

Youth Assets and Sexual Risk Behavior: The Importance Of Assets for Youth Residing in One-Parent Households

CONTEXT: Youth assets are associated with a reduction in sexual risk behavior; however, little is known about this association among youth at high risk of engaging in unsafe behavior, such as those in one-parent households.

METHODS: In-home interviews were used to collect data from 1,253 inner-city teenagers and their parents. Multivariate logistic regressions were conducted separately for youth from one- and two-parent households to assess relationships between youth assets and four behaviors related to sexual risk: never having had sexual intercourse, not being currently sexually active, having delayed intercourse until age 17 and having used birth control at last intercourse.

RESULTS: Among youth living in one-parent households, those with the aspirations for the future, good health practices (exercise/nutrition), peer role models and family communication assets had significantly elevated odds of reporting one or more of the behaviors examined (odds ratios, 1.8–7.3). The peer role models asset also interacted with parental education to significantly predict an absence of current sexual activity for youth in one-parent households (21.2). Among youth living in two-parent households, community involvement was linked to increased odds of never having had sex (1.9), but no other significant relationships were found. Youths' total number of assets significantly predicted three of the four behaviors among youth in one-parent households (1.2–1.8), but predicted only sexual inexperience among those in two-parent households (1.4).

CONCLUSION: Future research should more fully investigate the role of family structure in relationships between youth assets and risk behaviors. Certain youth assets may be particularly effective in reducing sexual risk behavior among youth in one-parent households.

Perspectives on Sexual and Reproductive Health, 2005, 37(1):25–31

By Roy F. Oman,
Sara K. Vesely and
Cheryl B. Aspy

Roy F. Oman is associate professor, Department of Health Promotion Sciences, and Sara K. Vesely is assistant professor, Department of Biostatistics and Epidemiology, both at the College of Public Health, University of Oklahoma Health Sciences Center, Oklahoma City. Cheryl B. Aspy is professor, Department of Family and Preventive Medicine, College of Medicine, University of Oklahoma Health Sciences Center.

Youth living in one-parent households are more likely to engage in sexual activity and related risk behaviors than are those in two-parent households. For example, compared with youth living in two-parent households, those living in one-parent households are significantly more likely to report sexual experience; young age at first sex; truancy; tobacco, alcohol or drug use; a history of having been arrested or detained by law enforcement; and fighting.¹

These findings are particularly important because the proportion of youth living in one-parent households in the United States has generally increased over the past three decades. For example, the proportion of youth younger than 18 living in one-parent households rose from 12% in 1970 to 28% in 1996 and stabilized at 27–28% from 1997 to 2002. From 1970 to 2002, the proportion of youth living with their mothers only increased from 11% to 23%, and the proportion of youth living with their fathers only increased from 1% to 5%.²

Studies have examined how family structure (i.e., one- or two-parent household) may influence youth risk behaviors. One study found that parental emotional support did not significantly interact with family structure to predict sexual risk behavior for males or females.³ Other research has suggested that the quality of the mother-child relationship (defined as the amount of communication,

warmth, love and closeness between mother and child) may be more important than family structure in determining young women's age at first sexual intercourse.⁴ Still another study found that fathers' absence from the household was significantly linked to early sexual activity and teenage pregnancy.⁵ These results suggest that further research is necessary to investigate significant factors that may influence the sexual risk behaviors of teenagers residing in one-parent households.

One strategy for addressing adolescent risk behavior that is currently receiving substantial attention is youth development, a concept defined by Werner and Smith and later elaborated by Catalano and Hawkins.⁶ As a programmatic approach, youth development is based on adolescent behavior research that incorporates social constructs associated both with risk behaviors (e.g., drug and alcohol abuse, delinquency) and with positive outcomes (e.g., academic achievement, self-control) and resiliency.⁷

A fundamental premise of youth development is that youth should be viewed as resources instead of as potential problems.⁸ This approach places the public health emphasis on providing youth with an environment that encourages growth and development, despite potential adverse situations such as poverty or parents' divorce. The focus on youth development has promoted a research and program approach that

TABLE 1. Youth assets, number of survey items representing each asset, and Cronbach's alpha reliability coefficient and example item for each asset

Asset	No.	Alpha	Example item
Nonparental adult role models	7	.74	You know adults that encourage you often.
Peer role models	6	.81	Are most of your friends responsible?
Family communication	4	.61	How often do you talk to an adult in your household about your problems?
Use of time (groups/sports)	4	.71	You participate in an organized activity after class.
Use of time (religion)	2	.71	How often do you participate in church/religious activities?
Community involvement	6	.78	You work to make your community a better place.
Aspirations for the future	2	.67	As you look to your future, how important is it to you that you stay in school?
Responsible choices	6	.69	You can say no to activities that you think are wrong.
Good health practices (exercise/nutrition)	1	na	You take good care of your body by eating well and exercising.

