

Presentation

The Baltimore Pregnancy Prevention Program for Urban Teenagers

I. How Did It Work?

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Summary

Two teams, each consisting of a social worker and a nurse, delivered the bulk of services in an experimental pregnancy prevention program for junior and senior high school students that combined school and clinic components. In-school components were classroom presentations, informal discussion groups and individual counseling; clinic services consisted of group education, individual counseling and reproductive health care. Eighty-five percent of the total student enrollment had contact with at least one component of the program. More males than females were among the 15 percent with no contact. When estimates of chronic absenteeism are taken into account, the program is believed to have reached all students in regular attendance.

Approximately 22 percent of staff-student contacts occurred in the classroom, and the remaining 78 percent were voluntary on the part of the student. About 68 percent of contacts occurred within the school, with small group discussions especially popular—they represented 41 percent of all contacts. The proportion of contacts that occurred in the clinic was highest among senior high females (46 percent) and lowest among senior high males (12 percent).

Introduction

Creative programs for the prevention of adolescent pregnancy and childbearing have proliferated in the United States in response to what is generally perceived as a high pregnancy rate among unmarried teenagers. Even though there is more to be

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learned about adolescent risk-taking behavior, the feeling is abroad that enough is known to begin working on pregnancy prevention measures.¹ Because few programs have been evaluated, there is little information on which to base the choice of models to replicate, and even less information with which to estimate the costs of replication.

In a previous issue of *Perspectives*, we reported on a school pregnancy prevention program that combined educational and medical intervention. The article showed the effects of the program on the attitudes, knowledge and behavior of a junior and senior high school population in Baltimore.² During the program's existence, pregnancy rates declined 30 percent in the program schools, while rising 58 percent in control schools; in addition, a delay was documented in the onset of coital activity among young women attending program schools. This, the first of two articles published in the current issue, provides a detailed description of the services delivered by that program and the students' overall utilization of those services; it does not explore the relationship between individual patterns of utilization and individual outcomes, but attempts to give a sense of what was done by the staff to bring about the collective results. The first article lays the groundwork for the

second, which is an accounting of program expenditures and the costs of specific services.

The privately funded demonstration project known as the Self Center program ran for approximately three years, and was a cooperative venture of The Johns Hopkins University School of Medicine and the Baltimore City Departments of Education and of Health. The program served a junior and a senior high school with enrollments of approximately 700 and 1,000 students, respectively; they were located a few blocks apart in an inner city neighborhood characterized by public and low-cost housing. The program's service consisted of classroom presentations, educational and counseling services provided in health suites in each of the two schools, and educational, counseling and medical services provided in a storefront clinic. The clinic, located across the street from the senior high school, was open only to students from the two program schools. The overall project combined service and research (two other schools were used as controls in evaluating the program), and it succeeded in achieving many of its objectives:³ to raise the level of student knowledge regarding reproductive biology and pregnancy, to postpone onset of intercourse where possible, to increase the level of clinic attendance and contraceptive

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among the sexually active, and to reduce the risk of pregnancy.

Each of the two program schools was assigned a Self Center team, consisting of a social worker and nurse-midwife or pediatric nurse practitioner who were experienced with and had a special interest in adolescents. They were joined in the clinic by a registrar, nurse's aide or licensed practical nurse and, on some days, by a physician. An experienced educator was also present on some afternoons to help with group education; both women used in that role had master's degrees and training and experience in sex education, adolescent services and group process. Other staff, including the service program's principal investigator and the program director, were involved in the administration and supervision of the project but were not responsible for the day-to-day provision of services to students.

In addition, 12 students—three males and nine females—were recruited to serve as peer resources for one year each in the second and third years of the program. The peer resource members were trained to serve as representatives of and spokespersons for the program and to assist with such tasks as presenting visual aids. These students were identified by their T-shirts or large red buttons with the words, "Ask me about the Self Center." In addition to their specific duties, they added a sense of student ownership and participation in the program.

Prior to the initiation of the program, parents were informed of its objectives and told of the services to be provided and of the student questionnaires to be used as part of the research component. Parents were invited to consult with the service staff and, in the first year, a few were paid for their participation in a parents' advisory committee. However, parental approval is not required in Maryland for students to obtain reproductive health services.

Program Components

This article focuses on the day-to-day work of the two social workers and the two nurses assigned to the schools; the vast majority of the students' individual and group contacts with the program involved these workers. The services that these teams provided fall within six categories: three types of services rendered in the schools (classroom presentations, small group discussions and individual counseling) and three in the clinic (group education, individual counseling and medical services).

- *Classroom presentations.* Especially in the first year, the initial contact between students and staff of the Self Center program was often in the classroom; each semester the social worker (and sometimes the nurse) gave at least one full-period presentation to every homeroom class in her school. The presentations were more structured and didactic than the smaller group sessions, but included interaction and discussion related to values clarification, decision-making and reproductive health.

The first class presentation of each year introduced the Self Center services and began to raise the students' consciousness about the consequences of unprotected sexual activity and to support students who were not sexually active. During this first session, students also viewed "A Matter of Respect," a film featuring Jesse Jackson. The film, which focuses on adolescent pregnancy as a problem for males and females alike, was used as a catalyst for philosophical discussions that would create a bond of understanding between the staff and the students. In fact, this bonding was the primary goal of the session: The staff sought, in a spirit of open communication, to establish the students' rights to raise questions and discuss subjects of concern, including matters they had never before discussed with adults.

The second classroom discussion, taking place in the same semester or the following one, usually dealt with personal goals, sexual activity, pregnancy, decision-making, contraceptives and sexually transmitted diseases. Although two presentations per year were mandated, many students received more because the staff offered their services to teachers when a relevant subject was taught within the regular curriculum. In the 30-month school program, Self Center staff conducted approximately 350 classroom sessions.

- *Group discussions.* The social worker, and sometimes the nurse, spent about two and a half hours during the middle of each day in the school health suite; students could drop in during their lunch periods to talk, seek individual counseling or make appointments for clinic visits. Group discussions in the health suites generally occurred spontaneously, either as informal rap sessions or as focused discussions initiated by a team member who had identified a group of students with a specific problem (e.g., suspected teenage prostitution or physical immaturity that had led to teasing). In these sessions, students often raised questions about pubertal development; the social worker would pose such topics as future goals, decision-making,

peer pressure, drugs, alcohol, the consequences of being a teenage parent and male-female relationships. The health suite was a hospitable environment in which to play "Transformer," an educational game that attempts to simulate a day in the life of a teenage parent, or "Humanopoly," a game that teaches anatomy and raises issues of values. Thus, small groups coalesced around a need, expressed by the students or perceived by a staff member; the discussions evolved under the guidance of professionals trained in group process. These informal sessions identified emotional needs that formal instruction could not; for some participants, the discussions led to individual counseling within the program or outside referral.

- *School counseling.* Each social worker had a well-publicized schedule and an accessible school office for individual consultation. Students could seek out the social worker to discuss relationships with the opposite sex, problems at home, a possible pregnancy and other personal matters. The social worker could encourage the student to come for weekly counseling, arrange for a clinic visit for the student, or refer him or her to another agency. If prolonged counseling was required, the clinic was often the better site because it conveyed more of a sense of privacy and neutrality, and was not subject to the academic schedule.

- *Group education.* After school, some combination of the four workers staffed the clinic, beginning at 2:30 p.m. most afternoons and continuing until 5 or 6 p.m. Students visited not only for individual appointments but also to participate in group discussions or to view videotapes and movies. The educational materials were selected to appeal to both males and females. Students visiting the clinic were required to register only if they were seeking individual counseling or reproductive health services. Appointments could be made ahead of time, but drop-ins were accommodated as quickly as possible.

Almost all youngsters who went to the clinic, with or without a specific appointment or purpose, received some form of educational intervention. Groups formed around a staff member in the informal atmosphere of the waiting room or around an audiocassette machine presenting educational material on such topics as sexually transmitted diseases, pubertal changes and talking to parents about sex. Books, pamphlets and the games described previously were also available for student use, and their ability to organize activities themselves contributed to the program's message of personal responsibility.

school, the proportion of individual contacts in the school setting is much lower than that of group contacts. The social worker was often in the health suite alone and could only counsel individual students if a peer resource person or nurse was available to accommodate the other students. Nonetheless, the school was a good base from which to encourage attendance at the clinic, which was better geared for individual counseling and, as the numbers indicate, was more heavily used for that purpose than was the school. All counseling sessions at the school were voluntarily sought by the students, whereas in the clinic, individual counseling was required of those seeking contraceptives.

The proportion of contacts that occurred in the clinic differs by sex and school level. The schools not only represented different age-groups but also different professional staffs in different educational environments. Whereas 46 percent of contacts with senior high females were in the clinic, only 12 percent of contacts with senior high males took place in that setting; among junior high students, 21 percent of female contacts and 19 percent of male contacts occurred in the clinic. Since clinic registrants who came for individual services—they frequently had both a counseling and medical appointment in one visit—were nearly always involved in some group experience, if only in the waiting room, they are also counted within the clinic group education category. Also included are teenagers who signed in on the waiting room log without seeing a staff member individually. Many other young people accompanied friends and took part in the day's activities without signing in—they are not counted in the figures.

