

Organizing Framework

The Baby Think It Over Parenting Program (BTIO) was created in 1994 by Jurmain, who used a computerized simulation doll as a non linear, psychological experience in which participants experience realities of parenthood (Roberts, & McCowan, 2004). The combination of two widely accepted learning theories, the “Attitude Accessibility” model of learning and the “Experiential Learning” theory
influenced the science-based BTIO parenting program. According to the “Attitude Accessibility” model of learning, programs that use infant simulators provide the most realistic experience of the demands of parenting, short of using an actual infant. The infant simulator follows the “Experiential Learning” theory which states that realistic knowledge can be obtained (Realityworks, 2007). The BTIO parenting curriculum follows the U.S. national teaching standards, and state teaching standards for family and consumer science and health education. The program addresses decision making, goal setting, readiness, parenting, infant care and child development. This framework is appropriate for this study because the current study will test the BTIO program effectiveness.

Definition of Terms

*Baby Think It Over Conceptual.*

Baby Think It Over is a parenting program that combines an infant simulation doll and parenting curriculum to provide a realistic, extended role-play experience Baby Think It Over computerized simulation doll that contains software that will measure caregiver competency. A pregnancy prevention program which combines parenting curriculum with 24-72 hours of caring for a computerized simulation doll. The doll requires care such as feeding, burping, rocking and diaper changing. This hands on experience is designed to simulate the responsibilities and intensity of parenthood. (Realityworks, 2007).
Baby Think It Over Operational.

The BTIO-1 instrument was used to measure effect of caring for a baby on academics, social life, emotional risks, cultural values, family values, and the desire to postpone pregnancy (de Anda, 2006).

The BTIO-2 instrument was used to measure adolescents' thoughts, desires or behavior

Limitations

The sample size is small and not random, limiting generalizability. The maturation process may alter posttest scores. The memory of the experience may decrease overtime diminishing the intensity of the program.

Assumptions

The following are assumptions related to this study: (a) teenagers want to avoid pregnancy, (b) having a baby during adolescence will impact academics, social life, and other family members, and (c) caring for an infant requires a great deal of responsibility.

Summary

The incidence of teen pregnancy is on the rise in the U.S. Billions of local, state and federal tax dollars are spent annually on negative pregnancy outcomes. Teen pregnancy impacts academic, social life and other family members. Adolescent mothers and children of adolescent mother’s are at an increased risk for medical and psychosocial problems. Our nation has been challenged to come together in the campaign against teen pregnancy. There are several program options available for teens, families and schools. The framework for this study is Baby Think It Over (Realityworks, 2007). The purpose of this study is to determine the impact on an infant simulation program on prevention of
adolescent pregnancy. This study is significant because the BTIO experience can influence teens to avoid risk taking behavior that results in pregnancy.
Chapter II
Review of Literature

Introduction

The United States continues to have one of the highest teen pregnancy rates in the developed world (Guttmacher Institute, 2006). Healthy People 2010, Goal 9-7 is to reduce pregnancies among adolescent females (Healthy People, 2002). In an attempt to reach this goal it is imperative to: (a) understand adolescent reasoning and decision-making; (b) examine adolescent thoughts regarding pregnancy prevention and birth control methods; and (c) evaluate the effectiveness of such methods. The purpose of this study is to determine the impact on an infant simulation program (BTIO) on prevention of adolescent pregnancy. The literature review is organized into four sections:

1. Organizing Framework
2. Incidence
3. Perceptions of teenage pregnancy: Adolescents and Parents
4. Evaluation of Program

Organizing Framework

Baby Think It Over is the organizing framework for this study. The Baby Think It Over Program was developed by Jurmaine (as cited in Realityworks, 2007). In January 2003, the company changed its name from Baby Think It Over to Realityworks, Inc
Baby Think It Over integrates two leaning theories the “Attitude Accessibility” model and “Experiential Learning” theory. According to the “Attitude Accessibility” model of learning, programs that use infant simulators provide the most realistic experience possible short of actual infant care in which a teen learns the demands of parenting. By responding appropriately to the infant simulator, participants can draw strong associations between the many responsibilities of caring for an infant and their attitudes toward parenthood. In the future, these attitudes can be easily recalled and are more likely to influence behavior (Realityworks, 2007).

The “Experiential Learning” theory has three components: experience, reflection and action. The infant simulator provides teens with realistic knowledge of parenting and the demands associated with parenting. Teens draw upon these experiences to form independent approaches to parenting responsibilities. The combination of experience and reflection help to form new decision-making skills regarding future goals (Realityworks, 2007).

Baby Think It Over is a program that uses an infant simulation doll for a given time period. The experience provides a realistic, extended role-play with a baby doll. The doll is 20 inches long and weights 7 to 8 pounds. Each doll contains a battery-operated microcomputer chip that simulates an infant’s realistic cry at random intervals. The intervals range from 15 minutes to 6 hours, 24 hours a day. The temperament of the doll may be programmed as: easy, normal or cranky. An easy baby will sleep 3 to 6 hours at a time, normal babies sleep 1 to 4 hours at a time, and cranky babies sleep 15 minutes to 3 hours (Realityworks, 2007).
Care of the infant includes feeding, burping, rocking and diaper changing. The simulation doll will cry at random times. The crying will increase in volume and intensity if the correct actions are not taken. The feeding time lasts for 35 minutes, which the probe must remain attached. Each student has a key attached with a tamper resistant band that is worn on the teen’s wrist. Participants must keep the doll with them at all times in order to respond quickly and appropriately. The teens care for the doll over a period of 2 to 3 days, usually on the weekend (Realityworks, 2007).

Feeding requires the teen to insert a magnetic probe (key) in the infants back. The microcomputer chip will monitor the teen’s response to the baby and record instances of rough handling and neglect, conditions similar to Shaken Baby Syndrome. If the doll is roughly handled it will cry nonstop. A red light will blink indicating rough handling and yellow light will blink indicating neglect. The simulator will shut down after a total of 24 abuses or 12 continuous hours of neglect (Realityworks, 2007).

The simulator software produces a report the measures the caregivers competency. The care provided is recorded as correct care or missed care. The exact dates and times of any missed care events that occurred are recorded. Students whose records indicate rough handling or neglect participate in a counseling session with the health teacher and mandatory participation in parenting class.

The infant simulator, Baby Think It Over, is used in conjunction with a parenting curriculum called Realityworks Parenting Program. Realityworks (2007) has incorporated U.S. national teaching standards for family consumer science and health education. The curriculum topics include decision making, parenting readiness, goal setting, infant care,
The Baby Think It Over approach combines the “Attitude Accessibility” model, “Experiential Learning” theory along with parenting curriculum to create a realistic experience of caring for an infant. The program goal is to increase teen’s awareness of the responsibilities and burdens involved in caring for an infant. Along with this awareness is to motivate them to avoid risky sexual activities that could result in teen pregnancy and teen parenting (Realityworks, 2007).

**Incidence of Teenage Pregnancy and Trends**

Little attention has been given to trends concerning teenagers’ contraception use. The purpose of Santelli, Morrow, Anderson, and Lindberg’s (2006) study was to examine data from the national Youth Risk Behavior Survey (YRBS) to determine contraception use of sexually active high school students and pregnancy risks.

The population included Caucasian, African American, and Hispanic adolescents in grades 9-12 from both private and public schools in the United States. A three-stage, stratified, clustered sample included: 1991, 9th grade (n=316); 10th grade (n=551); 11th grade (n=619), and 12th grade (n=818). In 2003 the sample included: 9th grade (n=346); 10th grade (n=547); 11th grade (n=746) and 12th grade (n=895). Two permission forms were used, this varied without any specific trend (Santelli et al., 2006).

The YRBS was used to collect data. The YRBS is a pencil-and-paper questionnaire administered in the classroom setting. Data from every national YRBS through 2003 provided estimates for use of condoms and of other contraceptives at last intercourse. The survey included the following contraceptive methods: pill only; condom only; pill and condom; withdrawal; injectable; injectable and condom; other method; other and condom; no method; and not sure. Two open-ended questions were asked:
“The last time you had sexual intercourse, did you or your partner use a condom?” and “The last time you had sexual intercourse, what method did you or your partner use to prevent pregnancy?” (Santelli et al., 2006, p. 109). The study was conducted by the Center of Disease Control and Prevention (CDC) every 2 years, beginning in 1991, to collect data regarding contraceptive practices and sexual behavior for adolescents. Santelli et al. (2006) created a Pregnancy Risk Index to summarize a previous study of overall pregnancy risks.

The CDC defined “sexually active” as having had intercourse in the past 3 months, and for the purpose of this study the definition was the same. In 1999 the category of injectable contraceptives was added. Published failure rates were used to determine the efficacy of specific contraceptive methods based on historical data. The overall failure rate refers to the risk of pregnancy in a year across all methods and among all women who are contraceptive users. Failure rates for combined methods at last intercourse were estimated by multiplying the method-specific failure rates for the two methods (Santelli et al., 2006). To estimate the overall risk of pregnancy among sexually active teenagers, the pregnancy risk index was used. All differences were reported as significant at the p≤ 05 (Santelli et al., 2006, p. 109).

Findings indicated that contraceptive use in sexually active teens between 1991 and 2003 increased. The number of sexually active female high school students that reported use of condoms alone, or with other methods, increased (38% to 58%). Teens that reported no method declined (18% to 12%), as did the use of withdrawal (19% to 11%), and use of the pill with or without condom declined (25% to 20%). There was little change in the use of hormonal methods (pill and injectable only or with condom). The
risk rate of pregnancy was 27.9 pregnancies per 100 sexually active women in 1991, and 22.1 pregnancies per 100 in 2003. Thus, the risk of pregnancy among sexually active high school women declined 21% between 1991 and 2003. The trend in pregnancy risk from 1991 to 2003 decreased significantly (Santelli et al., 2006, p. 108).

Trends among men were similar to trends among women. The proportion of sexually active male high school students that reported use of condoms increased (55% to 69%), the use of withdrawal declined (15% to 7%), and using no method (14% to 9%) declined. Males reported the use of hormonal methods among partners declined in pill use (17% to 13%) however use of injectable was 2% in 2003 (Santelli et al., 2006, p. 108).