Note: na=not applicable.

links risk reduction with efforts to increase protective factors—or youth assets—such as valuing achievement, positive peer role models and close ties to caring adults.⁹

Assets can help youth avoid potentially harmful behaviors.¹⁰ Catalano and colleagues reported that participants in 24 of 25 programs that had been appropriately evaluated showed significant improvements in such problem behaviors as drug and alcohol use, truancy, violence, sexual risk behavior and smoking.¹¹ Less is known about the role of assets among youth who are at increased risk of engaging in potentially harmful behavior, especially those living in one-parent households. Typically, researchers control for family structure's potential influence on the relationship between youth assets and risk behavior in much the same way as they control for parents' socioeconomic status and youths' age, race and ethnicity. Although the relationship between youth assets and youth risk behavior has been studied,¹² no published research investigates how this relationship may vary by family structure. Because family structure is clearly associated with youth risk behaviors, including sexual risk behaviors, it seems plausible that youth assets may also have a role in the relationship between family structure and youth risk behavior. For example, previous investigations using the data analyzed here suggested that some assets were associated with a reduced likelihood of fighting or alcohol use only for youth living in one-parent households.¹³ In this study, we systematically investigate how the relationships between nine youth assets and four

*Parental education often is significantly associated with youth risk behavior. The educational level of both parents may be important. In the case of youth living in one-parent households, we were unable to assess the nonresident parent's current or past involvement in the youth's life. One way to alleviate this problem was to assess and control for the educational level of nonresident parents; this allowed a clearer evaluation of the differences between youth in one- and two-parent households.

sexual risk behaviors may vary according to family structure, with an emphasis on assets that were significant in one-parent or in two-parent households, not in both.

METHODS

Data Collection and Study Design

Data were collected in 1999–2000 from 1,350 parent-teenager pairs residing in households in inner-city areas of two Midwestern cities, both of which had populations of approximately 500,000. We randomly selected households using a CD-ROM city directory produced by Metromail Corp.¹⁴ The CD-ROM included residences without telephone service or with unlisted numbers, as well as households listed in the phone book. Residences were randomly sampled from households on the CD-ROM that had zip codes representing inner-city areas. One parent and one teenager from each household were randomly selected for interviewing if the household contained more than one teenager or parent.

Teenagers and parents were interviewed simultaneously in different rooms of the residence with a computer-assisted data entry system. Basic demographic information was collected from both teenagers and parents, but data on youth assets and risk behaviors were collected only from teenagers. Teenagers self-administered the risk behavior questionnaire by listening to tape-recorded items with headphones and entering responses into the computer. The survey response rate was 51%, which accounts for all refusals and a proportion of households in which we were unable to determine if an eligible teenager lived. An extensive description of the study methods has been published elsewhere.¹⁵

Measures

• **Demographic variables.** Depending upon the analysis, youth age was included either as a continuous variable or as a variable stratified into three categories: 13–14, 15–17 and 18–19. The majority of parents (87%) identified themselves as biological parents. Other parental categories were adoptive parent, legal guardian, foster parent, grandparent and adult responsible for the teenager. Family structure was based on parents' reports of whether one or two parents were living in the household. Yearly household income was stratified into three categories: less than \$20,000, \$20,000–\$35,000 and greater than \$35,000. Parental education was also stratified into three categories: both parents had less than a high school education; at least one parent had completed high school, a GED or some college; and at least one parent had a bachelor's degree or higher. The educational level of the parent not interviewed was obtained from the participating parent, regardless of whether the household contained one or two parents.* When appropriate, for items that concerned the other parent, the definition of parent (residing or not residing in the household) was left to the interviewed parent.