Senior high school females were the most frequent patients of the medical staff, contributing 81 percent of all medical visits. About 16 percent of all program contacts with older girls were medical visits, compared with six percent for the younger girls. There were more individual counseling contacts among males than there were medical contacts, since males did not need a medical examination to receive contraceptives. They could obtain condoms and foam, along with contraceptive counseling, from social workers; indeed, 82 percent of all clinic visits to a social worker by males included the provision of contraceptives (not shown).

Some students had very brief durations of exposure to the program, and therefore less opportunity to use it, than did others. Few students who graduated from the junior high school in this study attended

Table 2. Percentage of students using program services (and percentage after adjustment for chronic absentees), by site and type of service, according to gender and school level

Site and type of service	All students (N=3,944)	Female		Male	
		Jr. high (N=1,001)	Sr. high (N=1,163)	Jr. high (N=1,132)	Sr. high (N=581)
Total	84.9 (112.2)	87.1 (119.0)	87.0 (97.8)	82.2 (132.6)	80.7 (90.7)
School					
Class presentation	72.7 (96.1)	81.2 (111.2)	73.0 (83.9)	73.9 (119.1)	61.3 (68.9)
Group discussion	50.6 (66.9)	55.2 (75.8)	55.6 (63.8)	42.0 (67.7)	48.2 (54.2)
Indiv. counseling	15.2 (20.1)	15.3 (20.9)	29.8 (34.3)	4.3 (7.0)	8.8 (9.9)
Clinic					
Group education	26.7 (35.3)	24.2 (33.1)	42.1 (48.4)	21.0 (33.9)	12.4 (13.9)
Indiv. counseling	19.7 (26.0)	14.5 (19.8)	34.3 (39.4)	15.6 (25.2)	9.8 (11.0)
Medical visit	14.5 (19.2)	13.4 (18.3)	34.8 (40.0)	1.8 (2.8)	2.2 (2.5)

Note: Chronic absentee rates as reported by the schools were: junior high females, 27 percent; senior high females, 11 percent; junior high males, 38 percent; and senior high males, 11 percent.

the program's senior high school, because they had a number of other schools as options. Consequently, hardly any ninth graders who graduated from the junior high in the first year of the program and none of the 12th graders who graduated from the senior high that year could have had more than six months of exposure to the program, which was initiated in December. In fact, 37 percent of those with no program contacts were exposed to the program during only that first partial year. The mean period of program exposure for students in this study was approximately 16 months, including summer and other vacation periods. Although the clinic was open during vacations, the school components were offered only when school was in session and were available to students for an average of 250 days.

A calculation of the mean and median number of contacts with the program by students who had a minimum of one contact indicates a mean of 10 contacts per student and a median of four in the course of the average 16-month exposure period (not shown). The mean number of contacts ranged from 5.5 among senior high males to 16.0 among senior high females; the median was three for males at both school levels and five for both the younger and older females. The mean is considerably above the median because of a few students who had a very large number of contacts with the program. A senior high school female had the largest number of contacts (234), with 227 being the most for a junior high female, 215 for a senior high male and 115 for a junior high male. Many of the individuals with large numbers of contacts were peer resource students, who were in frequent contact with the staff for training and for their personal needs, but other students also presented repeatedly

in one site or both. This quantitative evidence that a few students monopolize much of the professional staff's time is confirmed by the staff themselves, who report that these heavy users were often among their most difficult and needy cases.

With Table 2, we move from numbers of contacts to percentages of students who had contact with the program. The first set of calculations uses total school enrollment as the denominator, and the results are the proportion of all students ever on the school rolls during the three years that the program was in place who utilized particular services. The numbers in parentheses are the estimates one gets if the total enrollment figures are adjusted for the rate of chronic absenteeism in each category.

Eighty-five percent of all students were reached by at least one component of the program. The 15 percent of the total number of students who had no contact with the program includes more males than females. When chronic absentees are taken into account, the proportion of regular attendees who have contact with the program reaches 112 percent. This proportion suggests that a program with a variety of components has the potential to reach even chronic absentees on occasion. Another possibility is that school estimates of chronic absenteeism are higher than they really are. A total of 3,349 individuals are known to have been reached by this program; a weighted chronic absentee rate for the schools would imply that only 2,985 were in regular attendance, suggesting an overestimate, especially among junior high students where the proportion of regular attendees reached by the program is 119 percent of females and 132 percent of males.

Approximately 73 percent of students

Table 3. Percentage distribution of students who participated in the program, by pattern of services used, according to gender and school level

Pattern	All students (N=3,349)*	Female		Male	
		Jr. high (N=872)	Sr. high (N=1,012)	Jr. high (N=930)	Sr. high (N=469)
School contacts only					
Class presentations only	30.4	28.0	23.6	37.7	36.0
Other services (with/without class presentations)	38.2	44.2	28.0	36.7	48.6
Clinic contacts (with/without school contacts)					
Group education only	7.0	10.2	7.1	5.7	2.1
Other services (with/without group education)					
Indiv. counseling; no medical visit	7.3	2.2	1.3	17.7	10.4
Medical visits; no indiv. counseling	1.2	0.9	1.9	0.9	1.1
Both indiv. counseling and medical visit	15.9	14.4	38.1	1.3	1.7
Total	100.0	100.0	100.0	100.0	100.0

*Includes 66 students for whom gender and school information were unavailable.

ever on the rolls heard a classroom presentation, with the proportions higher among junior high students than among senior high students and higher among females than males. It is not clear why the proportion of senior high males is as low as it is (61 percent), since only about 11 percent of this group were considered chronic absentees. Conversely, the proportions in the junior high school, where chronic absenteeism was especially high, are larger than might be expected. Perhaps, since classroom discussions were more frequent in the junior high school than the senior high school, junior high students who were habitual absentees were more likely to make it to one or another session.

The popularity of the rap sessions in school is clear; from 42 percent of junior high males to 56 percent of senior high females availed themselves of this service. Female students were far more likely than male students to take advantage of individual counseling with a social worker at the school; this sex disparity was also true for senior high students in the clinic. However, junior high males were as likely as junior high females to see a social worker in the clinic. The highest proportions registering for both individual counseling and medical visits were found among senior high females. Although not shown in this table, there is a great deal of overlap between individual counseling and medical visits: Eighty percent of all first medical visits among females included a private social work contact, and 81 percent of all first social work visits

among females were accompanied by a medical visit.

If the denominators are reduced by the amount of chronic absenteeism in each group, the proportion of junior high students utilizing services rises considerably. In fact, this calculation shows that among regular attendees, a larger proportion of younger males than older males took part in school discussion groups (67 percent compared with 54 percent) and utilized medical services (2.9 percent compared with 2.5 percent).

Another way of evaluating clinic contacts is to use only sexually active students as the denominator. A survey of students conducted as part of the research component provides an estimate of the proportion sexually active (not shown).⁴ The number sexually active is computed for each group by multiplying that proportion by the number of students on the enrollment rolls at a representative point in the school year. (For the percentages given below we used the November roll, a useful single-point estimate because it is the first in the year in which transfers are likely to be recorded.) This denominator gives some idea of the prime target population of the clinic services, although the numerator (i.e., clinic registrants) includes a small number of students who were not sexually active. The adjustment for sexual activity makes the biggest difference among younger females: Among the 50 percent of all junior high females who were sexually active, the proportion who made medical visits was 27 percent. Among senior high

females, the proportion was 48 percent. Looking at visits to a social worker gives a better idea of the proportion of sexually active males who may have received contraceptive counseling through the program; 21 percent of sexually active junior high males and 12 percent of comparable senior high males did so.

Table 3 summarizes the different combinations of program services that individual students utilized. There are actually 35 permutations, ranging from no services at all to all six of the options offered. Some of the patterns of utilization are representative of fewer than one percent of students. Table 3 collapses the 35 possibilities into six and shows the percentage of students who had contact with the program distributed among the six patterns of utilization. Thirty percent of the students were exposed only to classroom presentations. While this level of exposure is minimal, it does mean that these students knew of the program and its staff. Had they wished, they could have availed themselves of the program's more voluntary components, as did the remaining 70 percent of students who participated in the program. Half of those who utilized other services (38 percent) participated in activities within the school health suite but never visited the clinic. Those making use of voluntary services ranged from 62 percent of junior high males to 76 percent of senior high females.

Overall, 31 percent of the students utilizing one or more of the services attended the clinic at some time. About seven percent participated only in the group activities that occurred there. (Some 50 students who participated only in the group activities had no school contacts with the program, not even a classroom presentation. Many, particularly younger males, were not on the school enrollment lists, so it is possible that they were adolescents in the community who came with their friends and received group service for which they were not technically eligible.) As Table 3 shows, only small proportions of female students had a social work visit in the clinic without a medical visit. Thirty-eight percent of senior high girls had both a medical and a social work visit; this was true for 14 percent of junior high female students, but fewer than two percent of male students in either school. Most of the males who registered for an appointment had only a social work visit, for reasons discussed previously.

In general, detailed patterns of utilization not shown here reveal a tendency among students making medical visits,

and to a large extent among those seeing social workers, to seek many different types of contact with the staff. The modal group of medical visitors had made use of all six service components. The use of a wide range of services is consonant with the expressed intent of the program that medical services be linked with education and counseling. The school components, conceived as a bridge from the classroom to the clinic appear to have served their intended purpose, while serving as the primary components of the program for many students who received all their services within the school.