The three most common female racial or ethnic groups in the YRBS were White, Black, and Hispanic. Women in each group showed increases in condom use and decreases in use of the pill, withdrawal and using no method between 1991 and 2003. In 2003, 26% of white females reported using the pill alone or with another method, as compared to 12% for both Blacks and Hispanics. Fifty-nine percent of Blacks reported condom use alone or with another method, as compared to 55% for Whites and 51% for Hispanics. Hispanics had the highest rate of using no method (21%), compared with 12% Blacks and 9% Whites. Twelve percent of both Whites and Hispanics reported use of withdrawal, as compared to 7% of Blacks. Between 1991 and 2003 the pregnancy risk score declined significantly (p < .001) for each group: 25% among Whites, 23% among Blacks and 19% among Hispanics (Santelli et al., 2006, p. 108).

There was a clear difference in contraceptive use at last intercourse among grade levels. In 2003, 17% of 9th graders reported use of hormonal (pill or injectable) method,
as compared with 18% of 10th graders, 28% of 11th graders, and 32% of 12th graders. Sixty-seven percent of both 9th and 10th graders reported condom use, compared with 56% of 11th graders, and 49% of 12th graders. The use of withdrawal increased from 7% of 9th graders to 14% of 12th graders. Fourteen percent of 9th graders reported using no method, as compared to 11% of 12th graders. In both 1991 and 2003, pregnancy risk was highest among 9th graders. However, 9th graders also showed the greatest improvement; between 1991 and 2003, pregnancy risk scores fell 28% (Santelli et al., 2006).

The findings indicated the risk of pregnancy among sexually active high school students declined 21% between 1991 and 2003. The authors conclude that: (a) risk of pregnancy is highest among Hispanics; (b) condoms are the most commonly used contraceptive; and (c) students in the higher grade levels have a lower pregnancy risk due to more contraceptive use. It is important for non-contraceptive users to be educated regarding interventions to prevent pregnancy and sexually transmitted diseases. Current users need information regarding dual protection, consistent use of contraceptives and accurate information to avoid misconceptions of contraceptive side effects (Santelli et al., 2006).

Perceptions of Teenage Pregnancy

Adolescents.

A long term public health goal is to reduce teen pregnancies by convince adolescents to postpone sexual activity, or if sexually active, become more responsible for preventing pregnancy. The purpose of this study was to evaluate whether adolescents in a Baby Think It Over (BTIO) program were serious about the program, and to determine if BTIO helps adolescents develop a more realistic view of parenting. The
authors used Life’s Walk curriculum as the sexuality education component, along with the BTIO infant simulator (Barnett & Hurst, 2004).

Twenty schools in rural Northwest, Missouri participated in the study. Students included 148 female and 129 male (n= 277) 8th graders enrolled in a state-mandated health class. The 8th grade program involved caring for a baby according to BTIO program guidelines for a 48-hour period during the school week. Seventy-one female and 31 male (n= 102) 10th grade students enrolled in an elective class that participated in the Life’s Walk sex education program. The 10th grade program used BTIO for 72 hours during the weekend. Parental consent was required for students to participate in the BTIO activity and evaluation (Barnett & Hurst, 2004).

Data were collected from two sources: a student survey administered at the end of the program and a computer printout provided by BTIO. The eight item survey (N=239) targeted students’ reactions to BTIO, the impact BTIO had on future decision-making and sexual behavior 1 month prior to participation in the program. Alpha reliability was reported at .78 (Barnett & Hurst, 2004, p. 69). The BTIO technical readout included the number of times the baby was left to cry for long periods without being attended to, the number of times the baby was handled roughly, and the quickness of response to BTIO.

Students (73%) believed the BTIO experience demonstrated what it would be like to be a single parent. Seventy-six percent stated BTIO reinforced waiting to have children. When asked if BTIO taught that caring a baby was fun, 76% disagreed. After the BTIO experience 65% were more likely to postpone sex (Barnett & Hurst, 2004).

Based on findings from the question “Have you had sexual intercourse since the BTIO experience?” only 11% of students reported having sexual intercourse after the
BTIO experience. When comparing gender responses, more females (14%) reported intercourse after BTIO than males (7%). When comparing grade level responses, 28% of 10th graders reported sexual intercourse after BTIO compared to 5% of 8th graders. A pretest question (given the first day of the program) asked if students had ever had sexual intercourse. Forty-five percent of the 10th graders and 12% of 8th graders reported having sexual intercourse (Barnett & Hurst, 2004).

The authors compared results from the survey based on gender and grade. Gender results indicated no significant variance for neglect (p=.33). There was a significant difference (p=.027) for the total amount of times the baby cried. Males were more likely to allow the baby to cry. Also, males were more likely to handle simulators roughly (p=.005). When comparing grade levels, there was a significant difference (p=.165) in the neglect of the baby. Total amount of time crying was not significant (p=.5). There was a significant difference (p=.001) in rough handling. Tenth graders were less likely than 8th graders to roughly handle infant simulators (Barnett & Hurst, 2004).

The authors concluded that the BTIO experience has value, helped students recognize the difficulties of caring for an infant and the importance of delaying parenthood. The BTIO program may have a greater impact on females and younger students (Barnett & Hurst, 2004).

Adolescent girls don’t always understand the realities of teen pregnancy and parenting. The purpose of this study was to gain an understanding of pregnant adolescents’ beliefs about the advantages and disadvantages of teen pregnancy and childbearing. The framework was based on guidelines from the Centers for Disease

A convenience sample of eligible girls (n=247, 62%) were 19 years and younger. Girls were recruited during the first prenatal visit to a Women’s Primary Care Clinic in Providence, Rhode Island. Inclusive parental consent was required for participants between age 12 and 17, and any language/intellectual barrier resulted in exclusion. The respondents were grouped by age: (12-15 years old [n=48, 19.4%], 16-17 years old [n=94, 38.1% ], and 18-19 years old [n=105,42.5%]). Respondents were grouped by ethnicity (Hispanic [n=117, 47.3%] versus non-Hispanic [White 19.4%, Black 17.8%, Asian 4.5% American Indian/Alaskan Native 4%, and other 17.9%]). Other demographic characteristics were: intendedness of current pregnancy (intended [n=58, 23.5%] versus unintended [n=189, 76.5%]), and reproductive experience factors (previous pregnancy [n=73, 29.8%] versus no previous pregnancy and children versus no children). Fifteen percent of teens having one pregnancy already had at least one child; 24.7% (n=18) acknowledged previous abortion; and 42.5% (n=31) had a previous miscarriage (Rosengard et al., 2006, p. 505).

The PRAMS (1997) questionnaire included items measuring demographics, pregnancy intentions, feelings/reactions about pregnancy, birth control use, decision-making processes regarding pregnancy, support systems, living situations, sexual experiences, school and extracurricular involvement, reproduction health history, substance use behavior, and abuse history (Rosengard et al., 2006, p. 505). A research nurse, or trained research assistant, asked each participant “Think back to the time just before you found out you were pregnant, and how you felt about pregnancy at the time.
When did you want to be pregnant?” If the participant indicated “Immediately (now),” “In the next few months,” or “In the next year,” the pregnancy was characterized as “intended.” Participant responses such as “I did not want to get pregnant,” or “More than a year from now,” were considered as “unintended current pregnancies” (Rosengard et al., 2006, p. 505). In an attempt to determine reproductive health history participants were asked: (a) Have you ever been pregnant before? and (b) How many children do teens have? Teens who were previously pregnant were asked if the teen had ever had an abortion and/or miscarriage. Open ended questions involved responding to two questions: (a) Considering everything, what do you think are the bad things or disadvantages about having a baby now instead of waiting until you are older? and (b) What do you think are the good things or advantages about having a baby now instead of waiting until you are older?

The findings from the open-ended questions indicated that female adolescents considered disadvantages of pregnancy to include: no disadvantages noted, lack of or insufficient preparedness, changes/interferences, and others’ perceptions. No advantages were identified as connections, benefits, positive changes, practical considerations such as youth and timing to be advantages of teen pregnancy (Rosengard et al., 2006, p. 507).

The findings among/between different subgroups regarding age, ethnicity, intendedness of current pregnancy, reproductive and parenting history, indicated that the younger age groups (12-15 and 16-17 years) perceived teen pregnancy as an opportunity to enhance connections with others. The 18-19 year olds expressed more practical considerations regarding teenage pregnancy. The older teenager (16-17 and 18-19 years)
had a greater recognition of lack of preparedness. However, the younger group (12-15
ten years) emphasized changes and interference in life goals (Rosengard et al., 2006).

“Enhancing connections with others” was an important emphasis reported by
Hispanics. Both “connections” and “practical considerations” were equally emphasized
for non-Hispanics. Hispanic and non-Hispanics expressed similar responses to
“change/interference.” More non-Hispanic teens identified “lack of preparedness” as a
disadvantage. Rosengard et al. (2006) stated “Teens who intended the current pregnancy
were more than twice as likely not to see disadvantages to teen pregnancies and were
slightly less likely to identify lack of preparedness” (p. 508). An advantage associated
with “enhancing connections with others” was higher in the previously pregnant group.
The “no previous pregnancy group” was more likely to list “change/interference” as a
disadvantage. The advantage identified most by participants already with a child was
“enhances connections with others.” “Changes/interferences” were identified most by this
same group as the biggest disadvantage of teenage pregnancy (Rosengard et al., 2006, p.
508).

The authors found that participants identified more disadvantages (n=355) than
advantages (n=322) to teen pregnancy. The responses indicated that this group was not
homogeneous in regard to pregnancy views. Age, ethnic background, and intendedness of
current pregnancy varied among the groups. Pregnant adolescents emphasized both
practical and personal advantages and disadvantages. The teens considered requiring
maturity and avoiding risky/unwise behavior as an advantage to pregnancy. The number
of changes and challenges that pregnancy presented were considered a disadvantage.
Participants identified more disadvantages than advantages. The data indicated that
pregnant adolescents are not a homogeneous group in regards to the views of teenagers on pregnancy. Teens who indicated an “intended” pregnancy identified more advantages to pregnancy than “unintended.”