• **Youth sexual risk behaviors.** We assessed four sexual risk behaviors, using established items recommended in teenage pregnancy prevention research.¹⁶ Whether youth had had sexual intercourse was assessed by the question "Have you ever had sexual intercourse ('done it,' 'had sex,' 'made love,'

TABLE 2. Percentage of youth in two Midwestern inner cities, by selected characteristics, according to responses to survey questions about sexual risk behavior and household structure, 1999–2000

Characteristic	Never had intercourse		Not currently sexually active‡		Delayed first intercourse until age 17§		Used birth control at last intercourse‡									
	One-parent		Two-parent		One-parent		Two-parent		One-parent		Two-parent					
	N	%	N	%	N	%	N	%	N	%	N	%				
Total	651	55**	602	70	291	46	178	52	127	15**	79	30	281	63	170	65
Age																
13–14	217	80	228	91	43	49	21	62	na	na	na	na	40	58	18	50
15–17	336	48	302	62	175	48	115	55	55	13	37	22	168	65	112	63
18–19	98	26*	72	42*	73	41	42	38*	72	17	42	38†	73	63	40	80*
Race/ethnicity																
Black	197	55	87	68	88	58	28	71	39	15	13	31	87	62	28	64
Native American	63	51	63	65	31	52	22	46	10	20	7	29	31	65	20	40
White	294	55	317	73	131	38	86	51	58	17	37	27	125	67	82	68
Hispanic	97	58	135	69	41	44*	42	43†	20	5	22	36	38	53	40	73*
Gender																
Female	346	54	301	70	160	46	90	52	69	16	35	31	157	64	88	60
Male	305	57	301	71	131	47	88	51	58	14	44	30	124	63	82	71*
Household income																
<\$20,000	285	52	99	75	138	46	25	52	60	13	7	43	130	58	25	56
\$20,000–35,000	233	58	207	67	98	52	69	45	44	16	35	26	96	68	63	73
>\$35,000	133	59†	296	72	55	38	84	57	23	17	37	32	55	69†	82	62
Parental educational level																
Both lower than high school	68	53	88	77	32	50	20	50	10	0	12	33	30	67	18	67
≥1 with high school/GED/some college	495	55	407	67	225	44	136	52	103	16	59	29	217	62	130	63
≥1 with bachelor's degree/higher	88	61	107	79*	34	62†	22	50	14	21†	8	38	34	68	22	77

*p≤.05 in chi-square or linear trend analysis. **Differs from two-parent households at p≤.01. †p≤.20 in chi-square or linear trend analysis. ‡Among youth who reported ever having had sexual intercourse. §Among youth who reported ever having had sexual intercourse and were aged 17 or older. Note: na=not applicable.

‘gone all the way’)?” Youth responded either yes or no. The other three sexual behaviors applied only to youth who had had intercourse. Current sexual activity was assessed by the item “During the last four weeks, about how many times have you had sexual intercourse?” Youth were categorized as currently sexually active if they reported having had intercourse at least once during that time. We measured age at first intercourse with the question “How old were you when you had sexual intercourse for the first time?” Youth responded by indicating the applicable age. To create an indicator of having delayed first sex until age 17, we dichotomized these responses (16 or younger vs. 17 or older) and analyzed data only for youth aged 17 or older. Use of birth control was determined by the question “The last time you had sexual intercourse, did you or the other person use birth control?” Youth responded either yes or no. Using these data, we created four outcome measures (coded one if present and zero otherwise): never had intercourse, not currently sexually active, delayed intercourse until age 17 and used birth control at last intercourse.

• **Youth assets.** The research team utilized focus group and needs assessment data to determine key assets to examine in the study. A literature search was conducted to identify appropriate items for asset measurement. Items with established reliability and validity from previously published research were used when possible. Items were created and pretested

if appropriate items were not available in the literature.

Factor analyses and reliability tests were used in the construction of scales. Scales were constructed with items that loaded .40 or higher on one factor and with a Cronbach’s alpha of at least .60. The nine assets are listed in Table 1 along with the number of items representing the asset, Cronbach’s alpha and an example item. The development and construction of the assets are detailed elsewhere.¹⁷

An asset was coded as one (present) or zero (absent) according to youths’ mean scores on responses to the items constituting the asset. Items were generally scored from one to four, four being the most positive response, and an individual was classified as having an asset if his or her mean score was three or higher. This indicated that the positive behavior had been reported “usually or almost always,” “very important or extremely important” or “agree or strongly agree.”

