

Infant Simulator Lifespace Intervention: Pilot Investigation of an Adolescent Pregnancy Prevention Program

**William Strachan, M.S.W., and
Kevin M. Gorey, Ph.D., M.S.W.**

ABSTRACT: This quasi-experimental study of 48 high school students clearly demonstrates the impact of a very realistic infant simulator on adolescents' attitudes and beliefs about what their future parenting experiences might be like. After their experience of the three-day lifespace intervention, the teenagers who participated had much more realistic notions about the responsibilities and demands involved in childrearing. Nearly all of them (90%) scored higher on a measure of realistic parenting expectations than the average adolescent in a comparison group did. Also of practical significance was the finding that the intervention even seemed to positively impact classmates of the primary intervention group, adolescents who merely observed others tending to 'infants.'

Introduction

Adolescent pregnancy has been a large extant problem among at least the past two generational cohorts. More than one million teenagers

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William Strachan, M.S.W. was a Master of Social Work (M.S.W.) candidate, School of Social Work, State University of New York at Buffalo, Buffalo, New York when this study was accomplished. Kevin M. Gorey, Ph.D., M.S.W. is Assistant Professor, School of Social Work, University of Windsor, Windsor, Ontario, Canada. Address communications to Kevin M. Gorey, Ph.D., M.S.W., 401 Sunset Avenue, Windsor, Ontario N9B 3P4.

have conceived annually in the U.S. since 1973, and during the past decade, approximately one of every nine adolescent females became pregnant each year (Dryfoos, 1990). Also, as with numerous other personal and social problems, adolescent pregnancy seems to persist in a vicious cycle with impoverished environments. Such pregnancies are seven-fold more prevalent among the poor versus the nonpoor, and this prevalence ratio has been consistently observed across ethnic groups such as non-Hispanic whites, African Americans, and Hispanics. At the other end of the cycle, the economic well-being of women who have had children as teenagers has declined steadily through the 1970s to the present (Butler, 1993; Dryfoos, 1990). This very strong social class-adolescent pregnancy association points toward a number of prevention strategies, one of which is education. In fact, the single largest personal predictor (protective effect) of adolescent pregnancy seems to be the holding of clear educational expectations. Those without such aspirations are approximately three times more likely to become pregnant (Plotnick, 1992; Smith, 1996). Clearly, any intervention which would bolster adolescents' ability to hold and to achieve such goals may be expected to have a large preventive impact.

Adolescent Pregnancy Prevention Programs

Five reviews have summarized the findings of the nearly 150 studies in this field (Allen-Meares, 1991; Gordon, 1990; Hofferth, 1991; Miller & Paikoff, 1992; White & White, 1991). They integratively allow for the following methodological inferences about the evaluation of these predominantly curricula-based preventive interventions, the majority of which have focused on family planning (contraception use). Only a few have focused on the delay of sexual activity. (1) The majority of these studies have not been published in peer-reviewed journals. (2) The majority of their reports have been qualitative or process evaluations. (3) Nearly all of the outcome evaluations have focused on measures of knowledge; they have consistently demonstrated positive effects which have tended however, to attenuate with longer follow-up. Finally, (4) the few studies which have focused on pregnancy as their outcome variable of interest have not been well enough controlled to allow for confident inferences about their effectiveness. The present study pilot investigates the effect of an innovative intervention (an infant simulator) on a new outcome measure (attitudes and beliefs about parenting).

Adolescents' cognitive strategies tend to be concrete, rather than

abstract. The implications of this tendency for unplanned pregnancy among them is clear; such thinking may be a barrier to their successful planning for the future (Combs-Orme, 1993). Relatedly, it has been observed that teenagers with a child expected childrearing to be easier than their non-childrearing counterparts did (Holden, Nelson, Velasquez, & Richie, 1993). The reviews in this field have suggested that interventions which facilitate adolescents' realistic appraisal of future consequences and rewards may be helpful in supporting their future goal-directed behavior (e.g., graduating from high school, going to college, getting a good job) and the making of difficult choices toward such ends (e.g., delaying sexual activity and thus eliminating the risk of a presently unwanted pregnancy). Group discussion interventional formats have been implemented around these issues. However, none of them, as of yet, has been independently evaluated. The intervention evaluated here goes one step further than discussion; it takes the intervention directly into the lifespace (an infant simulator doll which "demands" to be tended to) so that the adolescent may experience a very realistic appraisal of childrearing demands over the course of a few days. We are unaware of any previous study which has evaluated such an interventional strategy. One study did qualitatively evaluate a related intervention which used an egg to simulate the child (James, 1986). It's not difficult to imagine how such a contrived simulation may not be taken very seriously by many adolescents, whereas, an "infant" which is actually "crying" necessarily requires "parental" action.