Providing teens with concrete examples of the changes/interferences pregnancy causes may encourage teens to take protective measures to prevent subsequent pregnancies. Developmental, cultural, and experiential differences should be considered when developing interventions and prevention strategies. Understanding adolescents’ attitudes toward and motivation for pregnancy may aid in efforts to educate adolescents regarding the realities of teen pregnancy/parenting and reduce the negative health consequences of teenage childbearing in the United States (Rosengard et al., 2006, p. 504).

Teenagers have many expectations of the future and develop goals for future plans. The purpose of Jumping-Eagle, Sheedler, Kelly, and Stevens-Simon’s (2008) study was to determine if conventional goals were independently related to pregnancy avoidance attitudes and behaviors among teenage women, or if any relationship was mediated by the belief that pregnancy would be an impediment to achieving such goal (Jumping Eagle et al., 2008, p. 74).

The study was conducted at three urban adolescent health clinics in the Southwest. One clinic was hospital-based and the others located in neighborhood health center. The clinics serve predominantly medically indigent patients. The participants (n=351) were females, younger than age 20, had never been pregnant, and had not used contraceptive methods in at least one of the last four episodes of heterosexual vaginal intercourse. Participants signed consents; however parental consent was waived by the
University of Colorado Health Sciences Center institutional review board (Jumping-Eagle et al., 2008).

Participants completed a self-administered questionnaire addressing goal status, pregnancy avoidance measures, and social/demographic characteristics. Goal status questions included educational plans and vocational plans. Two questions asked if respondents perceived goals were obtainable. To quantify perceptions of teenage pregnancy as an impediment to achieving goals, the response set ranged from 1-3, with 1= having a baby would make it hard to finish school, 2= I go back and forth; and 3= having a baby would give me reason to finish school (Jumping-Engle et al., 2008, p. 75).

Pregnancy avoidance measures were evaluated. Five outcome variables were assessed regarding pregnancy avoidance measures: (a) respondents’ contraceptive use at last sexual intercourse, (b) intent to avoid pregnancy, (c) have an abortion if pregnancy occurred, (d) plan to use highly effective contraception, and (e) composite index of the other four measures (Jumping-Eagle et al., 2008).

Age, racial or ethnic background, living arrangements, sexual experience and education were included in the social and demographic measures. Acculturation was not assessed since all participants spoke fluent English and read at 4th grade reading level (Jumping-Eagle et al., 2008).

The mean age of the respondents was 16.4 (range=10.8 to 19.6 years). Race/ethnicity demographics indicated: 55% Hispanic, 25% Black, 19% White, 1% or fewer Native American and Asian. Seventy-three percent lived with parent(s), 11% lived independently with boyfriend, and 15% in another living arrangement. Thirty-nine percent of respondents were in school with passing grades, or were high school
graduates. Sixty-two percent had failing grades or had dropped out of high school. Eighty-nine percent had been sexually active for longer than 6 months, and 11% less than 6 months (Jumping-Eagle et al., 2008).

Characteristics of teenagers who did or did not have goals, and teenagers who did or did not consider pregnancy to be an impediment to achieving goals, were compared using t-tests and chi-square analyses. Characteristics statistically significant at p<.05 were included in hierarchical, forward stepwise logistic regression to assess relationships among having goals, or feeling that pregnancy would be an impediment to achieving goals, and the pregnancy avoidance measures (Jumping-Eagle et al., 2008, p. 77).

Findings from the questionnaire that addressed education and sexual experience found 74% indicated educational or vocational goals, 81% perceived goals to be achievable, and 42% considered pregnancy an impediment to achieving goals. Thirty-five percent of participants used contraceptives at last sexual intercourse, 48% intends to avoid pregnancy, 14% would have an abortion if pregnant, and 75% plan to use a prescription contraceptive (Jumping-Eagle et al., 2008, p. 76).

Analysis indicated female teenagers with goals resembled females without goals in relation to most of the variables (Jumping-Eagle, et al., 2008, p. 77). Teenagers who had goals were less likely to be Hispanic, Black or Native American (79% vs. 88%; p=.03) or to be living with a boyfriend (9% vs. 40%; p=.02). Eighty-one percent of the participants were more likely to have conventional goals, 69% did not share this perception (p=<.05) (Jumping-Eagle et al., 2008).

Female teenagers who considered pregnancy an impediment (n=149) were more likely to have used contraception at last intercourse than teens who did not consider
pregnancy an impediment (n=202). Girls that considered pregnancy an impediment, (a) used contraceptive at last sexual intercourse (46% vs. 28%, p< .0001), (b) intends to avoid pregnancy (78% vs. 27%, p< .0001), (c) would have an abortion if pregnancy (27% vs. 4%, p< .0001), and (d) plans to use a prescriptive contraceptive (83% vs. 69%, p<.01) (Jumping-Eagle et al., 2008, p. 77).

Of the teens that considered pregnancy an impediment, 120 had goals, and 29 did not have goals. More teens with goals used contraceptives at last intercourse (50% vs. 33%, p<.01), and would have an abortion if pregnant (28% vs. 22%, p<.01). Teens without goals were more likely to avoid pregnancy (83% vs. 77%, p<.0001), and planned to use prescription contraceptive (90% vs. 81%, p<.05) (Jumping-Eagle et al., 2008, p. 78).

There were more teens who had goals (N=140), than teens without goals (N=62), that considered pregnancy not an impediment. More teens with goals used contraceptive at last intercourse (31% vs. 20%, p<.01), intended to avoid pregnancy (27% vs. 26%, p<.0001) and would have an abortion if pregnant (4% vs. 3%, p<.01). Sixty-nine percent of teens with goals, and without goals, planned to use prescription contraceptives (Jumping-Eagle et al., 2008, p. 78).

The authors concluded that goals motivate teens to avoid pregnancy only if individuals believe pregnancy will be an impediment. The authors concluded that pregnancy prevention measures should help teens develop goals along with experiences that foster the understanding that early childbearing can be a threat to achieving goals (Jumping-Eagle et al., 2008).
Parents.

If parent-child communications regarding sexual standards are absent in the home, adolescent peer norms may become the sexual standards for teens. The purpose of this study was to examine the relationship between parent-teen communications while the teen participated in the Baby Think It Over (BTIO) program (Price, et al., 2000).

A total of 120 parents participated in the study. The participants were parents of students who made the greatest gain from pre-to post-test (n=60), and the parents of students who made little to no progress from the pre-to post-test (n=60) while participating in the BTIO program (Price et al., 2000).

The parent survey consisted of two sections. The first was a 10-item instrument with 3 to 7 responses per item. This survey was developed specifically for the BTIO program. The instrument assessed parents’ perceptions of BTIO on: (a) family activities; (b) child; (c) parent-child communications; and (d) technical aspects of BTIO. The second section consisted of demographic questions: (a) family relationship; (b) parent age; (c) race/ethnicity; (d) education level; and (e) number of children living at home. Content, face validity, and stability reliability were established. There was a reliability score of .85 (Price et al., 2000, p. 36).

There was a 74% (n=89) return rate from the questionnaires. The demographic characteristics of parents indicated 61% of girls (n=54) resided with Mother, 8% (n=7) resided with Father, and 31% (n=28) resided with others. The ages of parents were: 20-29, 1% (n=1), 30-39, 44% (n= 39), 40-49, 47% (n= 42), 50-59, 7% (n= 6), and age 60+, 1% (n=1). Ninety-eight percent (n= 87) were White and 2% (n=2) Hispanic. The education level parents was: (a) 5% (n= 4) did not complete high school; (b) 45% (n=40)
completed high school; (c) 34% (n=30) attended college; and (d) 16% (n=14) graduated from college (Price et al., 2000, p. 37).

Thirty-eight percent (n=33) of the parents responded the effects of the BTIO on family activities were positive, 37% (n=32) found the program disruptive, and 25% (n=22) said there was no effect. Eighty-five percent (n=73) of parents believed the program had an effect on the teen. Of the 85% that responded yes: 85% (n= 76) believed “the BTIO was a lot of responsibility;” 79% (n= 70) “time consuming;” 71% (n= 63) “kept from meeting goals in life;” 53% (n= 47) “expensive;” 3% (n= 35) “prevent graduating;” 6% (n= 5) “fun;” and 3% (n= 3) “easy” (Price et al., 2000, p. 37).

Sixty-five percent (n=58) believed that students who participated in BTIO increased parent-child communications about sexuality and parenting issues. The topics discussed were: (a) (n=64, 2%) effects of having a baby; (b) (n=61, 69%) being a parent; (c) (n=50, 56%) having sex; (d) (n=30, 34%) contraception; and dating (n=28, 32%) (Price et al., 2000, p. 37).

The demographic questions addressed length of program, and recommended grade level for the program. Students carried the infant simulator for 3 days. Sixty-three percent (n=56) believed that 3 days were just the right number of days, 29% (n=26) believed not enough days, and 8% (n=7) too many days. Eighty-four percent (n= 75) stated junior high grades were the most appropriate time for BTIO, 76% (n= 68) stated high school, and 13% (n=12) stated upper elementary grades (Price et al., 2000).

Price et al. concluded the BTIO program did increase parent-child communications. Parents believed the program achieved its intended effects. This was
evidenced because 90% of the parents would recommend the Baby Think It Over program to a friend (Price et al., 2000).

Evaluation of BTIO Program.

Teen attitudes need to be examined in regard to contraception use. The purpose of Somers and Fahlman’s (2001) study was twofold: (a) to determine the effectiveness of the Baby Think It Over program in regards to changes in participants’ attitudes regarding sexual and contraceptive behaviors, and (b) to evaluate teens' perceptions of BTIO in regards to utility and impact of the program.

The study took place in a suburban high school in a large Midwestern city. Students were primarily Caucasian and middle class, with a mean age of 16.2. Students in the experimental group (n=151) were enrolled in child development or health class. The group consisted of 11 males, 133 female, and 7 students that did not indicate gender. There was an even distribution of ages among 10th, 11th, and 12th grade students with a mean age of 15.98. The control group (n= 62) were enrolled in a required social studies class. The group consisted of 23 males, and 36 females. There was an even distribution of 11th and 12th grade students, with a mean age of 16.76. Participation was voluntary and informed parent consent and adolescent assent was received (Somers & Fahlman, 2001, p. 189).