Discussion

The material that has been presented outlines not only how the model was conceived but how it functioned, not only what the program offered but what was used. This project was highly focused in its goals, and generally provided only reproductive health education and services. Medical referrals were available, but these data cannot give reliable estimates of the demands a more comprehensive medical clinic might experience. However, the implications of the data for the staffing and design of similar programs are many.

The number of student-staff contacts can be extremely large in a program that is well accepted by the students. Decisions as to whether or not to accommodate all demands for repeated contacts have staffing implications. Of note is the important role played by the social worker in meeting the high volume of demands placed upon a sympathetic staff.

- Although the classroom maximizes contact and is useful for some purposes, small groups were especially popular among these adolescents. The school appears to be an excellent location for small-group discussions, since the data suggest that relatively few students attended group sessions in the clinic unless they also came for some other clinic service. Consequently, a large proportion of students reached by the program might have been missed without this school component. Furthermore, most clinic attendees are sexually active; therefore, it may be that only in the school is there a real opportunity to delay the onset of coitus.

- Group education in the clinic reached fewer nonregistrants than had been anticipated. Data analyzed here cannot validate the staff's impressions that attendance for educational purposes often preceded attendance for services that required registration. If that impression is correct, it would indicate that students used group

education until they felt comfortable enough to ask for individual services. At this point we can only say that educational opportunities in the clinic were well used by those who came for individual services; perhaps the needs of nonregistrants were adequately met, as they should have been, within the school.

- Individual counseling can take place in either a school or a clinic location, and almost 40 percent of students who received this service in one location did so in both. Counseling is often an on-going process and consumes a lot of staff time.

- Senior high females require the greatest proportion of reproductive health services. They are more likely to be sexually active than younger students, and many who are engaging in coitus use oral contraceptives, a method that requires attendance at a medical facility. Consequently, programs for senior high school girls should plan to deliver large numbers of clinic services.

- The mean number of staff encounters per male student is about one-half the number for females. But even senior high males, the group least likely to utilize clinic services, seek out small group sessions in the school. A relatively large proportion of junior high males use the social workers in the clinic as a source for condoms as well as information and counseling. The fact that these staff members were female did not seem to hinder their ability to serve as confidants, educators and counselors to young males.

- The peer resource students utilized a large amount of staff time. These students appear to profit on an individual basis from their involvement, but their training and nurturing is on-going and intensive. The intrinsic value of their services may be worth the investment, but these data suggest that they should not be viewed as a means of saving staff input.

- Programs may well have a small number of clients who use inordinate amounts of staff time. Median usage rates appear to be in a reasonable range and are considerably lower than the means, which are influenced by high extremes. The question must be raised as to whether the continuing involvement of the staff in long-term, serious problems is a judicious use of their time or whether referral is a wiser course.

- The concept of a school-linked clinic operation—or conversely, a clinic-linked educational and counseling project in the school—is a model that works in terms of the flow from one setting to the other. Approximately one-quarter of the students encounter the staff in both settings. Some who attend discussions in the school health

suite may not wish to enter a clinic, and would not do so even if it were located in the school. For others, in-school contact can serve as a bridge to the clinic, where counseling and medical services can proceed without the limitations of school hours, calendars and administrative controls.

- Formal efforts to involve parents generally failed. Information was not recorded on the limited number of contacts with parents, who were often seen on an individual basis but who rarely participated in meetings about the program. Students were encouraged to tell their parents that they utilized the program and many did so, but a great deal more time must be invested if real and continuing parental involvement is desired. Similarly, greater faculty involvement would have been useful, but that, too, would require time not allocated in this program.

In conclusion, we believe the results of the Baltimore pregnancy prevention program reported earlier⁵ reflected an impact on the school populations that was substantially greater than could be expected if this had been a clinic-only program. By putting school and clinic components together, the program created an atmosphere that legitimized discussions of sexual conduct, contraception, abstinence and pregnancy among those who used its individual services and those who did not. Although its focus was narrow and specific to reproductive health, its offerings in counseling and education and in values clarification and life planning were broad. In combination with the positive effects of the program, these utilization data suggest that the model was highly acceptable to the students, that the staff was seen as a valuable resource and that both the clinic and school components contributed to the program's success.

References

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Sunday - July 1994 NGA meeting

WELFARE REFORM LEADERSHIP TEAM

ENGLER

CARDER

Schaefer - teen pregnancy prevention - long history of efforts to reduce teen pregnancy

Maryland effort - ① parents as sex educators

② community, middle school program
teen abstinence

- believe it is easier to convince teens

not to become sexually active rather than stopping sex activity after it begins.

"Campaign ^{FOR OUR CHILDREN} Against ~~teens~~"

DOUGLASS CENTER

New York effort to reduce adolescent pregnancy prevention.

2700 teenagers who get pregnant everyday

1300 - ~~ten~~ babies born to teens every day.

Emphasis 7 learning components to reduce

- education - guarantee college education.

MR. KIRK - South Carolina

LAURIE SCHWAB ZAREM, REBECA WONG,
ROBIN M. WEINICK, AND MARK R. EMERSON
The Johns Hopkins University

Dependency in Urban Black Families Following the Birth of an Adolescent's Child

Correlates of change in short-term economic dependency are explored in households of 307 urban black adolescents, approximately half of whom bring babies into the family. Correlates of increased dependency differ with dependency defined as "proportion of household members employed" as opposed to "welfare dependency." The key explanatory variable with both definitions is the adolescent's employment status. Presence of her baby significantly affects an adolescent's job dependency, but not welfare dependency once prior welfare status is controlled. Multivariate models illustrate the roles of transiency, age composition, household structure and the adolescent's father. The conclusion raises questions requiring examination in larger, more representative samples.

Although associations between early childbearing and poverty have long been confirmed, it has become increasingly clear that a simple causal relationship cannot be demonstrated. Evidence of the causal role of economic conditions is reflected in the multigenerational nature of early motherhood, in the societal and cultural characteristics of many communities in which it is a common pattern of parenting, in predisposing characteristics of individuals who are more likely to become

teen mothers within those communities, and in the economic realities to which young women seem to be responding when they opt for early childbearing.

However, there is evidence that early childbearing has economic consequences as well. If childbearing limits the options available to the young mother, it may have an independent effect upon her well-being and that of the family in which the child is reared. This effect may be of importance in families which, by assisting the young mother, help protect her from long-term disadvantage. Although adolescent mothers who remain within their primary families, especially within supportive, often extended, black families, appear at least of an educational disadvantage than those who must make it on their own (Furstenberg, Brooks-Gunn, & Morgan, 1987; Scheirer, 1983), the consequences to the households which provide that support are not well understood.

While anyone's baby must have an effect upon the household in which it is raised, the degree to which an adolescent's child is responsible for a deterioration in economic well-being is not clear. Nor is it clear whether this deterioration, even if demonstrated, is attributable to costs associated with the additional child, the overall dependency ratio within the home, the household structure into which the adolescent's child was born, or limitations which child care places on the potential employment of the young mother and/or other members of her family.

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This paper utilizes a longitudinal data set based on the self-report of a small, demographically homogeneous group of black, urban adolescents to investigate some of these relationships. Just under half of these young women bore a child during a 2-year follow-up. We explore the structure composition of their households at baseline before any of them had children, and changes in those households in the subsequent 24 months. We attempt to assess the contributions of baseline and change variables, including a potential birth, to changes in the economic conditions of the homes of the mothers and nonmothers alike.

PRIOR RESEARCH

A high risk of dependency in the early period childbearing for most teen mothers has been demonstrated. The resulting financial burden is borne by the families of these young women and by society at large (Burt & Levy, 1987); costs for welfare and welfare related services to this subgroup doubled in the 1970s (Burt, 1986). A disproportionate number of welfare recipients bore their first children during their teen years; over twice as high a proportion of Aid to Families with Dependent Children recipients as nonrecipients fall that early childbearing subgroup (Moore, 1978; Moore & Burt, 1982). Risks of living in poverty in the long and the short term appear greater for those with early births (Hofferth, 1987). However, the effects of early birth on poverty are in part having their impact through larger families, marital dissolution, and lower levels of schooling, all of which are associated with early childbearing (Hofferth & Moore, 1979). Of these, only lower levels of schooling could be expected to affect the adolescent mother's household in the one or two following her first birth.

Child care constrains employment for women of any age, but the ability of a teenaged mother to enter the work force is further limited because (a) educational status does not give her access to jobs which can pay for child care even if she prefers to work; (b) the jobs available to her rarely include the benefits she requires for herself and especially for her child, making it necessary for her to qualify for welfare (hence also medical) assistance; (c) little child care is available outside the extended family in the low income environment in which she is often isolated. A high "tax"

on welfare dollars (that is, the welfare dollars lost when working and the low benefits associated with working) makes employment an unattractive alternative to social services support (Danziger, Haveman, & Plotnick, 1981; McLanahan & Garfinkel, 1989).

Recent studies of the impact of adolescent childbearing on future economic well-being have shown that its effects may depend upon how long after the birth of the child the measurements are made. Short-term effects on welfare and welfare related dependency, and on participation of the young mother in the labor force, may be great, but some differences between early and later childbearers tend to diminish over time (Card & Wise, 1978; Furstenberg et al., 1987). Short-term reliance on social services may not be associated with long-term disadvantage, especially if those who bear children early not only enter but also leave welfare earlier than those who bear children later (Block & Dubin, 1981). In fact, an adolescent's reliance on welfare in the period after child-birth may permit her to become more independent in the future; if her period of dependency allows her to return to school she can increase her potential earnings in later life.

