

DO ADOLESCENTS TAKE "BABY THINK IT OVER" SERIOUSLY?

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ABSTRACT

Infant simulators are a popular means for providing a realistic experience of caring for an infant and are often used as a supplement in sexuality education programs. The goal of this activity is to help adolescents realize the enormous responsibility that raising a child entails and to motivate them to avoid risking pregnancy. The little research conducted to date on the effectiveness of infant simulators has yielded mixed results. The present study compared the reactions of 8th- and 10th-grade males and females at the end of their experience with infant simulators. Data were collected via student surveys and technical readouts from the simulators. Overall, the findings support the use of infant simulators, with the impact being greater for females and the younger group (8th graders). Data from the simulators were consistent with the self-reports. These promising results support the continued use of infant simulators, but further research with stronger experimental designs and long-term follow-up is needed.

Convincing adolescents to postpone sexual activity, or to become more responsible if they become sexually active, has long been a goal of public health efforts, and for good reason. Approximately 40% of all females will experience at least one pregnancy before the age of twenty (Kirby, 2001). About 25% of the twelve million new cases of sexually transmitted diseases in the United States each year occur among teenagers (Carter-Jessop, Franklin, Heath, Jimenez-Trizary, & Peace, 2000). Teen motherhood has been linked to a host of problems for the mother (such as increased probability of dropping out of school and/or living in poverty) and for the child (low birth weight and increased likelihood of being abused) (Card, 1999).

A variety of approaches to the prevention of teen pregnancies and sexually transmitted diseases have been attempted. These range from programs that focus directly on sexual behavior to those that foster career plans and life skills. Some programs promote abstinence, while

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others promote condom use. Some offer brief, stand-alone curricula, while others are integrated into health and biology classes. Literature reviews provide clear evidence that almost all programs increase student knowledge about reproduction (Kirby, 1997, 2000; Kirby et al., 1994; Card, 1999). Unfortunately, knowledge alone does not change adolescent sexual behavior (Kirby, 2000).

The political debate currently raging in regard to sexuality education centers on the teaching of morality; specifically, whether programs should have an abstinence-only philosophy. There is an important issue that is missing in this contentious debate: how adolescents think.

In Inhelder and Piaget's (1958) theory of cognitive development, individuals are hypothesized to experience qualitative changes in thinking at different stages of life. Thus, children and early adolescents may not think about sexual activity, pregnancy, and child rearing the same way adults do. Extending Inhelder and Piaget's work, Elkind (1981) described early adolescents as egocentric, with their reasoning and decision-making clouded by an imaginary audience (one that thinks much like the adolescent and observes everything the adolescent does) and a personal fable (the belief in a unique destiny that is linked to "it can't happen to me" thinking). One failing of most sexuality education programs is that they do not address adolescents' cognitive development (Gordon, 1990).

Early adolescents believe they are unlikely to become pregnant and underestimate the negative consequences that would follow if they did become pregnant (Henderson, 1980). They also underestimate the difficulty involved in caring for a child, believing they could be perfect parents and still continue to lead a normal teenage life (Holden, Nelson, Valasquez, & Ritchie, 1993). In an attempt to address these errors, Salz, Perry, and Cabral (1994) had adolescents role-play teenagers who became pregnant. Two interesting outcomes were observed. First, the role-playing did help adolescents see the negative side of pregnancy and increased their endorsement of abstinence until marriage (relative to a no role-playing control group). However, the second observation was that the role-playing focused on the adolescents finding out they were pregnant or telling their partner or their parents they were pregnant. None of the scenarios they constructed involved childbirth, bringing a child home from the hospital, or taking responsibility for a child. This seems to reinforce the notion that early adolescents think differently from adults.

Attempts have been made to simulate the experience of caring for an infant. Schools have required students to carry eggs in a basket or sacks of flour as "babies" to help students understand, in some small

way, the investment of time and energy required to be a parent. Modern technology has improved upon these methods. Infant simulators, such as "Baby Think It Over" (BTIO), are constructed to be the size, weight, and appearance of real infants. The computerized simulators mimic the unpredictable nature of infant behavior (especially crying) and require the adolescents to care for them (by inserting a key). They cry at random intervals, for varying lengths of time, and even differ in their temperament (how often and how long they cry). They can appear to be male or female, and vary in skin color. BTIO comes equipped with a microprocessor that records information such as the amount of crying and if the simulators were handled roughly.