All students completed pretests that included attitudinal measures, sexual behavior and narrative items. The experimental group carried the doll for 2 to 3 days. After all students carried BTIO (10 to 12 weeks) both experimental and control groups completed posttests.
A questionnaire was designed to evaluate attitudinal measures. The following topics were addressed: (a) premarital sexual attitudes; (b) future orientation; (c) realism about the responsibilities of childrearing; (d) personal intentions regarding sexual intercourse and child-bearing; (e) self-efficacy to resist risky situations; and (f) perceptions of others’ acceptance of teen pregnancy. Twenty items were rated on a 5-point scale, ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). The self-efficacy items were rated on a 5-point scale ranging from 1 (“very sure”) to 5 (“very unsure”) (Somers & Fahlman, 2001, p. 190).

The Sex Knowledge and Attitudes Test for Adolescents (SKAT-A) was used to evaluate sexual behavior (Somers & Fahlman, 2001). Frequency of students’ engagement in 10 sexual behaviors was rated on a 5-point scale ranging from 1 (never) to 5 (daily). Two separate constructs were evaluated: (a) talking with others about sexual topics, and (b) overt sexual behaviors/activities. Internal consistency was reported with a Cronbach α of .86. (Somers & Fahlman, 2001, p. 190).

A questionnaire was developed to address attitudes about sexual experiences. Students were asked to indicate: (a) perceptions of how many peers are sexually active (1= none of them to 6= almost all of them); (b) level of personal sexual experimentation (1= never even thought about having sexual intercourse, to 7= had sexual intercourse many times); (c) plans for first sexual intercourse (1= before high school graduation, 2= after high school graduation, 3= after marriage), (d) contraceptive use during sexual activity (1= always use it, to 5= never use it); (e) first intercourse; (f) total number of sexual partners; and (g) desired age of first pregnancy (Somers & Fahlman, 2001, p. 190). During post testing, the experimental group received additional questions. Likert-type
items and open-ended narratives were used to discuss how the BTIO program affected respondents.

When comparing the experimental group with the control group the findings did not result in a statistically significant difference between groups’ attitudes and behaviors after using BTIO. The male students indicated BTIO made at least some impact. Only girls indicated it had no impact or increased confidence in becoming or desire to become pregnant (Somers & Fahlman, 2001, p. 194). Ninety-seven percent of participants reported having medium or large amounts of baby experience prior to BTIO (Somers & Fahlman, 2001).

The results of the experimental group’s post-test indicated that BTIO did influence adolescents’ ideas regarding teen pregnancy and childbirth. Students stated that the BTIO program taught that being a parent is time consuming, requires responsibility, affects future goals, and is expensive. A desire to avoid pregnancy was the most frequent response regarding the impact of BTIO on teen pregnancy (Somers & Fahlman, 2001).

Narrative results from this study revealed positive effects of BTIO in regards to preventing teen pregnancy. Continued development of objective measures would expand the exploration of what BTIO can do to prevent teen pregnancy. Despite efforts to reduce pregnancy, the rate of teen pregnancy in Canada was rising. Out and Lafreniere (2001) used the Health Belief Model to examine an intervention aimed at encouraging adolescents to acknowledge personal risk for involvement in an unplanned pregnancy.

Participants (n=114) in the study included 11th grade students (24 males, 90 females) within an age range of 14-19 years. Students were divided into intervention (n=53) and comparison (n=61) groups. The intervention students assumed responsibility
for the Baby Think It Over (BTIO) simulation doll for 2 days/nights or 3 days/nights. Students were provided detailed instructions for care of doll prior to receiving BTIO (Out & Lafreniere, 2001).

A Pre-test and Post-test questionnaire was created using several measures to assess attitudes, behaviors, and knowledge related to contraception and fertility. To determine teenagers’ attitudes toward teen pregnancy and contraception, as well as perceived susceptibility to an unplanned pregnancy the Health Belief Model Approach to Adolescents’ Fertility Control Questionnaire (Eisen, Zellman, & McCalister, 1992) was used. This tool had 35 items, grouped to form six subscales: (a) susceptibility to pregnancy/venereal disease, (b) serious affective consequences of pregnancy, (c) serious resolution consequences of pregnancy, (d) benefits of effective birth control use, (e) interpersonal benefits of birth control use, and (f) barriers to birth control use. To assess attitudes toward abstinence and the use of contraception Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraceptives was used. The Sexual/Contraceptive Behaviors Questionnaire assessed sexual experiences and use of contraception. (Out & Latreniere, 2001, p. 576). Out and Lafreniere (2001) constructed a single item measure to investigate attitudes and/or expectations regarding parenting: “Try to imagine waking up tomorrow morning to find out that you have suddenly become a parent. Identify ways in which your life might be the same or different” (Out & Lafreniere, 2001, p. 576).

Findings from the demographic information showed that 41.2% of the sample reported being sexually active. Of students who reported being sexually active, 83% experienced first intercourse before the age of 16 years. Nineteen percent who were
sexually active reported using contraception less than half the time. (Out & Lafreniere, 2001).

Other findings were reported based on an investigation of attitudes, behaviors, and knowledge related to contraception and fertility. Adolescents in the intervention group rated themselves as being significantly more susceptible to an unplanned pregnancy compared with adolescents in the comparison group. No significant differences were noted for the five other subscales. Adolescents in both groups who reported feeling more personally susceptible to an unplanned pregnancy, also reported having more favorable views regarding abstinence from premarital sex. Both groups of adolescents who reported feeling more personally susceptible to an unplanned pregnancy, also reported having more positive attitudes towards the use of contraception. (Out & Lafreniere, 2001).

Teens with positive views concerning abstinence tended to perceive fewer benefits associated with contraceptive use than did teens with more negative views. The intervention group indicated that teens who perceived there would be serious resolution consequences with an unplanned pregnancy also tended to hold more positive attitudes towards abstinence from premarital sex (Out & Lafreniere, 2001). Both intervention and comparison groups indicated that teens who perceived there were a number of barriers to effective contraception use also tended to hold more positive attitudes towards abstinence from premarital sex.

Responses for the single item measure were classified into four categories: child-rearing consequences, educational consequences, economic consequences, and social consequences. There were no significant differences between the intervention group and
comparison group regarding educational consequences, economic consequences, and social consequences. However, the intervention group produced significantly more examples of child-rearing consequences than did teens in the comparison group.

Out and Lafreniere (2001) determined that adolescents who participated in the BTIO experience were more likely to accurately assess personal risks for an unplanned pregnancy, as well as acknowledge that failure to use contraceptives during intercourse significantly increases the personal risk for becoming involved in an unplanned pregnancy. BTIO did produce more examples of child-rearing consequences for the intervention group, however there were no significant differences found between the comparison and intervention groups in terms of the number of educational, economic and social consequences of teen pregnancy. The effectiveness of BTIO, in conjunction with other lessons, could help to personalize both the short-term and long-term consequences of an unplanned pregnancy alone does not serve as a deterrent of actual desire to become pregnant or to avoid behaviors that could result in pregnancy.

Previous studies of the effectiveness of Baby Think It Over (BTIO) indicated that the simulation doll did not influence the intent of students to prevent pregnancy or demonstrate the difficulties of parenting. The North Carolina BTIO Project differs from other BTIO Projects in three ways: (a) a larger geographical study; (b) number of components studied; and (c) type of outcome measures analyzed (Tingle, 2002, p. 178).

The population included teachers, students and parents. Twenty-five teachers from 22 counties in North Carolina were randomly selected. A comparison group of 10 teachers implemented BTIO intervention. Students (n=431) completed pretest and posttest. The comparison group consisted of 186 students. Forty percent of parents
completed the survey (n=299 of 747). Seventy-six percent of the sample was mothers. Thirty-three percent graduated from high school, 16% did not graduate high school and 51% had some education beyond high school (Tingle, 2002, p. 181).

Sixty percent of teachers attended a BTIO training session and 32% were trained by someone else or were not trained. Each participating teacher completed a questionnaire assessing perceptions of the effectiveness of the BTIO program, type and quality of the programs implemented and demographic items (Tingle, 2002, p. 179). Eighty-eight percent of teachers returned surveys. Results indicated 91% were female teachers who taught Home Economics or Family and Life Science. Fifty-seven percent conducted BTIO intervention for 3 days; 24% less than 3 days; and 19% more than 3 days. Teachers spent an average of 7 hours discussing the BTIO program and related topics with students (Tingle, 2002, p. 182).

Student pre-test 1 consisted of a two-page questionnaire (19 Likert-type items) that measured teens’ beliefs regarding parenting, perceptions of becoming a parent, positive consequences and negative consequences of having a baby. Items included demographics, family communication, and assessment of intentions. Students completed a pre-test and post-test up to 6 weeks after the intervention. The comparison group completed pretest 1 and pretest 2. The surveys were administered twice before implementing the intervention one month between each administration (Tingle, 2002, p. 179).

The demographic characteristics of students revealed 61% (n=263) were White, 35 % (n= 149) Black, 2% Hispanic (n=11) and 2% Other (n= 11). Eighty-six percent of the sample was female. The average age of the sample was 15.5. Self-reported grades
indicated 40% (n= 172) had mostly A’s and B’s; 47% (n= 204) mostly B’s and C’s; 12% (n= 51) mostly C’s and D’s; and 1% (n= 3) mostly D’s and F’s. Sixty-nine percent (n= 295) of students indicated a desire to graduate from college; 9% (n= 40) attended college, but did not graduate in 4 years; 5% (n= 22) will attend trade school; 16% (n=70) will finish high school and get a job or join the military; and 1% (n=3) will not finish high school. Ninety-three percent (n= 399) of the students have never participated in a BTIO program. Seven percent (n= 29) indicated prior BTIO participation (Tingle, 2002, p. 179).

Eighty-eight percent of teachers returned surveys. Results indicated 91% were female teachers who taught Home Economics or Family and Life Science. Fifty-seven percent conducted BTIO intervention for 3 days; 24% less than 3 days; and 19% more than 3 days (Tingle, 2002, p. 182). Teachers spent an average of 7 hours discussing the BTIO program and related topics with students.