It has been shown that the dynamics of the household and the dynamics of poverty are related. For a family, the beginning of a spell of poverty is often associated with a change in household structure; such a change has been shown to precipitate almost 60% of the onset of poverty for female-headed homes (Bane & Ellwood, 1983). The effects of extended family structure, with and without a male spouse, on women's employment have also been explored; there is evidence that, whereas the presence of dependent adults who are not part of the nuclear family decreases the propensity of married black women to work outside the home, it serves to increase the probability that single mothers will be so employed (Tienda & Glass, 1985).

Studies which focus on the economic status of adolescents, and those which report measurable overall effects of specific structural variables on dependency, are often based on national data. The present study, using a small local sample, turns a microscope on relationships between some of the variables earlier studies have found significant—that is, nuclear/extended structure, single mother/father and mother-headed households, proportions of the household employed, and de-

pendency ratios in the household—to explore the dynamics of adolescents' households immediately following the birth of the teenager's child. This is the period when indirect long-term effects should not yet be apparent, but increased dependency has been documented. Therefore, although the independent variables we incorporate in our models are drawn from the broader literature, the rationale for their selection here demands that they can, logically, affect the household in the short term.

Our objective here is to explore changes in economic dependency over a 2-year period within the households of 307 young women who presented for pregnancy tests at ages of 17 and younger and, specifically, to determine what role, if any, the child of an adolescent plays in bringing about such changes. First, we describe the households of those who do and do not bear children, focusing on changes in structure, age distribution, and dependency during the period. Then we seek through multiple regression to determine the contribution of several characteristics suggested by the literature—including the adolescent's child—to changes in economic dependency.

While the size and homogeneity of our sample preclude generalization, our focus on a group homogeneous in its high risk of early childbearing will permit us to develop hypotheses about sources of short-term dependency which may be tested in more broadly representative populations.

DATA AND METHODS

This study examines the households of 307 urban, black adolescents aged 17 or younger who presented for pregnancy tests at either of two clinics in Baltimore in 1985 and 1986, all of whom were without children upon admission to the study. Interviewed at length upon admission, before results of their pregnancy tests were known, they were followed at 6-month intervals for 2 years; at 6 and 18 months they were interviewed by telephone, at 1 and 2 years in person. Although this analysis uses information from the intervening surveys, it is primarily based on information given us by the respondents at baseline and the 2-year follow-up.

During the 2-year interval, some had a baby as a result of a pregnancy diagnosed at the index pregnancy test and some bore a child as a result of a pregnancy conceived thereafter. In all, 47% had at least one baby during the observation period. In 96% of these cases, or 45% of the sample, the

babies live with their mothers, the vast majority of whom continue to reside with their primary lies. For purposes of comparison with those without a birth, it is the 45% of respondents children live in their homes who form the "Baby" subgroup. Omitted from this category are the 6 mothers whose babies do not live with them.

Comparing the households with ($n = 137$) without ($n = 170$) these children, we explore structure at baseline, the changes which occur in the composition and structure of the households in the 24-month observation period, and the effects of those changes on employment and welfare dependency. We use two measures of dependency as outcome variables: dependency on social services and a ratio of the number of dependent (i.e., unemployed) household members to all who live in the home. The respondent's child can change the latter measure both by adding to the number of dependent household members and by limiting the respondent's ability to enter the labor force at age 18. By isolating the independent contribution of the teenager's employment and of her child to the household's overall dependency, controlling for structural and change variables of interest, we attempt to understand the role of the baby in the period immediately following its birth.

Neither of the variables we use to define economic dependency—reliance on social service income transfers for support or the proportions of dependents to total household membership—requires that income levels be reported. Thus, we are able to rely on variables accessible to our adolescent respondents, who generally know if a welfare check is a source of income, and whether adults in the home are working or not. Given the difficulty of obtaining an adequate measure of household economic status from teenage respondents, an age group which is generally unable to report reliably on family income, our variables are a major advantage.

A limitation on our measures is the fact that we do not know the degree of dependency on social welfare; that is, we cannot distinguish between the household that receives one social service check and that which receives three. Similarly, we know whether or not an adult is working "regularly for pay now," but not the amount of wages earned; we do not know if the job is temporary or permanent, or whether the income is fixed or variable.

We assume that in households whose socioeconomic status is low and whose environment is ur-

poor, no one worker alone is bringing in a disproportionately high salary; this implies that higher income is related to the presence of additional workers. Thus, when the outcome is a dependency ratio based on work status, we assume that a household whose ratio is lower is at less disadvantage.

Descriptive tables (Tables 1-4) present percentage distributions of relevant variables. In Table 5 we define the models that are included in the multivariate models which follow. In these models, we use logistic regression when the dependent variable is dichotomous (Table 7). When the dependent variable is continuous (Table 6), we use ordinary least squares techniques. In all cases, we use the standardized regression coefficients, allowing comparison of the relative size of the coefficients within a given regression model.

TABLE 1. PERCENTAGE DISTRIBUTION OF RESPONDENTS' HOUSEHOLDS BY PRESENCE OF RESPONDENTS' PARENTS AND STRUCTURE OF HOUSEHOLDS AT BASELINE AND FOLLOW-UP, BY FERTILITY AT FOLLOW-UP

	All		Baby		No Baby	
	%	n	%	n	%	n
Baseline						
Mother and father	23.1	71	21.9	30	24.1	41
Nuclear	78.9		80.0		78.0	
Extended	21.1		20.0		22.0	
Mother alone	60.3	185	63.5	87	57.6	98
Nuclear	57.3		56.3		58.2	
Extended	42.7		43.7		41.8	
Father alone	1.3	4	0.0	0	2.4	4
Nuclear	75.0		0.0		75.0	
Extended	25.0		0.0		25.0	
Grandmother present	15.3	47	14.6	20	15.9	27
No grandparent(s)	66.0		60.0		70.4	
Independent household	27.7		40.0		18.5	
	6.4		0.0		11.1	
	100.0	307	100.0	137	100.0	170
Follow-Up						
Mother and father	15.3	47	11.7	16	18.2	31
Nuclear	78.7		68.8		83.9	
Extended	21.3		31.2		16.1	
Mother alone	59.3	182	61.3	84	57.6	98
Nuclear	64.8		69.0		61.2	
Extended	35.2		31.0		38.8	
Father alone	1.3	4	0.0	0	2.4	4
Nuclear	50.0		0.0		50.0	
Extended	50.0		0.0		50.0	
Grandmother present	24.1	74	27.0	37	21.8	37
No grandparent(s)	39.2		29.7		48.6	
Independent household	21.6		27.0		16.2	
	39.2		43.2		35.1	
	100.0	307	100.0	137	100.0	170

FINDINGS

Households of the Adolescents

The vast majority of the young women (83%) live with their mothers at baseline, and most (75%) still live with her at follow-up (Table 1). In only 28% of the households in which the mother is present, or 24% of the total sample, is the father (real or step) of the respondents in residence at baseline; in fewer than 17% of households is he present at follow-up. Many more of the mother-headed than two-parent households are extended in structure (43% vs. 21%). We will see that some of the change in family structure at follow-up is due to the respondent herself moving out of the primary family setting during the observation period, but very few (9%) set up independent households. We define such a household as one in which neither the girl's nor her boyfriend's par-

TABLE 2. PERCENTAGE DISTRIBUTION OF RESPONDENTS' HOUSEHOLDS BY NUMBER IN HOUSEHOLD, AGE DEPENDENCY RATIO, AND JOB DEPENDENCY RATIO AT BASELINE AND FOLLOW-UP, AND BY FERTILITY STATUS OF RESPONDENT AT FOLLOW-UP

	All (n = 304)	Baby (n = 134)	No Baby (n = 170)
	Baseline		
Mean number in household	4.6 (1.8)	4.8 (2.0)	4.4 (1.7)
Age dependency ratio ^a	.365 (.268)	.399 (.252)	.338 (.279)
Job dependency ratio ^b	.728 (.221)	.755 (.211)	.706 (.226)
	Follow-Up		
Mean number in household	4.4 (1.8)	4.9 (1.6)	3.9 (1.9)
Age dependency ratio	.320 (.277)	.357 (.282)	.291 (.270)
Job dependency ratio	.640 (.275)	.753 (.191)	.550 ()
% change in age dependency	-12.3%	-10.5%	-14.2%
% change in job dependency	-12.1%	-0.1%	-22.1%

Note: Standard deviations in parentheses.

^aAge dependency ratio equals: $< 18 + > 65 / \text{All}$.

^bJob dependency ratio equals: $\text{Not working} / \text{All}$.

ent(s), grandparent(s), nor aunts or uncles are present, and in which either she herself, her partner, and/or a contemporary (≤ 25 years old) are identified as the head of household. Using this definition, only three girls lived independently at baseline and all of them had returned to their primary families at follow-up. Thirteen others had moved out. Therefore, most of the changes shown in Tables 1-4 reflect changes within the primary family itself. It is noteworthy that, although more respondents with babies than without (12% vs. 8%) have moved out of the primary family at follow-up, only 4% of the young mothers did so in order to establish a home with the father of the baby.