Method

Sampling

One suburban and two City of Buffalo public high schools (one intervention and two comparison) were convenience selected because they were located in at-risk or generally impoverished neighborhoods and they had established relationships with one of this study's organizational collaborators, the Liberty Partnerships Program. Health or home economics courses were again convenience selected, and from among their 80 students, 48 agreed to participate and completed the study pre- and post-test questionnaires (participation rate of 60%). Signed informed consent was obtained from each of the adolescents' parents or legal guardians before the study began. Six of the willing participants were randomly assigned to receive an infant simulator;

their 17 classmate volunteers were also considered as vicariously part of the intervention group. The small size of this primary intervention group was simply a function of resource availability; six dolls were generously donated by another organizational collaborator, the Buffalo Council on Adolescent Pregnancy Prevention. Twenty-five other study volunteers did not at first receive the intervention and so served as a comparison group. After the intervention group completed the study, these adolescents were then provided the same opportunity to experience the intervention.

Intervention

The primary intervention group received their infant simulator dolls (Copyright © 1996, Baby Think It Over™; Baby Think It Over, Inc., Eau Claire, WI) by the end of classes on a Wednesday and kept them until approximately the same time the following Saturday (April, 1996). This allowed them to experience the modeled demands of child-rearing for three full nights and days, at least one of which was a week day and weekend. It also allowed the vicarious intervention group, that is, their classmates, to observe these demands for one full class day (Friday was a holiday). They also received "the usual" infant supplies: diapers, diaper bag, clothing, bottles and accessories, and a car seat. The infant simulators, which are designed to cry at intervals from every 45 minutes ('sick' or 'colicky' infant) to every six hours ('very good' infant), were set to mimic a "normal" infant who may be expected to cry every three hours or so. Moreover, their crying response was set at what may be characterized as a relatively "easy" setting; the "infants" stopped crying immediately after being tended to (tending probe inserted by the "parent"). The primary intervention group was also given instructions on routine parenting skills, as well as a few "rules of the game." For example, the baby had to go with them everywhere during the study period. They were also made aware of the fact that the infant simulator contained a sensitive recording device; if it was not tended to appropriately (including tampering with the batteries), such "neglect" would be recorded.

Outcome Measure. This study's central question concerned the effect of the intervention on adolescents attitudes and beliefs about parenting: Did the intervention positively impact their capacity to project a realistic notion about the likely demands of parenting an infant? The Parenting Attitude Scale (PAS), a 10-item measure (score range of 0 to 10, higher score keyed toward more realistic expecta-

tions) of the construct of “realistic parenting expectations” was developed for this study: (1) Are you ready to be a parent now? (2) Do you know how to be a good parent now? (3) Do you feel that you would be a good parent now? (4) Are you aware of the responsibilities of being a parent? (5) Do you know what a baby needs when it is crying? (6) Do you know what to do when a baby is crying? (7) Do you think that you would be tolerant and understanding with a crying baby? (8) If you had done everything you could think of for your baby and it still persistently cried, do you think that you would continue to be tolerant and understanding? (9) Could you ever get angry enough to hit your baby? (10) Do you think that caring for a baby cost a good deal of money? The face validity of the PAS was positively assessed by staff members of collaborating agencies who have had significant practice experience in this field. It was also assessed to be adequately reliable among this study’s sample (Chronbach $\alpha = .73$).

Results

Sample Description

This study’s adolescent participant sample ($N = 48$) was childless, predominantly female (73%) and ranged in age from 16 to 18 (10th to 12th grade). It was represented nearly equivalently by African Americans (48%) and non-Hispanic whites (42%); five of the participants (10%) were of other ethnic groups (Hispanic, Latino or Native American). The intervention and comparison groups differed significantly on only one of these descriptive characteristics—race/ethnicity. Proportionately, more than twice as many of the comparison group was nonwhite (80%) as compared with the intervention group (35%); $\chi^2(1, N = 48) = 10.01, p < .01$. However, race is not likely to confound this study’s central hypothesized relationship (intervention-outcome) because it was not associated with any of the dependent variables at pre-test, (not with the 10 individual items of the PAS, nor with the PAS total score).

Interventive Effects

A nonsignificant trend in the expected direction was observed on average Parental Attitude Scale scores at post-test: primary intervention or infant simulator group ($M = 6.20, SD = 2.38$), vicarious intervention or class group ($M = 4.91, SD = 2.05$), and comparison group ($M = 4.19, SD = 1.61$); $F(2, 45) = 2.11, NS$. It ought to be noted that

if the sample sizes were doubled (and the magnitude of the observed effects maintained), the above comparison, as well as all of the effects displayed in Table 1 would be minimally significant at $p < .05$. Also, converting to a measure of practical significance—Cohen's (1988) U_3 statistic—and again assuming that the magnitude of the effect observed with this relatively small sample were maintained with a much larger one, 90% of those adolescents experiencing the infant simulator lifespace intervention may be expected to do better (i.e., have a more realistic notion about the likely demands of parenting an infant) than the average adolescent not participating in such a program. A similar, though not quite as large effect may be expected even among their classmates, who merely observed them tending to their "babies" throughout the course of two school days ($U_3 = 70\%$).