Teachers identified topics/activities discussed in the teen pregnancy program: economics of pregnancy (86%), abortion/ adoption (68%), sexual anatomy and physiology (82%), intimate relationships (73%), refusal skills (77%), puberty (50%), legal aspects of parenting (52%), contraception (64%), pregnancy (86%), parenting skills (86%), sexually transmitted diseases (77%), abstinence until marriage (91%), BTIO core program (96%), and effects of alcohol/drugs (96%). Teachers identified perceptions of effectiveness of BTIO at preventing pregnancy: 23% indicated “very effective;” 59% “somewhat effective;” and 18% “not sure.” Twenty-seven percent of teachers believed BTIO was “very effective” in changing high risk teens attitudes; 59% “somewhat effective,” and 14% “not sure or ineffective” (Tingle, 2002, p. 182).
Teachers remarked about the BTIO affect on initiating communication between parent and child. Fourteen percent indicated “very effective;” 45% “somewhat effective;” and 41% “not sure.” BTIO intervention did influence teachers’ communication with students. The specific topics included: dating (86%), contraception (75%), being a parent (76%), having sex (82%), effects of having a baby (100%), and abstinence until marriage (95%) (Tingle, 2002, p.182). Fifty-three percent of teachers indicated BTIO had no effect on daily school activities, 16% indicated program was disruptive and 31% reported a positive effect (Tingle, 2002, p. 182).

A parental questionnaire assessed the impact of the BTIO program on family functions and parents’ perceptions about the effectiveness of BTIO program. A questionnaire consisted of 12 closed-end items and demographic questions were sent home after the students participated in the intervention (Tingle, 2002).

Parents were asked to report the effect of BTIO on family activities: 39% reported no effect, and 30% reported positive effect. When questioned about the length of time for the program: 62% indicated “just the right number of days,” 24% stated “not enough,” and 14% indicated the time was “too long” (Tingle, 2002, p. 181).

The parent-child communication questionnaire was evaluated by parents. Seventy-one percent indicated increased communications about sexuality and parenting issues between parent and child. Parents were asked if “specific topics” were addressed: dating (68%), contraception (64%), being a parent (94%), having sex (86%), effects of having a baby (93%), and abstinence until marriage (76%). Seventy-four percent of parents believed BTIO had an effect on the child’s perceptions of parenting. Thirty-three percent indicated the child’s perceptions of parenting was having fun; 96% time
consuming; 91% expensive; 98% a lot of responsibility; and 24% easy. Sixty-six percent of parents believed having a baby would keep the child from graduating high school (Tingle, 2002, p. 182).

Eighty-two percent of parents saw or heard BTIO advertisements encouraging parent/child discussion regarding sex. Parents were asked when to initiate the BTIO program: 20% elementary school, 83% middle school and 97% high school. Ninety-two percent of parents would recommend BTIO program to a friend (Tingle, 2002, p. 182).

The findings revealed most parents and teachers believed the BTIO program effectively influenced issues of teen-age parenting. Student findings did not reveal similar results. The intervention provoked minimal change in student’s attitudes and beliefs about parenting. The North Carolina BTIO project showed minimal positive effect on student’s intent to prevent pregnancy (Tingle, 2002).

One goal of Healthy People 2010 is to reduce teen pregnancy rates by more than 50% during the next decade. The “In Your Care” Pregnancy Intervention program uses an infant simulator to provide students an opportunity to experience the responsibilities, demands, and frustrations of teen parenthood. The purpose of this study was to evaluate the personal impact the program had on students 2 and 3 years after the intervention (Didion & Gatzke, 2004).

Fifty 11th grade students from three rural Midwestern county high schools participated in a focus group and completed a survey. Respondents were age 16 or 17. Sixty-four percent of respondents were female. The students had participated in the “In Your Care” intervention as 8th or 9th grade students. Signed parental permission was required for participation (Didion & Gatzke, 2004).
The focus groups consisted of six or seven same gender participants that met during lunch period. Open-ended questions regarding: (a) the benefits of BTIO; (b) should the program continue; and (c) if so, how could the program be improved. Repetition of data among focus groups confirmed saturation (Didion & Gatzke, 2004).

The questions (number of items not indicated) assessed attitudes as well as actual and intended behaviors. Questions similar to the post-test used immediately after the intervention assessed: (a) attitudes about teen pregnancy; (b) the parenting experience; (c) sexual activity; and (d) risky behavior (Didion & Gatzke, 2004).

Focus group findings revealed BTIO influenced parenting realities such as sleep deprivation and loss of personal freedom. The BTIO experience stimulated feelings such as frustration and embarrassment. Findings revealed a negative impact on family relationships. One positive behavioral impact of BTIO was being “scared” of a pregnancy, resulting in greater cautiousness. The caregiver role expectation question revealed societal expectations of females’ responsibilities for abstinence, contraception and parenting is greater than for males (Didion & Gatzke, 2004).

All students in the focus groups unanimously supported the BTIO program. Suggestions for program enhancements included: lengthen the program, provide information regarding sexually transmitted diseases and contraception, as well as communication skills for intimate relationships (Didion & Gatzke, 2004).

The survey findings revealed that students had realistic attitudes towards parenting 2 years after the “In Your Care” experience. Students unanimously reported that caring for a baby requires most of the parent’s time. Girls thought caring for an infant took more hours than boys (p=0.001). Eighty percent of the participants believed
marriage was essential, or very important prior to having a child. Eight percent believed a baby would destroy family relationships, 74% thought it would be more difficult, 16% believed the baby could improve family relations, and 2% expressed no effect on family. Boys were significantly (p=0.014) more likely than girls to believe a baby would improve family relations (Didion & Gatzke, 2004).

When asked if a baby would affect goals and plans, 98% stated yes. Fifty-eight percent believed future plans would be difficult to accomplish or be postponed. Forty-two reported having a baby now would change future plans (Didion & Gatzke, 2004).

Gender did not influence perceptions of pregnancy risk and/or postponing pregnancy. When discussing decisions about engaging in sexual activity, 30% reported being sexually active, 32% undecided, and 38% were not sexually active. The risk of pregnancy reportedly would deter 54% from being sexually active, while 16% reported unprotected sex, and 48% postponed intercourse to prevent pregnancy. The rate of employed students that postponed sex to avoid pregnancy was significant (p= 0.036) (Didion & Gatzke, 2004).

A risk assessment was developed to determine if there was a correlation between risk taking behavior and sexual intercourse. The assessment inventory evaluated students’ risk-taking behaviors such as cigarette smoking, alcohol consumption, drinking and driving, physically harming another, self-harm, and using force to get something within the last 30 days. Students who reported sexual intercourse were significantly (p=0.007) more likely to participate in other risky behaviors such as: smoking, alcohol use, driving while drinking, self-harm, and using force (Didion & Gatzke, 2004).
Didion and Gatzke suggested that the BTIO experience is an effective learning tool. It allows students to experience the realities of parenting along with making complex decisions regarding the risks of sexual activity. The authors investigated the effect of infant simulators when used in conjunction with a competency-based curriculum on teenagers’ attitude toward parenting and sexual behavior (Roberts & McCowan, 2004).

The sample included 112 males and 124 females (n= 236) enrolled in grades 10, 11 or 12 at two suburban schools in western New York. The students ranged from 14 to 18 years of age. The sample was randomly assigned to an experimental group (n= 174) or control group (n= 62). Parental permission was required prior to beginning the program (Roberts & McCowan, 2004).

Roberts and McCowan developed the Infant Simulator Impact Scale (ISIS) to be administered as a pre-test and post-test. The instrument has 38 items, 15 demographic and informational items, and 23 attitudinal items. The attitudinal items were organized into responsible (8 questions regarding accountability, conscientiousness, and trustworthiness), social (8 questions concerning behavior and interaction within groups), and pragmatic (7 questions related to problem solving) scales. A 4-point Likert response format ranging from strongly agree (5) to strongly disagree (1) was used. Ten college facility members and high school health teachers reviewed the questionnaire to establish face and content validity of the instrument (Roberts & McCowan, 2004).

The experimental group participated in a 5-week curriculum on parenting/sexuality and cared for the Baby Think It Over simulator for 72 hours over a weekend. The control group viewed a videotape that demonstrated the proper way to
handle an infant. Students did not participate in the parenting curriculum. Both groups completed the ISIS pretest and posttest (Roberts & McCowan, 2004).

The student demographic characteristics of religion, gender, ethnicity, age, mother’s education and grade were reported. Religious orientation results indicated: Catholic 58.9% (n=139); Protestant 30.9% (n=73); Jewish 4.7% (n=11); and other 5.5% (n=13). There were 124 females (52.5%) and 112 males (47.5%). Most (84.3%) were white (n=199) with few reporting Black 6.8% (n=16), Hispanic 4.7% (n=11), and other 4.2% (n=10). Students reported ages as: 14 3.8% (n=9); 15 15.7% (n=37); 16 39.8% (n=94); 17 23.3% (n=55); and 18 17.4% (n=41). The majority (52.5%) of Mothers had a high school education (n=124), 10.6% (n=25) 2-years of college, 30.1% (n=71) 4-years college, and 6.8% (n=16) reported other. A majority of the students were in the 12th grade 48.3% (n=114), 11th grade 36% (n=85) and 10th grade 15.7% (n=37). Chi-square analysis was used to compare experimental and control groups on demographic characteristics and no significant differences were noted between groups (Roberts & McCowan, 2004).

The experimental and control groups differed significantly on the attitudinal items: responsibility, p<.0001; social, p<.0001; and pragmatic, p<.002. Higher scores were found in the experimental group. The BTIO computerized monitoring based on infant care (neglected, handled roughly, and shaken) was not significantly different between groups (p<.166) (Roberts & McCowan, 2004).

The authors concluded that when an infant simulator is combined with a well designed curriculum, students’ attitudes regarding parenting and sexuality can be
modified. The program better prepares teens to care for an infant and stated parenting is a skill that takes time and patience (Roberts & McCowan, 2004).

Cognitive development of an adolescent may be a factor in the risk taking behavior of unprotected sexual intercourse. To alter adolescents’ perceptions of the effort involved in caring for a baby and increasing awareness of intent to avoid pregnancy a Baby Think It Over (BTIO) intervention was carried out. As early as 1967, Elkind posited the importance of cognitive development in understanding adolescent risk-taking behavior, including pregnancy risks (as cited in de Anda, 2006).