Mean numbers of household residents decline overall during the 2-year interval, but not surprisingly they rise in the households in which the respondent bore a child (Table 2). We report two types of dependency ratios in this table. The first is based on age and reflects the proportion of all household members who are below 18 or over 65 years old. Age is the variable upon which dependency ratios are generally based. They reflect the theoretical dependency ratio of the household in which the respondent and her child live. Because the respondent and her child(ren) are accounted for in other variables, this variable is defined omitting them both from the numerator and the denominator of the ratio. The second ratio we use is an actual economic dependency ratio, describing the proportion of nonworking household members among the total number of persons in the home. The effects of the respondent and her

child are retained in this variable. The first proportion declines 12%, (i.e., the proportion in dependent age groups becomes smaller) and changes in the childbearing and nonchildbearing homes are not substantially different. However, the second measure remains virtually the same in the childbearers' households while it declines over 22% in the homes in which the adolescent did bear a child. Thus, in the homes without a birth to an adolescent, a larger proportion of household members are working at the end of the 2-year period than at the outset.

Implied by these changes but not shown here is the large amount of mobility evident within the homes of the respondents. Interviewed at 5 times in the course of 2 years, there were only 10% of homes in which there was not at least one change in residential membership in one of the intervals. Looking at only two points in time, in only 19% of the homes did the composition at the end of the 2 years appear to be the same as it was at the beginning. Even when controlling for the respondent's baby, only 17% of households had no changes in any interval during the 2-year period. Thus, in addition to changes between the beginning and the end of the period, there was considerable transiency, hence change in both age job dependency, beyond that captured in summary measures.

At follow-up, 55% of the respondents are 18 or more years of age (Table 3), 62% of these who bore a child. (This 7-point differential is due to the fact that those who conceived subsequent to the index event were slightly older than those who

TABLE 3. PERCENTAGE DISTRIBUTION OF RESPONDENTS BY AGE, JOB STATUS, AND FERTILITY STATUS AT FOLLOW-UP

	All (<i>n</i> = 306)	Baby (<i>n</i> = 136)	No Baby (<i>n</i> = 170)
18 years old	55.2	61.8	50.0
Working	37.3	26.2	48.2
Not working	62.7	73.8	51.8
18 old	44.8	38.2	50.0

id not. ages of those with a baby and those without not significantly different, 15.7 vs. 5.5.) E we define the respondent as a dependent until age 18, we remove her from the numerator of the job dependency ratio when she reaches that age, if she is working 20 hours a week or more. In a variable reflecting her work status we see a dramatic difference between the two groups on fertility status: Whereas 48% of the respondents age 18 or older without a child are working at follow-up, only 26% of those with a child are no longer dependents. This difference is significant ($p = .004$). Large differences in maternal status are associated with employment: among those both working and in school, about 2 out of 10 are mothers; among those either working or in school, just over 4 out of 10; and among those who are neither working nor in school, about 7 out of 10 (not shown).

At baseline, 70% of the households into which an adolescent's child will be born are receiving support from social services and/or medical assistance compared to 56% of the families which will not (Table 4). Although that difference becomes

greater at follow-up, it is frequently a pre-existing phenomenon. The difference is significant ($p < .02$) and is reflected in the proportion of households which are never dependent on public assistance, a proportion twice as large among non-childbearing households as among childbearing households (34% vs. 17%).

Multivariate Models of Dependency

The multivariate models which follow utilize variables quantified in the descriptive tables; the relevance of each variable is proposed by or theoretically grounded in the literature described above. All the variables are defined in Table 5. Each analysis was performed twice, using two different definitions of the number of people in the household at baseline. One method counted each individual as 1, whatever his or her age. The second used weighted equivalents that account for assumed differences in consumption following recent work by Macunovich and Easterlin (1990). However, because most of the results do not dif-

TABLE 4. PERCENTAGE DISTRIBUTION OF RESPONDENTS' HOUSEHOLDS BY HOUSEHOLDS' SOCIAL SERVICE SUPPORT STATUS AT BASELINE AND FOLLOW-UP, AND PERCENTAGE RECEIVING SOCIAL SERVICE SUPPORT BY RESPONDENTS' RESIDENCE WITH PRIMARY FAMILY, AND FERTILITY STATUS AT FOLLOW-UP

	All (<i>n</i> = 304)	Baby (<i>n</i> = 135)	No Baby (<i>n</i> = 169)
Social Services and/or Medicaid Support			
Baseline and follow-up	44.7	53.6	36.1
Baseline, follow-up	17.1	14.1	19.5
Follow-up, not baseline	11.5	13.3	10.1
Neither baseline nor follow-up	26.7	17.0	34.3
	100.0	100.0	100.0
Receiving Services and/or Medical Support at Follow-Up			
AI ^a	56.4	68.6	46.5
Respondent in primary family ^b	55.4	66.1	47.1
Respondent in independent household ^c	65.5	87.5	38.5

^a*n* = 275.

^b*n* = 275.

^c*n* = 29.

TABLE 5. DEFINITIONS OF VARIABLES IN REGRESSION MODELS

Variable	Definition
Outcome	
Welfare status	0 = never on or changed from on to off; 1 = always on or changed from off to on.
Job status	Continuous variable = difference between ratio dependents in household/all in household at beginning and end of observation period. Dependents = all minors + adults (≥ 18) not working ≥ 20 hours a week.
Economic dependency	Continuous variable = job status variable with correction for welfare status. If change from off to on welfare, add 1, on to off add -1; if no change in welfare status add 0.
Independent	
Nuclear household	0 = extended family household at baseline; 1 = nuclear family household at baseline, includes parent(s) and child(ren) only.
Father present	0 = father not in home at baseline; 1 = father in home at baseline.
Number—baseline	Continuous variable = number of persons in household at baseline.
Welfare—baseline	0 = household not receiving welfare support at baseline; 1 = household receiving welfare support at baseline.
Age dependency	Continuous variable = difference between ratio persons under 18 and over 65/all at beginning and end of observation period, omitting respondent and her child.
Father moved	-1 = father was in home at baseline, was not at follow-up; 0 = father was in the home or out of the home at both time periods; +1 = father was not in home at baseline, was in home at follow-up.
Respondent job	0 = respondent not working at follow-up; 1 = respondent ≥ 18 and working > 20 hours/week at follow-up.
Baby at home	0 = respondent has not had a child of her own in household; 1 = respondent has a child of her own in household.
Respondent age	0 = respondent was ≤ 17 at 2-year follow-up; 1 = respondent was ≥ 18 by 2-year follow-up.
Independent household	-1 = respondent in independent household at baseline, with primary family by 2-year follow-up; 0 = respondent with primary family at baseline and follow-up; +1 = respondent with primary family at baseline, in independent household at follow-up. Independent household defined as: Respondent reports herself/boyfriend/contemporary under 25 as head of household; no parents/grandparents/aunts or uncles present.

fer significantly when weighted equivalents are used, we present only the unweighted regressions below.

In order to separate the effects of the baseline and change variables on both the employment and the welfare components of dependency, the regressions presented in Tables 6 and 7 use different definitions of dependency as the outcome variable. We define dependency in Table 6 in terms of change in the "job dependency" measure reported in Table 2; in Table 7, we define it in terms of the household's receipt (or nonreceipt) of public assistance at the 2-year follow-up. Note that the focus is not on absolute levels of dependency but rather on the correlates of change in both outcome measures.

When change in the job dependency ratio is the outcome of interest (Table 6), the employment status of the respondent herself, and the presence or absence of a child born by her, are highly significant. Also highly significant are changes in the age dependency ratio (net of the respondent and

her baby) between baseline and follow-up. In Model I, which explains almost 47% of the variance in dependency, neither welfare status at baseline nor variables associated with the respondent's father are included. In Model II, variables relating to the adolescent's father are entered; his presence in the home at baseline appears to play no role, but his leaving the home during the observation period adds significantly to an increase in dependency. In Model III, baseline welfare status is entered. Although statistically significant, it adds little to the explanatory power of the models, ($R^2 = .49$ vs. $.50$).

A change in the age dependency ratio adds considerably more than welfare status ($\beta = .35$ vs. $.12$). This is noteworthy because the respondent's age, the presence of her baby, and/or the presence of her father are all controlled. This independent effect of change in the age dependency ratio is largely due to the aging of household members, especially of siblings who become 18 or more during the follow-up period. It also reflects

TABLE 6. BETA COEFFICIENTS AND SIGNIFICANCE OF INDEPENDENT VARIABLES

Variables	Model I	Model II	Model III
Baseline			
Number in household	.0716	.0435	.0774
Nuclear household	.0571	.0227	.0217
Father at home		.0409	-.0033
Welfare at baseline			-.1181**
Follow-Up			
Respondent ≥ 18 at follow-up	.0447	.0511	.0514
Increased age dependency	.3707***	.3439***	.3481***
Adolescent's baby in home	.2036***	.2032***	.2103***
Respondent working	-.4633***	-.4717***	-.4898***
Indep. household	-.0779	-.1032*	-.0941*
Father moved		-.1061*	-.1175*
R ²	.4697	.4854	.4966

Note: Outcome variable is change in job dependency (positive change = greater dependency).
 * $p \leq .05$. ** $p \leq .01$. *** $p = .0000$.

the movement of other individuals into and out of the household. Such movement affects the proportion of the household members who are, in fact, dependents, but these changes represent only a small proportion of the observed change in the age dependency ratio.