BTIO has been found to be popular with health teachers (Kralewski & Stevens-Simon, 2000) and the parents of students who participated in the experience (Price, Robinson, Thompson, & Schmalzried, 1999). However, Kralewski and Stevens-Simon's (2000) survey of 6th and 8th graders participating in a BTIO program found that adolescents continued to overlook the negative aspects of parenting (late-night feedings, for example).

Strachan and Gorey (1997) randomly assigned at-risk students from impoverished neighborhoods to a 3-day BTIO experience or to a no-BTIO control group. The two groups did not differ significantly on a 10-item self-report measure of attitudes toward parenting administered shortly after the experience. There were significant differences on some individual items, suggesting that the BTIO group had more realistic expectations of parenting than the control group, but, overall, no significant differences were found.

Another study involving BTIO examined a group of mostly middle class, white high school students who "parented" the infant simulator for three days over a weekend (Somers & Fahlman, 2001). Posttests were completed 10 to 12 weeks after the experimental group had experienced BTIO. Relative to a no-BTIO comparison group, no differences were found on a variety of measures, including assessments of sexual behavior and attitudes toward parenting.

Divine and Cobbs (2001) compared students who had experience with infant simulators to students with a similar health education background but no simulator experience. In follow-ups one and two years later, students with simulator experience knew more about infant care and judged infant care more difficult and time-consuming than did comparison students. The infant simulators helped students to think about possible implications before engaging in sexual intercourse. There were no differences between the two groups on issues surrounding sexual behavior.

Out and Lafreniere (2001) found a significant difference between a BTIO group and a no-BTIO control group in perception of personal risk for an unplanned pregnancy. However, no differences were found in these 11th-grade students on several other outcomes, including attitudes toward abstinence and use of contraception, and listing the educational, economic, and social consequences of teen pregnancy.

A comprehensive evaluation of BTIO was reported by Tingle (2002), based upon a number of programs in North Carolina. Similar to the studies by Kralewski and Stevens-Simon (2000) and Price et al. (1999), BTIO consistently received high ratings from adults (parents and teachers) involved in these projects. However, Tingle found little evidence to support BTIO when students were assessed. Reported changes were relatively small and just as likely to be negative as positive.

This mixed pattern of results is troubling. On the one hand, any activity that fosters a more realistic, less glamorized view of parenting and alters adolescent thinking and increases responsibility has great potential benefits. On the other hand, BTIO is expensive (each infant simulator costs from \$250 to \$350) and its impact on teenagers' behavior has yet to be proven conclusively. The purpose of the present study was to evaluate whether adolescents take this activity seriously, and whether BTIO helps adolescents develop a more realistic view of parenting when the experience with BTIO is embedded in a larger sexuality education unit.

METHOD

Participants

A questionnaire was completed by 277 eighth graders (148 females and 129 males) and 102 tenth graders (71 females and 31 males) from 20 schools in a rural portion of northwest Missouri. These students were participating in the Life's Walk sex education program (Life's Walk, Inc., provides the curriculum, materials, and BTIO to public schools). The program for 8th graders is integrated into state-mandated health classes, taken by virtually all of the students in these 20 schools. The program is 15 days long. BTIO is used for a 48-hour period during the school week (not over a weekend). The program for 10th graders is 12 days long and BTIO is used for 72 hours, from Friday to Monday morning. This program is part of an elective class, so it is taken by only a proportion of the students in the 10th grade (i.e., a less representative sample relative to the 8th graders).

Some of these schools had the same programs over a period of years, so some of the 10th graders were having their second experience with BTIO and formal sexuality education. All students had written parental consent to participate in the sexuality education program, including the BTIO activity and the evaluation.

Procedure

The BTIO activity is integrated into the Life's Walk curriculum, and clear instructions, a demonstration, and practice inserting the key and caring for the simulator (which stops crying when the key is inserted) were provided to the students. The rules of care were explained, and supplies such as diapers and a diaper bag were distributed.

BTIO is not only a mandatory part of the curriculum, but also a stimulus for other activities in the classroom. Pricing car seats and strollers, investigating day-care options, and shopping for baby food and diapers are all class activities tied to BTIO in the Life's Walk program. Further, class discussions and writing assignments follow the BTIO activities.

All parents received written materials about the sexuality education curricula and BTIO, and were invited to a parent meeting. They were informed of the purpose of the BTIO activity and encouraged not to become "babysitters" or to assume responsibility for the simulator.

One month after the program ended, a questionnaire was administered by Life's Walk personnel. The BTIO items were part of a larger evaluation.