The study was carried out in a Los Angeles County high school. The sample included students (n=353) from a predominately Latino community (92.9 % of students were Latino). Students enrolled in a health class (primarily 9th graders) and carried an infant doll for 24 hours a day for 2 ½ days. The BTIO-2 measure was completed by 108 students (94.4 %), age 14-15 (99.1 %), Latino (92.6 %). Carrying the infant simulation doll was part of a Baby Think It Over (BTIO) program that provided students with an understanding of the amount of time and effort involved in the care of an infant, and how the infants needs might affect daily lives and the lives of family and significant others (de Anda, 2006, p. 27).

The Baby Think It Over intervention has seven major objectives to raise awareness that: (a) caring for a baby affects academic and social life; (b) other family members are affected; (c) there are emotional risks for each parent; and (d) there are family and cultural values related to having a baby during adolescence. The other three objectives proposed an increase in the number planning to postpone parenthood: (a) until
a later age; (b) until education and career goals were met; and/or (c) until marriage (de Anda, 2006).

The two instruments used were BTIO-1 and BTIO-2. Using BTIO-1 as a pre-test, post-test measure and BTIO-2 as a post-test only evaluation measure used to obtain self-report data on the impact of the program. BTIO-1 measures four main program objectives with a 25-item, closed-ended instrument with a 4 point Likert-type scale, ranging from 4= strongly agree to 1= strongly disagree. A higher score indicates a higher level of agreement with the program objectives. Two separate scores for items related to understanding and dealing with a crying infant and related to overall infant care. Internal consistency was reported as .84 (α=.84) (de Anda, 2006).

To address the three objectives concerning postponement of parenthood students were asked two questions. The first was: “When would you like to have children?” with a response of: (1) never, (2) right now, (3) when I finish junior high school, (4) when I’m in high school, or (5) after I graduate from high school. The second question was: “What would you like to do before having a baby?” with a response of: (1) have a good paying job; (2) go to college; (3) graduate from a junior college; (4) graduate from a four-year college; (5) go to a trade or technical school; (6) get married; (7) have a career; or (8) “other” write-in responses (de Anda, 2006, p. 30).

BTIO-2 is a self-report instrument that measures if the BTIO program: (a) changed what participants thought it would be like to have a baby; (b) when teens would like to have a baby in terms of age and educational and career achievements; (c) beliefs regarding the use of birth control or protection; and (d) how much time and work are involved in taking care of a baby. Perceptions before and after carrying the BTIO doll
were measured on a Likert-type scale for use of birth control or protection, amount of effort involved in caring for a baby, and the interference of infant caregiving with educational goals, career goals, and social life (de Andra, 2006).

Findings from the BTIO-1 instrument were that there was a greater recognition of the impact of caring for a baby on: academic and social life; the effect of adolescent parenthood on other family members; and the emotional risks accompanying adolescent parenthood. There was no recognition of cultural and family values. The experience of carrying the BTIO doll was reflected in the individual items: 92.6 % (n=327) disagreed or strongly disagreed that it was easy to ignore a "fussy, crying baby;” 86.1 % (n=304) disagreed or strongly disagreed that babies would not cry if loved, and loved the parent in return; 85.3 % (n= 301) did not view a baby who “cries a lot” as “spoiled;” 65.7 % (n=232) did not attribute the crying to insufficient care by parents; and 94.6 % (n= 334) was crying as a form of communication (de Andra, 2006).

There was a significant statistical difference in the responses to the three questions regarding the participants’ views of overall care for an infant. Students acknowledged an increase in the recognition of substantial time and effort involved in caring for an infant. Females demonstrated greater gains in objective 1 academic, and social life \[ F (1, 352) = 4.411, p< .05 \], objective 3, emotional risks \[ F (1, 352) = 10.619, p < .001 \], and crying \[ F(1, 352) = 9.290, p < .01 \] (de Andra, 2006, p. 30).

Objective 5 focused on the length of time the adolescent planned to postpone parenthood. There was a 1.4 % increase in the number of students intending to wait until after graduating from high school. There was a dramatic decrease, from 8.7 % to 1.5 %, of students who wanted children before graduating from high school. The percent of
students that never wanted children increased from 15.9 % to 23.8%. Objective 6 was to investigate postponing pregnancy to achieve academic and career goals was met with a statistically significant increase (de Andra, 2006, p. 31).

The BTIO-2 measures “Before BTIO” and “after BTIO” and the post test was used to document changes in the students’ perceptions of thoughts, desires, or behaviors. The BTIO experience changed the desired age to have a child from 23 to 25 years. When asked if the BTIO experience influenced the decision of what age to have a baby, 58.3 % responded “yes.” BTIO-2 respondents wanted to complete college and have a career/job before becoming parents (72.2 % increased to 77.8 %). The question about “having a baby would interfere with education” (increase from 65.7 % to 83.3 %); getting a good job/career (increase from 54.6 % to 77.8 %); and social life (increase from 58.3 % to 73.1 %). Fifty-six percent of respondents indicated that BTIO changed perceptions of what having a baby would be like. Fifty-eight percent indicated BTIO helped to change students minds about using birth control or protection to prevent unwanted pregnancies (de Andra, 2006, p. 32).

The author concluded that of the Baby Think It Over intervention program was useful. The BTIO -1 provided information about: the impact of caring for a baby on academic and social life; the effect of adolescent parenthood on other family members; and the increase in the recognition of emotional risks accompanying adolescents. Students became more aware of the impact that having a baby can have on life and family. The BTIO should be used to decrease pregnancy rate as it was effective.

The educational value of Baby-Think-It-Over (BTIO) infant simulators should be considered to educate teens about responsibility of pregnancy. Two versions of sexuality
education programs were compared, 1 group used BTIO and the other group was an abstinence-only program. The Life’s Walk curriculum was the framework. The purpose of this study was to compare pregnancy outcomes following two different programs (Barnett, 2006).

Students enrolled in private and public schools during the 2001-2002 school year in rural Northwest Missouri participated in the study. The population included 10th grade students (n=98) enrolled in state mandated Health Education class. Forty-nine students (33 male and 16 female) did not use infant simulators. Forty-nine students (23 male and 26 female) did use BTIO. Parental permission was required for participants in the sexuality education unit and its evaluation (Barnett, 2006, p. 106).

A private organization developed the Life’s Walk curriculum. Each school was provided an education curriculum that included videos, BTIO simulators, descriptions of classroom activities and assignments, and teacher training on sex education. The abstinence-only program lasted 13 class periods.

The same survey was administered as a pretest on the first day of the program and as a posttest given on the last day. The survey measured parent-adolescent communication, attitudes toward teen sex, knowledge about sexuality and sexual behavior (Barnett, 2006, p. 105). Twelve items on the inventory measured parent-adolescent communication. Items were rated on a scale of 1 to 4, high scores implied good communication. Alpha was calculated at .92. The second scale on the inventory had 12 questions that measured attitudes toward sexuality. A respondent set of 1 to 4 was used for ratings, a low score implied conservative sexual attitudes. An alpha .94 was calculated.
Student knowledge about sex was measured with 15 items: eight true-false, six multiple choice, and one item students defined abstinence. Alpha reliability was .70. Eleven items surveyed student’s involvement in specific sexual behavior. Behaviors ranged from kissing to sexual intercourse. A scale of 1 (never) to 5 (10 times or more) was used. Alpha was .92 (Barnett, 2002, p. 106).

The results indicated no significant differences between the two groups on any of the four measures. The pretest scores comparing With BTIO and Without BTIO were equal. The four comparisons failed to reach significance: communication p=.65, attitudes p=.38, knowledge p=.15 and sexual behavior p=.23 (Barnett, 2006, p. 107). The analysis of parent-adolescent communication found no significance differences. The main effect for the program was not significant (p=.60). Changes between pretest and posttest scores was not significant (p=.86). Time interaction of program was not significant (p=.94).

Attitudes toward teen sex indicated no significant differences between groups: program differences (p=.27), time effects (p=.22), and time interaction by group (p=.81). There was a significant increase in knowledge from the pretest to posttest (p=.009). There was no significant difference in program (p=.87), or time interaction (p=.068). The sexual behavior scale indicated no significant difference between the two programs (p=.22), time effort (p=.22), and time interaction (p=.70) (Barnett, 2006, p. 108).

The results failed to find evidence of the benefits of the BTIO program. It is important to determine efficacy of the BTIO program before schools invest in the infant simulator. Barnett concluded that adolescent thinking is not impacted by infant simulation alone.
Summary

A national survey of adolescents indicated that contraceptive use among sexually active adolescents has increased. Programs need to encourage contraceptive use among teenagers who do not use it and to stress consistent and correct use among those who do (Santelli et al., 2006).

Infant simulators provide adolescents with a realistic experience of the requirements and responsibilities of caring for an infant. The BTIO experience helped students recognize the difficulty of caring for an infant and the importance of delaying parenthood (Barnett & Hurst, 2004). Understanding adolescents’ attitude toward and motivation for pregnancy may aid in efforts to educate adolescents regarding the realities of teen pregnancy/parenting and reduce the negative health consequences of teenage childbearing in the United States (Rosengard et al., 2006). Pregnancy prevention measures should help teens develop goals along with experiences that foster understanding that early childbearing can be a threat to achieving goals (Jumping-Eagle et al., 2008). Parents perceived the BTIO program had a positive effect on family activities, increased awareness of the responsibilities of caring for an infant, and would recommend the program to a friend (Price et al., 2000).

Students who experienced the BTIO program along with a comparable group of teens not experiencing the program, were not different in outcomes (Somers & Fahlman, 2001). Teens that engaged in the BTIO program were more likely to produce concrete examples of activities and consequences related to child-rearing than were teens that were not (Out & Lafreniere, 2001). The evaluation of the BTIO project in North Carolina revealed that parent and teacher respondents supported the use of an infant simulator.
However, there was not a change in the students’ attitude and beliefs about parenting after the intervention (Tingle, 2002). Students believed the consequences of pregnancy and teen parenthood to be negative. Adolescents reported intention to delay pregnancy (Didion & Gatzke, 2004).