A somewhat different picture emerges in the models in which change in welfare dependency is the outcome measure. In the dichotomous outcome logit models (Table 7), status at follow-up is coded 1 to represent either continuation on welfare or a move from off welfare to on welfare. Welfare status at 2 years determines the outcome measure. Once again, the respondent's work status is highly significant ($p = .0000$). Whether or not the respondent has a job is an important determinant of her household's welfare status at the end of observation

than the presence or absence of a child born to her. In fact, once baseline welfare status is entered (Model III), the presence of her child loses even the limited significance it had in Models I and II. In Model III, the respondent's job plays a stronger role than baseline welfare status, (beta = -2.02 vs. 1.71). In these models, the presence or absence of the adolescent's father at baseline, and his movement in or out during follow-up, become significant contributors to increased dependency. That is, his absence plays a role in the household's dependency when it is defined in terms of social service support, a role which was much weaker when it was defined in terms of the proportion of its members in the work force. Conversely, changes in the age dependency ratio, net of the respondent and her child, do not play a significant role when welfare status is the outcome measure;

they are strong determinants of dependency when dependency is defined, as in Table 6, by the proportion employed in the household.

Finally, we note the significance in this model of nuclear household structure: It contributes, although not greatly, to the level of dependency. In this sample, the majority of the households, extended and nuclear, are headed by single mothers. For them, the presence of an extended family appears to protect somewhat against reliance on public assistance, once the presence or absence of their partners and baseline welfare status are controlled (Table 7). However, the beta is small, and a similar picture does not appear when job dependency is the outcome measure.

Thus, the correlates of dependency appear to differ when different definitions of dependency are employed. To explore the effects of a more inclusive definition, we performed similar analyses using a summary measure of change in economic dependency as the outcome variable (not shown). This outcome measure combines changes in the welfare status of the household, and changes in the proportion of household members who are in the work force. An increase in dependency over the 2-year observation period is represented by a move onto welfare and/or an increase in the ratio of dependents (of any age) to working adults. The models using this outcome give a mixed picture of the sources of dependency, suggesting the importance of differentiating between dependency measures as we did in Tables 6 and 7.

In all the models with the summary outcome measure, the addition of the adolescent's baby to the household, the employment status of the respondent herself, an increase in the age dependency ratio, and a nuclear household at baseline are all significantly associated with increases in dependency. When the presence of the father in the household at baseline and a change in his presence between baseline and follow-up are entered, they produce little change in the results. With welfare status at baseline added, the explanatory power of the model more than doubles. Nuclear household structure remains positively associated with increased dependency but, again, its contribution is small. The adolescent's baby remains highly significant in this model with a combined outcome, most likely because of its role in the household's job dependency ratio.

Role of Background Characteristics

In each of these models, the effects of individual background characteristics of the respondent herself were tested, characteristics such as her school status and her educational aspirations, her age or her religiosity. There were, not surprisingly, some differences between the young women who had a baby during the observation period and those who did not. Significant differences were those which suggest lower academic standing among the child-bearing group, such as the larger percentage behind age for grade ($p = .01$) and the smaller percentage who aspire to more than a high school education ($p = .001$). In no case, however, were these characteristics significant in relation to the outcome variables. Furthermore, when introduced into the multivariate models, they did not change the relative contribution of the independent variables reported above.

CONCLUSIONS

We have attempted to describe changes in dependency status in the households of urban, black adolescents during a 2-year period following their presentation for pregnancy tests at age 17 or younger. Some of them had a child during that interval and some did not. We seek to understand the role of the adolescent's child in the changes in economic dependency we observe. Although limited in our ability to control for the time since the birth of the child, in all cases the effects we describe should be seen as short term; they are all observed within 18 months of the birth.

Sources of Dependency

The data suggest that the sources of increased economic dependency are not the same when dependency is defined in terms of public assistance as when it is defined in terms of an employment-based dependency ratio. Some variables are significant in relation to both outcomes, but others are clearly different. In both cases, dependency is associated with the prior status of the household and with changes in the households during the observation period. In both cases, it is related in part to the presence of the adolescent's child and in part to other factors.

The respondent's own employment status consistently makes the largest contribution to both

TABLE 7. BETA COEFFICIENTS AND SIGNIFICANCE OF INDEPENDENT VARIABLES

Variables	Model I	Model II	Model III
Baseline			
Number in household	.1379	.1962*	.0638
Nuclear household	.2346	.5435	.6291*
Father at home		-1.5862***	-1.1109**
Welfare at baseline			1.7142***
Follow-Up			
Respondent ≥ 18 at follow-up	.7916**	.7786**	.9496**
Increased age dependency	.0007	.0007	.0007
Adolescent's baby in home	.6698**	.5649*	.5162
Respondent working	-2.0449***	-2.0414***	-2.0162***
Indep. household	.6438	.5646	.4671
Father moved		-1.0585*	-.9490*
R ²	.320	.363	.446

Note: Outcome variable is social services dependency at follow-up (welfare at follow-up = 1).
 * $p \leq .05$. ** $p \leq .01$. *** $p = .0000$.

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I. What Did It Cost?

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Summary

An experimental pregnancy prevention program for junior and senior high school students consisted of classroom lectures, informal discussion groups and individual counseling in the schools and group education, individual counseling and reproductive health care in a nearby clinic. The structure of the program allowed for extensive individual counseling for students who desired it, and the reported costs are thus considered generous. School-based services utilized 40 percent of a total three-year budget of \$409,250, and clinic services, 60 percent. The average cost per student served was \$122, with the average per female student almost four times that per male and the average per senior high student more than twice that per junior high student. Students who utilized more expensive types of services, such as individual counseling and medical services in the clinic, also used other program offerings more frequently. Services to students who attended only class lectures cost an average of \$13.20 to deliver, while students who utilized all services cost the program an average of \$546 each.

Introduction

The variety of programs or components of programs that attempt to address some aspect of adolescent pregnancy has resulted in a wide range of cost estimates both for entire programs and per patient. The diversity in organization, types of services offered and primary goals, however, makes cost comparisons difficult, as does the diversity in methodology and sources of data from which the estimates

are made. One report estimates the United States' total expenditures for family planning clinic services to be \$81 per woman of reproductive age, including those who do not use clinic services.¹ Based on statewide expenditures, an Illinois report estimates a cost of \$10 per teenager for family life education and \$75 per teenager for family planning.² One analysis cites \$100 per patient for comprehensive school health services.³ Another widely quoted figure of \$125 per student is an average that was computed by dividing wide-ranging estimates of costs in 15 comprehensive school health clinics by estimates of the numbers of students using each facility; a number of costs, such as those for maintenance and overhead, were not included in the analysis.⁴ None of the programs mentioned has published a detailed description of services, and none is proposed as a basis for replication. Project-specific estimates have been made for programs for pregnant and parenting teenagers, but not for programs that aim at prevention.⁵

This article explores the costs of one program, described in the preceding article, that had as its primary objective the prevention of pregnancy in a high-risk population. Two comments should be made at the outset. First, the project was conceived as an experimental model with a strong research component. Although research costs are not included in our analysis, the very structure of the program was luxurious, with generous staffing and ample time to meet the demands of the students. There is reason to suppose, therefore, that the reported costs are maximal. Second, the project was connected to a

major health institution and shared staff with that institution. In replicating any one project, especially one with these advantages, the question must always be raised of whether the costs can be duplicated. Adjustments made in accommodating program costs to the accounting and staffing requirements of The Johns Hopkins University (the affiliated institution) are reported, and the overall impact of the institutional association is addressed.

The denominator used throughout this analysis to calculate per student costs is not total enrollment but rather students who had contact with the program; as described in the preceding article, this probably includes all students in school on a regular basis. Data on student utilization of various program components were drawn from project records, as detailed in the preceding article. The Johns Hopkins University accounting records provided a systematic and complete account of the expenditures of funds assigned to the program, which was underwritten by a private grant. Records kept by program staff and interviews with them were utilized only to help in assigning time estimates to particular functions.

The administrative staff included the principal investigator of the service project, a program director who managed day-to-day operations and a secretary who also served as the clinic registrar. The core service staff consisted of two social workers, both with master's degrees, and two registered nurses (a nurse-midwife and a pediatric nurse practitioner). They were supported in the clinic by one nurse's aide or licensed practical nurse and were joined

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Medicine. The authors acknowledge the support of the W. T. Grant Foundation and the Ford Foundation for the analysis on which this article is based. The pregnancy prevention program was funded by the Educational Foundation of America. The authors also acknowledge the contributions of the program staff, the Johns Hopkins University Business Office and Jennifer Petroski, who prepared the manuscript.

on some afternoons by a physician, often the medical director, who had the ultimate responsibility for the program's medical services. Physician time was scheduled differently as the program developed: At first, a physician was utilized for one afternoon a week, then later, for portions of afternoons or on an on-call basis. On busy clinic afternoons, the staff was augmented by an educator with training and experience in sex education, adolescent services and group process. Peer resource students, trained to encourage student participation and to assist with audiovisuals and small group discussions, were paid for their help. During the first year, parents were occasionally involved and paid to serve on an advisory committee. An outreach worker compensated by another program played a small role in the first year as well.

Maintenance and custodial staff employed by the university were paid out of program funds for time spent in the clinic. The university did not charge the program directly for rent and utilities (except for telephone expenses); these were covered through an annual overhead charge of 15 percent of project funds that the university collects from all grants. This charge included bookkeeping and payroll functions. The 15 percent rate is almost identical to the actual per-square-foot charge attributable to the space occupied. At the funder's request, the university waived the charge in the first year of the three-year program, but for the purposes of this analysis, we have added a similar amount to first-year costs to represent rent and utilities. As is customary in most schools around the country, no rent was charged for the in-school health suites used by the program.