Instrumentation

Data were collected from two sources. First, a survey was administered to all students at the end of the program. This survey contained items targeted specifically at their reaction to BTIO and the impact of BTIO on their future decision making, plus one item about sexual behavior in the month since the program. The 8 BTIO items had an alpha reliability of .78 and are presented, in brief form, in Table 1.

The second data source was the technical readout provided by BTIO: the number of times BTIO was neglected (left to cry for a long period of time without being attended to), the number of times BTIO was handled roughly, and the total amount of time BTIO cried (representing the quickness of response to BTIO). Data were collected on 173 students. Data were not collected from all program participants due to time constraints. On numerous occasions, the simulators were returned by one school and delivered almost immediately to another school, leaving insufficient time to retrieve BTIO data. No intentional

or systematic bias was involved: schools often schedule this activity around the same time and Life's Walk, Inc., tried to accommodate as many schools as possible.

RESULTS

Attitudes Toward BTIO, Parenting, and Sex

Students' reactions to BTIO are presented in Table 1. Seventy-three percent agreed that BTIO showed them what it would be like to be a single parent and 76% agreed that BTIO helped them decide to wait to have children. Seventy percent disagreed that BTIO taught them that caring for babies is fun. Most important, 65% agreed that BTIO made them more likely to postpone sex. The responses to the survey items clearly show the value of the BTIO experience in helping students to recognize the difficulty of caring for an infant and to understand the importance of delaying parenthood.

Responses were then combined to form a scale indicating the extent to which students took the BTIO experience seriously and were reconsidering parental responsibilities. Items were rated from 1 to 4, where higher ratings denoted taking the experience more seriously (some of the items had to be reversed scored). A 2×2 analysis of variance, using gender and grade as independent variables and total score as the dependent variable, was conducted. The descriptive statistics for this analysis are presented in Table 2. There was a significant gender effect, $F(1, 376) = 5.49, p = .02$, with females scoring higher than males. There was also a grade effect, $F(1, 376) = 4.54, p < .034$, with 8th graders scoring higher than 10th graders. The grade by gender interaction was not statistically significant, $F(1, 376) = .13, p = .72$.

Sexual Behavior

The first item on the BTIO survey asked students if they had had sexual intercourse since their BTIO experience (a month had passed since the end of the program). Overall, 11% reported having had sexual intercourse. Surprisingly, females were slightly more likely than males to have had sexual intercourse (14% vs. 7%). Eighth graders were far less likely than 10th graders to report having had sexual intercourse (5% vs. 28%).

For comparison purposes, one item from the program evaluation asked students if they had ever had sexual intercourse. On the pretest (given the first day of the program), 45% of the 10th graders and 12% of the 8th graders reported having had sexual intercourse. It is tempt-

Table 1

Frequency (in Percentages) of Responses to BTIO Survey Items

Item	SA	A	D	SD
BTIO made me want to become a teenage parent	5	6	27	63
BTIO made me realize how easy it is to hurt a baby	18	48	23	12
BTIO made me realize how much fun babies are	7	23	39	31
BTIO made me realize I am ready to become a parent	5	8	35	52
BTIO helped me decide to wait to have children	38	38	12	12
BTIO showed me how it would be to be a single parent	22	51	18	10
BTIO made me think I could take care of a child on my own	6	17	41	35
BTIO made me more likely to postpone having sex	27	38	22	13

Note. SA = strongly agree, A = agree, D = disagree, SD = strongly disagree.

Table 2

Mean Scores and Standard Deviations on the BTIO Scale by Gender and Grade

Grade	Females		Males		Total	
	M	SD	M	SD	M	SD
Eighth	25.16	4.34	23.67	4.00	24.47	4.70
Tenth	23.79	3.75	22.70	3.72	23.47	3.76
Total	24.71	4.20	23.49	4.79	24.20	4.49

ing to conclude that the BTIO experience slowed adolescent sexual activity. However, it is possible that the findings reflect the inconsistent sexual behavior of adolescents, where long periods of inactivity are common (Brooks-Gunn & Furstenberg, 1989).

BTIO Output

The data provided by the simulators were consistent with the survey results showing that students took the BTIO experience seriously. Cases of “abuse”—where BTIO was neglected for long periods of time or handled roughly—were rare.