The infant simulator is an effective tool for teaching childcare skills. When combined with a curriculum program, such as BTIO, the likelihood that student attitudes toward sexuality/parenting issues can be significantly modified (Roberts & McCowan, 2004). The BTIO program had a significant impact on academics, social life, and the amount of responsibility involved in caring for an infant (de Anda, 2006). When comparing sexuality education programs— one with and one without an infant simulator there were no differences found between the two versions of the sex education program (Barnett, 2006).
Chapter III
Methodology

Adolescents underestimate the care required for a baby and participate in risky sexual behaviors (de Andra, 2006). Caring for a simulation doll (BTIO) may give the adolescent a more realistic view of the responsibilities of parenting infants during high school, thereby decreasing the chance of an unwanted pregnancy. This is a partial replication of de Andra’s (2006) study. This chapter contains a description of the methods and procedures for this study.

The purpose of this study is to determine if adolescents’ perceptions of the effort involved in caring for a baby and increasing intent to avoid pregnancy before and after the Baby Think It Over (BTIO) simulation doll intervention. Experience with the BTIO simulation doll many increase awareness of the responsibilities and stress of caring for an infant. The variables include: adolescent’s academic and social life, affect on other family members, emotional risks, impact on family and cultural values, and how long students propose to postpone pregnancy.

Research Questions

1. What is the impact of BTIO on academic and social life?
2. What is the impact of BTIO on emotional risks and cultural values?
3. What is the impact of BTIO on other family members?
4. Will teens who participate in BTIO attempt to postpone pregnancy until a later age?

Population, Sample and Setting

The population for this study will include all 10th grade students in one of two Muncie Community High Schools (n=600). The anticipated sample size is 150 high school students who are enrolled in the required Health Class that incorporates BTIO as part of the curriculum. Muncie Community schools are located in the central region of urban Delaware County in Central Indiana. The current ethnic makeup of the schools include 73% White, 21% African American, 2% Asian, 2% Hispanic and 2% Multiracial (Muncie Community Schools, 2010). Criteria for inclusion in the study are 10th grade students at a Muncie community school and enrolled in the state required health class. The exclusion criteria includes: present pregnancy, past personal experience with teen pregnancy, family experience with teen pregnancy or lack of parental permission.

Protection of Human Subjects

Prior to the initiation of this study, permission will be obtained from Ball State University’s Institutional Review Board (IRB). In addition, separate permission from each of the following will be obtained: the School Board members of Muncie Community Schools, Muncie Community High School Principals. Teachers of the 10th grade students will be informed of the study. Parents and students will receive a letter explaining the program and the study, including the students responsibilities for the infant simulator during the 72 hour period. Parents may withdraw the student from the study at any time. Students and parents will be informed that lack of participation will not jeopardize the academic grade for the health class. There are no identifiable risks to the
participants of this study. Benefits include gaining a better understanding of the physical, emotional, psychological, social and financial stressors of caring for an infant.

*Procedures*

After approval of the study the researcher will meet with the Principle of each school to explain the research project. Next, the researcher will meet with the health teacher and school nurse to describe the research study and to instruct how the BTIO infant simulator works. The health teacher and school nurse will be resource contacts if the students have questions or develop problems with the BTIO doll during the intervention. The researcher will attend the required health class to describe the BTIO program to the students. After the researcher reviews parental consents and students agree to participate in the study a schedule will be arranged assigning all interested students a 72 hours BTIO experience. Any questions regarding the BTIO project will be directed to the researcher. Students that agree to participate in the study (with parental permission) will care for a BTIO simulation doll over the weekend for a 72 hour period.

*The BTIO Program*

The simulation doll requires unpredictable needs similar to a live infant. Care requirements include feeding, burping, rocking and diaper changing. The simulation doll will cry at random intervals, for varying lengths of time. The infant simulator’s cry will increase in intensity and volume if the infant is not attended to. The student must determine what type of care the infant needs. Each student will have a key attached to the wrist which will allow a quick response to the infants needs. The key will be removed at the end of 3 days. The attachment of the key to the wrist insures that the student is the one providing the infant care. The doll also requires proper head support, positioning,
and constant attention. Rough handling of the doll will be detected by an internal microcontroller.

Research Design and Measure

The design will be a one-group pretest-posttest quasi-experimental design. The purpose of a quasi-experimental design is to provide alternative means for examining causality in situations not conducive to experimental controls (Burns & Grove, 2009). Burns and Grove described a one-group pretest-posttest design. A (BTIO-1) pretest is the measurement of dependent variable(s), treatment the manipulation of independent variables, and posttest the measurement of dependent variables (Burns & Grove, 2009). A posttest-only evaluation measure (BTIO-2) will be used obtain information of the impact of the program.

Instrumentation, reliability and validity

The BTIO-1 Tool is a 25-item, closed-ended instrument with a 4 point Likert scale, ranging from 1 = strongly disagree to 4 = strongly agree. This instrument focuses on academic and social impact; impact on family members, emotional risks, and family and cultural values. Higher scores indicate a higher level of agreement consonant with the program objectives and greater accuracy in evaluation of the statements (deAnda, 2006).

BTIO-1 has two questions concerning postponement of parenthood. The first question was “when they would like to have children?” (1) never, (2) right now, (3) when I finish high school, (4) after I graduate from high school. The second question was “What would like to have before having a baby?” (1) a good paying job, (2) go to college, (3) graduate from a junior college, (4) graduate from a 4-year college, (5) go to a trade or technical school, (6) get married, (7) have a career, and (8) “other” write in
responses (DeAnda, 2006, p.30). Internal consistency was demonstrated with $\alpha = .84$. Validity will be increased by having participants use own controls through pretest-posttest comparisons.

BTIO-2 is a self-report measure, that measures if the BTIO experience altered what participants thought it would be like to care for a baby: what age, educational and career achievement would like to have prior to a baby; beliefs regarding the use of birth control and protection; and how much time and work are involved in taking care of a baby (Realityworks, 2007).

**Measure of Data Analysis**

Paired $t$-tests will be performed on the summated BTIO-1 and BTIO-2 scores. Scores will be summated for two groups: the first four objectives and the scores for crying and overall care. The pretest is used as the covariate. The $t$-test is one of the most common parametric analyses used to test for significant differences between statistical measures of two samples (Burns & Groves, 2009). Chi-square analysis will be performed on nominal data such as gender, for the objectives on postponing pregnancy and parenthood. Chi-square is designed to test for differences in frequencies of observed data and compare them with the frequencies that could be expected to occur if the data categories were actually independent of each other (Burns & Grove, 2009).

**Summary**

The purpose of the study is to determine if adolescents’ perceptions of the effort involved in caring for a baby and increasing intent to avoid pregnancy before and after the Baby Think It Over (BTIO) simulation doll intervention. It is a replication of a quasi-experimental study by de Anda (2006). An anticipated sample of 150, 10th grade
student enrolled in a state mandated heath class at Muncie Community Schools will be enrolled in the study. Participants will complete the BTIO-1 and BTIO-2 instruments. Data will be analyzed using Chi-square analysis.
References