Because all indirect costs were thus applied to space, there was no item in the program budget for administrative functions supplied by the University, many of which were attributable to the record-keeping requirements of a large institution. Fringe benefits and personnel practices of the affiliated university and hospital also put a larger burden on the budget than might be expected in freestanding programs. It may be that administrative monies saved and monies spent (or time saved and time spent) because of this program's relationship with a major university hospital cancelled one another out; it would be difficult to prove that the relationship systematically increased or decreased administrative costs. Some budget adjustments were made when staff and materials were shared, but often time devoted to this project by hospital staff bal-

anced time devoted by program staff to other tasks in the hospital; similarly, materials purchased with program funds were shared with the hospital, and hospital materials were shared with the program. Finally, because an extant facility was used, as is often the case with programs run in cooperation with another institution, start-up costs did not include furniture or clinic equipment, such as examining tables.

The two social workers and two nurses maintained daily logs of all their student contacts. These enabled us to estimate the average time invested in each type of program encounter. Although other staff did interact with students at times, the four key staff members were primarily responsible for the six school and clinic services offered by the program. Therefore, we have allocated the costs for the entire project to the six component services according to the amount of time the four workers invested in each component. This method of calculation allows for a breakdown of costs by site (school and clinic). The analysis produces maximal estimates of the costs of each service, because all expenditures for the program—including administration, rent, supplies and support staff—are assigned to one or another of the services provided. When divided by the number of student contacts within that service, the cost of a medical visit, for example, will include expenditures for the physician, nurse's aide or licensed practical nurse assisting in the clinic; contraceptives and other medical supplies; a share of overhead for administration and maintenance; and the portion of the nurse's time allocated to clinic visits as reflected in her staff log. Similarly, the cost of individual social work visits include expenditures for educational materials, an extra educator in attendance during clinic hours, overhead and the social worker's time.

The distribution of staff time differed in start-up and later segments of the program and in the summer and winter segments. Consequently, costs were computed as a percentage of the time devoted to each type of service in different time periods covering the course of the program. These costs were then averaged to determine an overall cost per service.

A few costs are divided between the school and clinic sites before being allocated according to the time distribution index. The costs for administrative staff are divided 50 percent to each site, with the exception of those for the secretary, who also acted as clinic registrar—her time is divided 25 and 75 percent between school and clinic services, respectively.

Table 1. Program costs, by type of expenditure, according to site, September 1981–June 1984

Type of expenditure	Total	School	Clinic
Total	\$409,250	\$163,500	\$245,750
Personnel	329,000	143,500	185,500
Administrative	117,500	49,500	68,000
Social workers & educators	93,750	50,250	43,500
Medical staff	105,750	41,500	64,250
Students & parents	3,250	0	3,250
Maintenance	8,750	2,250	6,500
Rent & utilities	43,250	10,750	32,500
Supplies	35,250	8,750	26,500
Office	7,250	1,750	5,500
Educational	14,000	7,000	7,000
Medical	14,000	0	14,000
Travel	1,750	500	1,250

Similarly, because the clinic served as the administrative center for both sites, 25 percent of office supplies, rent and maintenance costs at the clinic are attributed to the school component of the program. Within the clinic or school component, costs not specific to one or another site are prorated according to the time distribution of the social workers and nurses.

Budget Breakdowns

Table 1 shows a total budget of approximately \$409,250 for the three school years.* School-based services utilized 40 percent of the budget, and clinic services, 60 percent. Personnel costs for administration include a small portion of the time of the principal investigator for the service program, all of the time for the program director in the first two years and half of her time in the third year, and all of the time for the secretary/registrar in all three years. With the reduced activity of the program during school vacations, the assignment of social workers and nurses to the hospital helped control costs while allowing for continuity of staff. The fourth line of the table shows the costs for the time of the two social workers (whose average annual full-time salaries would have been the equivalent of \$20,000, including fringe benefits) and the hourly cost of educators during busy clinic afternoons. The medical staff category accounts for the costs of the two nurses (with an average full-time equivalent salary of \$24,000, including benefits) and an hourly cost for the part-time physician and nursing assistants.

*The program ran from September 1981 to June 1984. Staff work started between September and November 1981; the school services commenced in November, the clinic opened in January 1982.

Table 2. Number of students served, total expenditures and costs per student, by gender and school level

Gender and school level	N	Total	Costs per student		
			Average	Maximum†	Minimum
students	3,348*	\$409,140	\$122	\$3,052	\$3
Junior high	1,834	143,106	78	1,680	3
Senior high	1,508	266,001	176	3,052	3
Male	1,400‡	68,438	49	891	3
Junior high	930	47,460	51	815	3
Senior high	469	20,970	45	891	3
Female	1,868‡	340,281	180	3,052	3
Junior high	872	85,397	109	1,680	3
Senior high	1,012	244,868	242	3,052	3

*Includes students with gender and/or school level unknown.

†Maximum costs exclude peer resource students. ‡Includes students with school level unknown.

Table 2 shows the allocation of expenditures by sex of student and school level; the average cost per student served is \$122. The average cost per female student is almost four times that per male, and the average cost per senior high student is more than twice that per junior high stu-

t. These mean costs represent widely divergent extremes, as the maximums and minimums suggest. The \$3 minimum is the cost per student of in-school discussion groups conducted by a social worker, who led most of these discussions and whose hourly rate was less than that of the nurses, who also led some discussion groups. Maximums reach extraordinarily high levels, even excluding the costs attributable to the peer resource students, which are omitted from these maximum figures and will be discussed later. The maximum of \$3,052 for a senior high female covers some 228 contacts that one individual had with the program staff.

Table 3 shows the cost for each of the six

types of service. It documents the relatively low cost associated with small-group work both in the schools and in the clinic—slightly more than \$4 per student contact. This was less than a class presentation. Although each presentation included many more students, they took time to prepare and lasted for a full class period.

Small-group costs contrast dramatically with the high price of individual counseling, which averaged \$28 in the school setting and \$42 in the clinic. No attempt was made in this program to reduce the amount of time devoted to these sessions, and the costs reflect that decision. Social workers did all of the clinic counseling and 60 percent of the school counseling. Yet, even though personnel costs were less for social workers than for nurses, the average cost per clinic contact was more than that per school contact because private consultations were longer in the clinic. In fact, on a per contact basis, clinic visits with the social worker were more expensive than visits with medical staff. Since 80 percent of all clinic registrants asked for a contraceptive method at their first visit and since counseling was required for all contraceptive patients, these counseling costs are part of the process of introducing and maintaining a contraceptive regimen.

Most of the encounters of students with the staff in the first year of the program cost more than in the last two school years, because of start-up costs and because of the time it takes for patient flow to build. With time and improved efficiency, medical service costs were reduced, so that individual medical visits reported in Table 3 at almost \$41 for each encounter averaged slightly more than \$31 at peak periods. Clearly, the expenditures reported in any study of costs will be affected by the duration of the program, because start-up costs are attenuated over time.

Table 4 classifies all of the students touched by the program by the pattern by which they utilized services. Moving across the table, groups include those who heard only a classroom presentation, used only school components, visited the clinic but never sought individual services, sought individual counseling with the social worker, had a medical visit, and had visits with both the social worker and medical personnel. As expected, mean costs per student varied widely depending on how many different components they utilized, and moving from left to right, increasing levels of involvement imply sharply increasing costs. For example, those students who attended only class presentations attended an average of 2.4 such sessions during their program exposure, at a cost of \$13.20 to the program. Those students who participated in other school activities without attending the clinic averaged 7.2 contacts with the program—2.7 class presentations, 4.3 group discussions and 0.2 counseling sessions—for a total of \$40 worth of services.

This table suggests that not only does use of more expensive components increase costs, but those students who register for individual clinic services use more of each component along the way. For example, the average number of clinic group contacts for students whose only clinic participation was in group education (1.4) was lower than that for those who had individual counseling (2.6), and was much lower than that for those who utilized both counseling and medical services (8.2). Note that even the row reflecting attendance at class presentations increases with greater program involvement, implying that these students spent more time in school, or at least attended these classes more often. Thus, the students who utilized the more expensive services used more of the other services as well. For example, costs for school services alone for those students who visited the clinic for both individual counseling and medical services totaled \$140, in comparison to the \$40 total for the same services for those who restricted their contacts to the school setting.

The clinic data indicate that the small subset of students (40) who utilized medical services but never met with the social worker had lower overall costs (\$119) than those who received counseling but no medical services (\$162). The first group were primarily individuals who came for one medical visit. They contrast strikingly with students visiting for medical services who also consulted a social worker, a group with almost six medical visits each,

Table 3. Number of contacts and cost per contact, by site and type of service

Site and type of service	N	Cost
Total	36,434*	\$11.23
School	25,570	6.42
Class presentation	9,263	5.56
Group discussion	14,604	4.44
Individual counseling	1,703	28.08
Clinic	10,756	22.78
Group education	5,377	4.22
Individual counseling	2,243	42.24
Medical visit	3,135	40.69

*Includes 109 contacts with site or type of service unknown.