To gain more knowledge of this intervention's practical significance, this study's central outcome variable, the PAS was dichotomized (scored above [or below] the pre-test median score of 4.5) and compared between groups (see top of Table 1). The prevalence of scoring in the high or "realistic attitude" range at post-test was more than two-fold greater among the infant simulator group (83%) as compared with the comparison group (40%); prevalence ratio (PR) = 2.08, $p < .05$. A nonsignificant positive trend (more realistic attitude at post-test) was also observed among their classmates (PR = 1.32). Interestingly, one of the PAS items (8. If you had done everything you could think of for your baby and it still persistently cried, do you think that you would continue to be tolerant and understanding?) stood out as highly impacted by the intervention. Prior to the intervention, most of the adolescents, in a sense, believed that such a scenario would be no big deal; their opinion on this score seemed to change radically after their experience with the simulator doll. Most of them (83%) seemed to doubt their capacity to be consistently tolerant and understanding with such persistent infant demands, a more than three-fold differential with the comparison group (24%, PR = 3.47, $p < .01$).

The study questionnaire also contained a query about the adolescents' perception of childrearing with a partner (see bottom of Table 1). At post-test, approximately three-quarters more of those in the intervention group (both infant simulator [PR = 1.74] and their classmates [PR = 1.71]) thought that having such support would be important. In response to more open-coded qualitative queries, the adolescents in the intervention group were unanimous in their assessment of the experience as helpful as well as their recommenda-

TABLE 1
The Effectiveness of the Infant Simulator Lifespace Intervention: Comparison of Intervention and Comparison Groups at Post-Test^a

Outcome Measure Group	Prevalence (%) of Attribute	Intervention/Comparison Prevalence Ratio
<i>Realistic Attitude (Scored > Pre-Test Median)</i>		
Parenting Attitude Scale		
Infant simulator N = 6	83.3	2.08**
Class intervention N = 17	52.9	1.32
Total intervention N = 23	60.9	1.52
Comparison N = 25	40.0	
<i>Realistic Attitude, Perhaps Lack Tolerance/Understanding</i>		
Response to Persistently Crying Infant—Already Done Everything		
Infant simulator	83.3	3.47***
Class intervention	35.3	1.47
Total intervention	47.8	1.99*
Comparison	24.0	
<i>Very Important or Essential</i>		
Importance of Marriage or a Partner		
Infant simulator	83.3	1.74*
Class intervention	82.4	1.71**
Total intervention	82.6	1.72**
Comparison	48.0	

^aThe groups did not differ significantly on any of the dependent measures at pre-test.
 * $p < .10$ (approaches statistical significance), ** $p < .05$, *** $p < .01$.

tion of it to other teens. More than half of them specifically mentioned the rigorous demands of the caregiving tasks (e.g., the amount of time involved) and how these additional "responsibilities" impacted their daily schedule. One participant's qualitative response to the experience succinctly sums up its hypothesized preventive impact: "I think it (infant simulator lifespace intervention) would prevent a lot of teens from having kids too early; It should be included in all sex education classes."

Discussion

This study clearly demonstrates the impact of a very realistic infant simulator on adolescents' attitudes and beliefs about what their future parenting experiences might be like. After their experience of the three day lifespace intervention, the teenagers who participated had much more realistic notions about the responsibilities and demands involved in childrearing. Moreover, the size of such observed interventive effects may be characterized as large to very large. Their holding of such more realistic attitudes (e.g., their realization that they may not always be tolerant and understanding with their persistently crying infant [after appropriately tended to]) were two to nearly four-fold more prevalent than a non-intervention comparison group's. Also of practical significance was the finding that the intervention even seemed to positively impact the classmates of the primary intervention group, adolescents who merely observed their classmates tending to "infants."

Much remains to be learned, however, about both the longer term stand-alone effectiveness of such a lifespace intervention, and its possible potentiation of the effectiveness of extant curriculum-based programs. The present study provides the preliminary empirical evidence necessary to hypothesize very positive long term effects, e.g., of incorporating infant simulation strategies with other health/sex education courses. It ought to be recalled that this study, though it used some procedural elements of a true experiment (random assignment to intervention and non-intervention groups, and some assurance of the pre-test equivalence of these groups on the dependent measures), was limited in a number of ways (small sample, convenience selection of high schools and classes for participation), so at best may be considered a quasi-experiment. Its inferences may best be considered as tentative hypotheses, to be confirmed (or refuted) by future studies.

It seems that many educators and health and human service workers are presently engaged in this work. For example, we are aware of more than 250,000 recent (past three years) communiques on the topics of infant simulation and adolescent pregnancy prevention via the internet. We would simply request that our colleagues incorporate procedures for qualitative and/or quantitative evaluation of their work, and report their findings in peer-reviewed professional forums. Such a developing knowledge base would go a long way toward supporting ongoing program development as well as providing the means (e.g., the political will to support large research grants) for the accomplishment of this field's next generation of research. For example, no large epidemiologic investigation (retrospective or prospective cohort, or trial) which examines the key end-point of interest, that is, actual pregnancy prevention, has ever been undertaken. It is true that a study of this type would be extremely expensive, however, such expense pales in comparison to the human and societal cost of prevalent adolescent pregnancy.

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