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<td>Santelli, Morrow, Anderson, &amp; Lindberg (2006). Contraception use and pregnancy risk among U.S. high school students, 1991-2003.</td>
<td>Contraceptive use is important to prevent pregnancy. Less attention has been given to the trends in teenagers’ contraceptive use than to the adolescent sexual intercourse.</td>
<td>To examine data from the national Youth Risk Behavior Survey (YRBS) to determine sexually active high school students’ use of contraceptives and risk of pregnancy.</td>
<td>Pregnancy Risk Index (Santelli, 2004).</td>
<td>Caucasian, African American and Hispanic adolescents in grades 9-12 in both private and public schools in the U.S.</td>
<td>Trend Design/ descriptive</td>
<td>Data from the national Youth Risk Behavior Survey (YRBS). The pregnancy risk index measures overall pregnancy risks. The index was calculated for each survey year by summing the product of each method-specific failure rate and the proportion of women using the method. YRBS included 10 items for each for males and females.</td>
<td>Between 1991-2001 contraceptive use improved and the risk of pregnancy among sexually active high school women declined by 21%. Improving contraceptive practice among teenagers is needed.</td>
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<td>Barnett &amp; Hurst (2004). Do adolescents take “baby think it over” seriously?</td>
<td>A public goal is to convince adolescents to postpone sexual activity or if sexually active become more responsible preventing pregnancy. BTIO program is one approach.</td>
<td>To evaluate whether adolescents take baby think it over (BTIO) seriously, and to determine if BTIO helps adolescents develop a more realistic view of parenting</td>
<td>Life’s Walk curriculum &amp; BTIO Program.</td>
<td>277 eighth grade students from 20 rural schools in Northwest Missouri.</td>
<td>Posttest-only Descriptive Design</td>
<td>BTIO student survey administered at the end of the program specifically targeted student’s reaction to BTIO experience and the impact of future decision making. BTIO technical readout recorded number of times the BTIO was neglected, handled roughly, and amount of time BTIO cried.</td>
<td>The BTIO experience demonstrated the demands and responsibilities of caring for an infant. Females reacted more favorably to the experience. The impact was greater on 8th grade students.</td>
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<td>Rosengard, Pollack, Weitsen, Meers, &amp; Phipps (2006). Concepts of the advantages and disadvantaged of teenage childbearing among pregnancy adolescents: A qualitative analysis.</td>
<td>Lack of understanding how pregnant adolescents perceive positive and negative effects of teen pregnancy and childbirth.</td>
<td>To gain understanding of pregnant adolescents’ ideas of the advantage and disadvantage of teen pregnancy and childbearing.</td>
<td>Pregnancy Risk Assessment Monitoring System (PRAMS) (CDC, 1997),</td>
<td>247 pregnant adolescents first prenatal visit to a women’s primary care clinic in Providence, Rhode Island.</td>
<td>Descriptive Design</td>
<td>Open-ended questions assessing ideas about advantageous and disadvantageous about having an infant during teen years rather than waiting until older.</td>
<td>Themes related to advantages of teen pregnancy: enhancing connections, positive changes/benefits, and practical considerations. Themes related to: disadvantaged included lack of preparedness, changes/interference, and others’ perceptions. Differences in how pregnancy and childbearing are conceptualized along with developmental, cultural, attitudinal, and experiential lines will strengthen ability to tailor pregnancy-prevention messages.</td>
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<td>Jumping-Eagle, Sheeder, Kelly, &amp; Stevens-Smith (2008). Conventional goals, perceptions of pregnancy, pregnancy avoidance behavior and attitudes.</td>
<td>Teenagers have many expectations of the future and develop goals to reach future plans. There is a lack of knowledge about teens’ beliefs.</td>
<td>To determine if conventional goals are related to pregnancy avoidance attitudes and behaviors among teenaged women, and relationship of belief to goals be an impediment to reaching goals.</td>
<td>Concept: Conventional goals motivate teens to prevent pregnancy.</td>
<td>351 sexually active females younger than age 20, from three urban adolescent health clinics in the Southwest.</td>
<td>Descriptive Design</td>
<td>15-item questionnaire addressed goal status, pregnancy avoidance measures, and social/demographic characteristics.</td>
<td>Teenagers’ educational and behavioral plans do not influence sexual behavior that could result in pregnancy.</td>
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<td>Price, Robinson, Thompson, &amp; Schmalzried (2000). Rural parents' perceptions of the Baby Think It Over Program- A pilot study.</td>
<td>When parent-child communications regarding sexual standards are absent in the home, adolescent peer norms may become the sexual standards for teens. Need to understand parent-teen communications.</td>
<td>To examine the relationship between parent-teen communications while the teen participated in the Baby Think It Over (BTIO) program.</td>
<td>BTIO Program; Jurmaine, 1994).</td>
<td>120 parents of students who participated in the BTIO program.</td>
<td>Descriptive Design</td>
<td>14- Item survey developed based on the BTIO program. Section one assessed parents’ perceptions of program on family activities, child, parent-child communications, and technical aspects of the BTIO program. Section two asked demographic questions regarding family relationship, age, race/ethnicity, education level, and number of children in the household.</td>
<td>The results indicated that an equal amount of parents felt the BTIO had a positive effect and a disruptive effect. The BTIO experience increased parent-child communication. 90% of parents would recommend the BTIO experience.</td>
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<td>Somers &amp; Fahlman (2001).</td>
<td>Teen attitudes need to be examined in regard to BTIO knowledge and attitude.</td>
<td>To determine the effectiveness of the Baby Think It Over (BTIO) program in regards to changes in participants’ attitudes towards parenting, attitude regarding sexual and contraceptive behavior. To communicate with teens about perceptions of BTIO in regards to utility and impact.</td>
<td>Concepts: Pregnancy (BTIO; Jurmaine, 1994).</td>
<td>213 high school students from suburban areas of a large Midwestern city. The students were primarily Caucasian, middle class with a mean age of 16.2. The groups included a control and experimental group.</td>
<td>Quasi-Experimental Design (Pretest and Posttest).</td>
<td>Questionnaires created for this research, SKAT-A (Sex Knowledge and Attitude Test for Adolescents), Narrative posttest (Leif, Fullard and Devlin, 1990).</td>
<td>SKAT-A: No significant difference between adolescents who experienced BTIO and who did not experience BTIO.</td>
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<td>Out &amp; Lafreniere</td>
<td>Despite efforts to reduce pregnancy the rate of teen pregnancy in Canada has been rising. Teens may not know risk factors. An intervention may improve pregnancy rate</td>
<td>To examine an intervention aimed at encouraging the adolescent to acknowledge personal risk for involvement in an unplanned pregnancy, as well as prompting to consider types of commitments involved in adolescent parenting.</td>
<td>Health Belief Model- Perceived susceptibility and perceived severity (Rosenstock, 1974).</td>
<td>114 11th grade students (23 males, 90 females) age range 14-19 years divided into intervention (session 1-carried BTIO) and comparison (session 2) did not carry BTIO groups.</td>
<td>Quasi-Experimental Design (Pretest and Posttest).</td>
<td>Health Belief Model Approach to Adolescents’ Fertility Control (Eisen, Zellman, &amp; McAlister, 1992). Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraception (Saltz et.al 1994). Sexual/Contraceptive Behaviors Questionnaire (Johnson &amp; Green, 1993). Single item question: “Try to imagine waking up tomorrow morning to find out that you have suddenly become a parent. Identify ways in which your life might be the same or different.”</td>
<td>Health Belief Model Approach to Adolescents’ Fertility Control: Sessions 1 and 2 reported negative association between benefits of contraception use and attitudes toward abstinence. Attitudes Concerning Abstinence from Premarital Sex and Toward the Use of Contraception: Session 1 BTIO- positive relationship between perceptions of severity of consequences of unplanned teen pregnancy and attitudes toward abstinence. Sexual/Contraceptive Behaviors Questionnaire: Both Session 1 and 2 negative association between perceptions of the presence of barriers to effective contraception use and attitudes toward abstinence.</td>
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<td>Tingle (2002). Evaluation of the North Carolina “baby think it over” project.</td>
<td>Previous studies of the effectiveness of Baby Think It Over (BTIO) indicated that the simulation doll did not influence the intent of students to prevent pregnancy or demonstrate the difficulties of parenting.</td>
<td>To evaluate (a) larger geographical study, (b) number of components studied, and (c) type of outcome measures analyzed.</td>
<td>BTIO Program; Jurmaine, 1994.</td>
<td>25 teachers from 222 counties in North Carolina. 431 students-average age 15. 5. 299 parents returned surveys.</td>
<td>Quasi-Experimental Design (Pretest and Post test). Descriptive Design.</td>
<td>Teacher questionnaire assessing perceptions of the effectiveness of the BTIO program. Student pre-test 1 questionnaire measured teens’ beliefs regarding parenting, perception of becoming a parent, positive and negative consequences of having a baby. Parent questionnaire assessed the impact of the BTIO program on family functions and perceptions about the effectiveness of the BTIO program.</td>
<td>Single item question: Session 1 and 2 classified categories: child-rearing consequences; educational consequences; economic questions; and social consequences. Intervention group were more likely to accurately assess personal risk for unplanned pregnancy than comparison groups. Most parents and teachers believed that BTIO program effectively influenced issues of teen-age parenting. Student findings did not reveal similar results. The intervention provoked minimal change in students’ attitudes and beliefs about parenting.</td>
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<td>Didion &amp; Gatzke (2004). The Baby Think it Over experience to prevent teen pregnancy: A post intervention evaluation.</td>
<td>Reduce teen’s increased pregnancy rate. A program may impact attitudes and behaviors.</td>
<td>To evaluate the personal impact the program had on students 2 and 3 years after the BTIO intervention.</td>
<td>“In Your Care” Pregnancy Intervention program.</td>
<td>50 11th grade students, age 16 &amp; 16, from three rural Midwestern county high schools.</td>
<td>Descriptive Longitudinal</td>
<td>Student survey similar to the original posttest evaluation assessed attitudes and behaviors, both actual and intended. Focus groups gathered information regarding benefits of program and recommendations regarding continuation and improvement of the program. Risk assessment developed to determine correlation between risk taking behaviors and sexual intercourse.</td>
<td>The BTIO experience of parenting realities, feelings, family relationships, behavioral impact, and caregiver role expectations is effective in realities of parenting along with the complex decisions regarding the risks of sexual activity.</td>
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<td>Roberts &amp; McCowan (2004). The effectiveness of infant simulators.</td>
<td>The use of infant simulators to help teenagers experience the responsibilities of parenthood is limited in American public schools.</td>
<td>To investigate the effect of infant simulators when used in conjunction with competency-based curriculum, on teenagers’ attitudes toward parenting and sexual behaviors.</td>
<td>Infant Simulator Impact (ISIS).</td>
<td>Two groups of 236 students enrolled in 10th, 11th or 12th grade at two suburban schools in western New York.</td>
<td>Quasi-Experimental Design (Pretest and Post test).</td>
<td>An Infant Simulator Impact Scale (ISIS) developed (Roberts &amp; McCowan, 2000).</td>
<td>When an infant simulator is combined with a well designed curriculum students attitudes regarding parenting and sexuality can be modified.</td>
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<td>deAnda (2006)</td>
<td>As pregnancy rates are slowly declining among African American and White adolescents-Latino adolescents have the highest pregnancy rate. Teenagers don’t have experience with caring for infants. This experience with Baby Think It Over (BTIO) simulation doll may increase awareness of the responsibility. Cognitive development of an adolescent may be related to the risk taking of unprotected sexual intercourse.</td>
<td>To alter adolescents’ perception of the effort involved in caring for a baby increasing intent to avoid pregnancy be using the Baby Think It Over (BTIO) simulation doll. The variables include: adolescent’s academic and social life, affect on other family members, emotional risks, impact on family and cultural values, and how long students propose to postpone pregnancy.</td>
<td>Concept: risk taking of unprotected sexual activity related to cognitive development (Elkind, 1967).</td>
<td>353 Latino students 9th grade from a Los Angeles county high school: 140 male participants and 204 female participants.</td>
<td>Repeated-measures-BTIO-1 (pretest and post test) BTIO-2 (post test only).</td>
<td>BTIO-1 (pretest-posttest), BTIO-2- post hoc.</td>
<td>BTIO-1 (pretest-posttest): greater recognition of: the impact of caring for a baby on academic and social life; the effect of adolescent parenthood on other family members; increase in the recognition of emotional risks accompanying adolescent. There was not recognition of cultural and family values on adolescent parenthood. BTIO-2: carrying the BTIO doll delayed the desired age to have children; increased the desire to complete college and have a job/career before parenthood; caring for a baby is harder than previously thought.</td>
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<td>Barnett (2006). Evaluating “baby think it over” infant simulators: A comparison group study.</td>
<td>The educational value of Baby Think It over (BTIO) infant simulators should be tested to educate teens about teen pregnancy.</td>
<td>To compare pregnancy outcomes following two different programs.</td>
<td>Life’s Walk Curriculum &amp; BTIO Program; (Jurmaine, 1994).</td>
<td>98 10th grade students enrolled in private and public schools in rural Northwest Missouri.</td>
<td>Quasi-Experimental Design (Pretest and Post test).</td>
<td>12-item parent-adolescent communication inventory survey. 12-item questionnaire to measure attitudes toward teenage sexuality. 15-item questionnaire measured student knowledge about sex. 11-item survey regarding in students involvement in specific sexual behaviors.</td>
<td>This study failed to find evidence of the benefits of the BTIO program. There was no significant differences related to the educational value of BTIO between groups.</td>
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