Total number of contacts is 3,046 greater than reported in Table 1 of the preceding article: The 109 with site or type of service unknown were not included in the analysis of services; 2,937 contacts made jointly by two staff members were counted as one contact when tabulating services but as two when tabulating costs, because each worker contributed time.

costing an average of \$235 for medical treatment alone. What is noteworthy about this latter group, however, is the fact that their total cost to the program of more than \$545 each is not solely a function of their medical costs but reflects their more extensive use of almost all services.

A breakdown by sex shows the same pattern among females: The more types of service the student participated in, the more she used each service. Among males, the pattern is not quite as consistent. A particular exception is a small group of 63 who used the clinic only for group activities. Because these students also attended the smallest mean number of class presentations, many may not have been members of the student body at all. Some may have showed up at the clinic with partners or friends, since 20 of them appeared on clinic sign-in sheets but did not appear on any of the school rolls. While they were technically not eligible for service, out-of-school partners might be reached in this manner at little cost, a possibility that other programs might wish to explore.

Table 5 (see page 192) divides the services offered and their cost per student into three broad categories—education, counseling and the provision of contraceptives—ignoring the site at which students received these services. Students in the first group received classroom or group education—in the school, the clinic or both—but no private consultations. Those in the second group received individual counseling at at least one site. Those in the third group were registered clinic patients who received some contraceptive method from social workers, medical staff or both. The overall cost per contraceptive patient, of whom there were 740 in the program, averaged \$432. Although not evident in the table, this cost was considerably less for the 241 males (\$174) than for the 449 females (\$557). All the figures shown in the table include the large costs associated with training and serving the 12 peer resource students. The cost for each of the 12, all of whom were contraceptive patients, averaged \$2,248, plus direct stipends paid when they assisted at the clinic. Excluding the expenditures for these students would decrease the cost per contraceptive patient to \$402 and the total cost per student to \$115.

Costs were also calculated according to whether students attended a program school for one, two or three years. Costs rose steeply, especially between one and two years' exposure. The sharp rise is attributable not only to the greater number of services in a longer time period

Table 4. Mean number and mean cost of contacts per student, by type of service, according to pattern of utilization

Type of service	Utilization pattern					
	Class presentation only	School contact only	Clinic group education	Clinic counseling: no medical	Medical; no clinic counseling	Individual counseling & medical
TOTAL	(N=1,018)	(N=1,279)	(N=234)	(N=246)	(N=40)	(N=532)
Contacts	2.4	7.2	7.8	15.6	11.0	35.0
Cost	\$13.20	39.74	42.44	162.11	119.21	545.66
SCHOOL						
Class presentation						
Contacts	2.4	2.7	2.5	3.6	2.8	3.5
Cost	\$13.20	14.66	13.91	20.01	15.99	19.73
Group discussion						
Contacts	na	4.3	3.6	6.8	4.2	12.0
Cost	na	19.55	15.07	28.39	17.71	53.74
Indiv. counseling						
Contacts	na	0.2	0.3	0.4	0.6	2.4
Cost	na	5.53	7.70	11.47	17.58	66.90
CLINIC						
Group education						
Contacts	na	na	1.4	2.6	1.9	8.2
Cost	na	na	5.75	11.06	7.91	34.41
Indiv. counseling						
Contacts	na	na	na	2.2	na	3.2
Cost	na	na	na	91.17	na	135.93
Medical visit						
Contacts	na	na	na	na	1.5	5.8
Cost	na	na	na	na	60.02	235.27

but also to the much larger proportion of those students exposed for two or three years who utilized the clinic for contraceptive services. This implies return visits for those who continued to use contraceptives. Longer exposure also implies older ages, but some of the differential remains even when the age is controlled for.

Discussion

In a sense, the attribution of a cost to each service is an artifact of the analysis. The staff had a fixed cost; each student did not add an incremental cost but rather used a piece of the time that would have been paid for whether or not a service was delivered. Could that staff have been smaller? In the interest of continuity between the school and the clinic, the model called for the placement of a staff person in the school in the morning and the same staff person in the clinic in the afternoon. Without violating the model, no savings could be effected there; however, considerable savings were realized after the first year, by putting only the social workers (and not the nurses) in the schools on a daily basis. In the second and third years, the nurses went into the schools only for special lectures or activities. This saving was effected because data from the aggregate research survey conducted at the end of the first

year revealed that students who went to the health suites had discussed the same subjects with either professional. They did not appear to require a medical person. The ability to retain higher cost medical personnel for only the half-time clinical operation represented an important economy.

One of the big surprises in these data was the evidence that social work counseling in the clinic was more costly, per contact, than medical care. This is clearly a function of the time invested in each encounter, time which was allowed in this service model. Consequently, even with the price of contraceptives, other medical supplies, physicians and support staff included in the estimated cost of visits with the nurses, the time invested in clinic counseling by social workers made their sessions more costly. The belief of everyone associated with the program is that the program's effects would be difficult to replicate without the social work component. Furthermore, if more counseling were to fall on the medical staff, with their higher hourly costs, these services would become prohibitively expensive.

Does that imply that it is necessary to invest in virtually unlimited personal counseling for any student who requests it? Should those in of repeated sup-

Table 5. Number of students and cost per student, by services used, according to years in program

Services used	All		One year		Two years		Three years	
	N	Cost	N	Cost	N	Cost	N	Cost
Total	3,349	\$122	1,706	\$ 39	1,014	\$174	629	\$264
Classroom and group ed. only	2,325	23	1,402	14	603	29	320	50
Individual counseling	284	126	108	87	102	127	74	183
Contraceptive services	740	432	196	188	309	473	235	581

portive care be referred instead to outside agencies? The staff believes it would have been difficult to convince the students who depended most heavily on them to accept an outside referral, because when the attempt was made in several cases, it was difficult to convince the student to follow through. It is also the sense of the staff that those who made the largest demands on their time were not always their greatest successes, but often were their most needy cases. If as a result of extensive counseling, a student's tenure in school can be extended one year or an unintended pregnancy can be postponed by a few months, then reducing the counseling component might be a serious mistake. In the absence of a control clinic in which counseling time is limited, these questions cannot really be answered. What is not in doubt, however, is that in a disadvantaged urban population where few resources are available to teenagers, life-event counseling and crisis management are major unmet needs.

Group education in the clinic was an extremely economical way of performing several functions: For unregistered students, it introduced the ideas and attitudes of the program, and for some, it served as the precursor to registration; for other students, it was an on-going source of educational support in the absence of individual clinic services; and for registered patients, it augmented more costly individual services and updated their education on repeat visits. Small-group work in the school, at comparable costs, accomplished many of the same goals for the same students, and for many who would not otherwise have received this service.

A subjective assessment by the staff was that the program probably invested too little time in establishing positive relationships with the faculty of the program schools. If more time had been spent on this endeavor, teachers might have involved the staff in more classroom discussions, the social workers' time in the school would have been more efficiently used, and the cost of classroom contacts would have been considerably less than the cost

of small-group sessions, not more.

The use of staff time by the peer resource students cost almost \$27,000, averaging \$2,248 for each member. That is a major investment and was supplemented by direct stipends paid to them totaling more than \$2,000. It was the impression of the staff that the payoff came more in the individual growth it encouraged for these students than in the original goals of referring other students to the clinic or providing assistance to the staff. All 12 students were contraceptive patients, so some of the expenditure would have been incurred even if they were not peer resource students. If one subtracts, from the approximately \$29,000 that these individuals cost, the average expenditure on three male and nine female contraceptive patients, the remainder is almost \$23,500, or \$11,750 per year. This is a relatively high price to have paid for the help of the peer resource students, although it also paid for their contribution to the students' sense of ownership and pride in the program. There are probably less costly ways of promoting that sense of student participation. A decision on whether or not to include a similar component should probably be made with the knowledge that the drain on staff time, and hence on program dollars, is considerable.

Costs for individual medical services do not appear high in view of their inclusion of tests and contraceptive supplies, especially since after the start-up period, they came down to \$31 per contact. Critically important to an estimate of medical costs in a new program are data on the percentage of students who are sexually active, because of the large impact of their demand for contraceptive services, and in particular, the costs of their initial visits.

The association of a school-linked program with a larger, year-round institution can be cost-efficient. The ability to share staff so that they can be used only where and when needed would serve as an economy to any program, especially one with the time and seasonal constraints of a school-linked operation. Cooperation

between schools and nearby health delivery systems also permits the provision of year-round health care in one site. This model, which places the clinic adjacent to, but outside, the school is politically attractive. It is also cost-effective because, in many locations, it allows one clinic to serve more than one school. However, it requires more than an informal linkage; it requires the presence of program staff in the school.

Forty percent of the cost of this model program was used for school services and 60 percent was used for clinic services, even though many more students used the school components than used the clinic components. The \$163,500 that the school services cost—or between \$50,000 and \$60,000 per academic year—seems a relatively small amount to have spent to reach almost all the students in the classroom, among them 1,018 who were reached only in that setting. It also covered the delivery of small-group and individual services to the 1,279 students who sought them out only in the school setting and to the 1,052 students who received services in the clinic setting. Much of the program's success in postponing the onset of intercourse⁶ must have been due to the school component, since it was usually the sexually active students who came to the clinic. The program's success in bringing about measurable change in the student body as a whole appears to have been predicated on establishing an atmosphere of communication and responsibility among a larger segment of the students than attended the clinic, which again reflects the value of the school component. This study suggests that the cost of that component is relatively low, which may recommend the model for replication in other jurisdictions.

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