Analysis

Statistical analyses of assets associated with never having had intercourse were based on the overall sample of 1,253 youth, of whom 651 lived in one-parent households and 602 lived in two-parent households. Forty-nine youth were missing demographic data, 20 gave a race or ethnicity other than those listed in Table 2 and 28 did not answer the question that determined sexual experience; given some overlap between these groups, a total of 97 youth were excluded

TABLE 3. Adjusted odds ratios (and 95% confidence intervals) from multiple logistic regression analyses assessing associations between youth assets and youth sexual risk behaviors, by household structure

Risk behavior and asset	One-parent		Two-parent	
	N	Odds ratio	N	Odds ratio
Never had intercourse				
Community involvement	649	1.57 (0.95–2.61)†,††	601	1.86 (1.05–3.32)*,†,##
Aspirations for the future	573	1.76 (1.10–2.82)*,†,††	552	1.63 (0.96–2.76)†,##
Total no. of assets	571	1.26 (1.15–1.39)*,†,††	550	1.38 (1.23–1.56)*,†,##
Not currently sexually active				
Peer role models (main effect)	291	na	177	1.69 (0.91–3.15)†,‡
Peer role models x parental education				
Both lower than high school	32	21.18 (1.81–247.22)*,‡	na	na
≥1 with high school/GED/some college	225	0.70 (0.40–1.22)‡	na	na
≥1 with bachelor's degree/higher	34	0.23 (0.05–1.06)	na	na
Total no. of assets	228	1.06 (0.92–1.23)‡,##	145	1.02 (0.84–1.22)†,‡
Delayed first intercourse				
Good health practices	127	7.32 (1.60–33.48)*,##	79	1.43 (0.48–4.32)†
Total no. of assets	77	1.76 (1.14–2.72)*,##	20	1.07 (0.72–1.60)†
Used birth control at last intercourse				
Peer role models	281	2.01 (1.21–3.34)*,††	169	1.13 (0.57–2.22)†,‡,§
Family communication	281	1.92 (1.16–3.19)*,††	170	1.34 (0.66–2.70)†,‡,§
Total no. of assets	218	1.24 (1.07–1.45)*,††	138	1.09 (0.90–1.32)†,‡,§

*p≤.05. †Adjusted for youth age. ‡Adjusted for youth race/ethnicity. §Adjusted for youth gender. ††Adjusted for household income. †††Adjusted for parental educational level. Note: na=not applicable.

from the sample. Only youth who had had sexual intercourse were included in the other analyses. The maximum sample size for these analyses was 469 youth, of whom 291 lived in one-parent households and 178 lived in two-parent households. The sample of youth aged 17 and older, on which we based our analysis of delaying first intercourse, comprised 126 respondents in one-parent households and 79 in two-parent households.

All analyses were performed with SPSS 10.0.¹⁸ An alpha of .05 or lower was used unless otherwise stated. Analyses were performed separately for one- and two-parent households. Chi-square tests were used to examine univariate associations between dichotomous risk factors and demographic variables. Logistic regression analyses were conducted to calculate the unadjusted odds ratio indicating the relationship between each asset and the absence of each risk factor; multiple logistic regressions were used to assess these relationships while controlling for possible confounders. Multivariate models controlled for youth age (continuous), gender, race and ethnicity, and household income and parent education only if univariate analysis indicated a p-value of .20 or lower. Interactions between assets and demographic variables were assessed in each logistic regression with the alpha level set at .01 or lower. Logistic regression was conducted for significant interactions, stratifying by the demographic variable that had shown the significant correlation.

To assess the potential effects of youths' cumulative number of assets (0–9), we included a variable measuring total assets in the regression analyses. The analyses included only those youth for whom all assets had been measured.

Adjusted and unadjusted odds ratios were calculated with the same methodology as that used for individual assets.

RESULTS

The study sample of 1,253 youth had a mean age of 15.4 (standard deviation, 1.7), and 52% were female. Forty-nine percent were non-Hispanic white, 23% non-Hispanic black, 19% Hispanic and 10% non-Hispanic Native American. Fifty-two percent of the youth lived in one-parent households, and 79% of single-parent households were mother-only. Sixty-six percent of the youth lived in households with reported income levels of \$35,000 or less, and 12% had parents who had both not graduated from high school.

Never Had Intercourse

Fifty-five percent of youth in one-parent households reported never having had sexual intercourse, a significantly lower proportion than the 70% in two-parent households (Table 2). The proportion who had not had sexual intercourse decreased as youth age increased, and this trend was significant in both one- and two-parent households. In two-parent households, the proportion of youth who reported never having had intercourse was significantly higher among those who had at least one parent with a bachelor's degree than among those with less educated parents (79% vs. 67–77%).