Results were compared by gender and grade. Descriptive statistics are presented in Tables 3 and 4. Due to very unequal subsample sizes, and a relatively small number of 10th-grade males, simple comparisons using *t* tests were conducted. Levene’s test for equality of variances

Table 3
Mean Scores and Standard Deviations on BTIO Output by Gender

Output	Females		Males	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Neglect	2.31	4.79	2.93	3.75
Total time crying	9.12	17.23	16.87	22.58
Rough handling	.74	1.51	1.92	2.88

Table 4
Mean Scores and Standard Deviations on BTIO Output by Grade

Output	8th Grade		10th Grade	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Neglect	1.93	2.87	3.90	7.62
Total time crying	11.87	20.04	9.23	19.15
Rough handling	1.31	2.29	.32	.60

was also conducted, and when results were statistically significant, degrees of freedom were adjusted appropriately to accommodate the unequal variances.

First, independent t tests compared males and females on BTIO output. No significant difference was found on neglect, $t(144) = .98$, $p = .33$, nor did the variances differ, $F = .11$, $p = .33$. However, there was a statistically significant difference on the total amount of time BTIO cried, $t(105) = 2.24$, $p = .027$. There was also a significant difference between the variances, $F = 6.87$, $p = .01$. Males were more likely to let their infant simulators cry, but the range of response times was wider for males than for females. Males were also more likely to handle their infant simulators roughly, $t(82) = 3.20$, $p = .005$. Once again, there was more variability among males than females, $F = 15.09$, $p < .001$. Taken together, the BTIO output suggests that females took better care of the infant simulators than did males. Males' generally higher scores and larger variability suggest that some did not take the parenting role seriously.

A second set of comparisons examined differences between 8th and 10th graders. The groups did not differ significantly on neglect, $t(32) = 1.42$, $p = .165$. However, there was a significant difference between the variances, $F = 7.84$, $p = .006$; 10th graders showed far more variability. There was no significant difference in the total amount of time crying, $t(171) = .67$, $p = .5$, nor was there a difference between variances, $F = 1.16$, $p = .28$. Finally, the groups differed significantly on rough handling, $t(167) = 4.48$, $p = .001$, with 8th graders more likely to handle their infant simulators roughly. Levene's test also showed that the variances were significantly different, $F = 9.02$, $p = .003$, with more variability among 8th graders.

DISCUSSION

The purpose of this study was to determine if "Baby Think It Over" is taken seriously by adolescents enrolled in a sexuality education program. The survey results are very supportive, with students recognizing the difficulty of caring for an infant and understanding the importance of delaying parenthood. The technical readout from the simulators also suggests that students took this activity seriously. Rough treatment and neglect were rare.

In general, females reacted more favorably to the experience than did males. One possible explanation is that the issue of teen pregnancy is more real to them. It is also possible that females are more mature

and thus take these experiences more seriously, while males (especially the 8th graders) are too immature to consider the issue seriously. It may also be the case that males view this activity as "playing with dolls" and therefore inappropriate for them.

A greater impact was found for 8th graders than 10th graders, especially in regard to the survey data. Several explanations are again possible. For example, these findings may be an artifact of the design of the study. Some of the 10th graders participated in this sexuality education program, along with BTIO activities, as 8th graders. It is possible the impact is bigger during the first experience. A second explanation is that, for some students, BTIO is occurring too late. Once adolescents are sexually active, the message to "wait" may not be effective.

There are limitations to this study that must be addressed. First, self-report data should always be interpreted cautiously. Responses to the question about having sexual intercourse could obviously be distorted. Responses regarding attitudes toward BTIO could be due to social desirability bias rather than a sincere rethinking of teen pregnancy and parenting. A second limitation of the present study is that there was no long-term follow-up. These students completed their surveys one month after the BTIO experience. It is important to learn whether this experience has long-term beneficial effects. A third limitation is that an experimental design (comparing students with and without BTIO) was not utilized. A final limitation of this study is that these students were enrolled in a class that had other sexuality education components besides BTIO, which may have influenced students' responses.

Because BTIO is expensive, some schools can afford only a few simulators, and students experience BTIO at different times throughout the semester. In the Life's Walk program considered here, there were enough simulators so that all students within their particular health courses experienced BTIO simultaneously. This relates to the important issue of how BTIO is used. BTIO can be a cute gimmick that looks good to adults and becomes a silly game for the students. On the other hand, BTIO can serve as the basis for serious educational activities. An essential ingredient may well be teachers who engage students in meaningful discussions and provide real-life examples and supplemental information. Future research needs to examine how BTIO can be used most effectively.

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