Table 3 shows only those assets that were significantly associated with reports of risk behavior for youth in one-parent or two-parent households, not both. Two youth assets met this criterion for the outcome reflecting sexual inexperience. Youth living in one-parent households who had the aspirations asset were significantly more likely to have never had intercourse than were youth in one-parent households who did not have the asset (odds ratio, 1.8). Among youth living in two-parent households, those with the community involvement asset were significantly more likely than those without the asset to report never having had sex (1.9).

The nonparental adult role models, peer role models and use of time (religion) assets were significant in the unstratified sample and in both household strata. The family communication, good health practices (exercise/nutrition) and responsible choices assets were significant in the whole sample but not in either stratum. Analyses of the data from the unstratified sample have been published elsewhere.¹⁹

The adjusted odds ratios for the total number of assets were significant for one-parent as well as for two-parent households (1.3 and 1.4, respectively—Table 3). This indicates that, depending on family structure, youths' odds of never having had sexual intercourse increased about 30–40% with the addition of any one asset.

Not Currently Sexually Active

The proportion of youth in one-parent households who were not currently sexually active did not differ significantly from that in two-parent households (46% and 52%, respectively—Table 2). For youth residing in two-parent households,

the proportion not currently sexually active decreased significantly with age. Among youth residing in one-parent households, the proportion who were not currently sexually active was significantly lower among whites than among youth of other races and ethnicities (38% vs. 44–58%).

The interaction between parent education and the peer role models asset was significantly associated with not being currently sexually active among youth in one-parent households (Table 3). In this stratum, youth with peer role models whose parents both had less than a high school education were significantly more likely to report not being currently sexually active than were those without the asset whose parents had a comparable level of schooling (odds ratio, 21.2). None of the other youth assets were significant in the unstratified sample or in the one- or two-parent household stratum.

Logistic regression models that included the total assets variable did not yield significant results. This suggests that youth assets had no significant cumulative effect on youths' odds of current sexual activity, regardless of family structure.

Delayed First Intercourse

The proportion of youth who delayed first sexual intercourse until age 17 or older was significantly lower among those in one-parent households than among those in two-parent households (15% vs. 30%—Table 2). In multivariate analyses, youth residing in one-parent households who reported good health practices were significantly more likely to have delayed sexual intercourse than were youth residing in one-parent households who did not have this asset (odds ratio, 7.3—Table 3). None of the other youth assets were significantly associated with this outcome in either household stratum.

For youth living in one-parent households, the odds of having delayed first sexual intercourse increased by nearly 80% with each additional asset. The adjusted odds ratio for the total number of assets for youth living in two-parent households was nonsignificant.

Used Birth Control at Last Intercourse

The proportion of youth who had used birth control at last intercourse did not differ significantly by household stratum (63–65%—Table 2). For youth residing in two-parent households, it increased significantly with age. Among youth residing in two-parent households, a significantly lower proportion of Native Americans than of youth in other racial or ethnic groups had used birth control at last intercourse (40% vs. 64–73%). In two-parent households, a significantly higher proportion of males than of females reported this behavior (71% vs. 60%).

The peer role models and family communication assets were significantly associated with birth control use among youth living in one-parent households (Table 3). Youth in one-parent households with either of these assets were significantly more likely to have used birth control at last sexual intercourse than were youth in one-parent households without these assets (odds ratios, 1.9–2.0). None of the

other youth assets were significant in the unstratified sample or in either household stratum. For youth living in one-parent households, the odds of having used birth control at last intercourse increased by about 20% with the addition of any one asset.

DISCUSSION

Our findings suggest that associations between risk behaviors and demographic factors may vary according to household structure. Youth in one-parent households tended to report risk behaviors in greater proportions than did youth in two-parent households, although this difference was significant for only two risk behaviors. In addition, most of the significant relationships between demographic variables and risk behaviors were found only in the two-parent household stratum. For example, demographic factors (age and race) were significantly linked to birth control use among youth in two-parent households but not among those in one-parent households. One interpretation of these findings is that youth in one-parent households may be more likely than those in two-parent households to participate in risk behaviors, regardless of their demographic profile; in contrast, some demographic variables may be associated with participation in sexual risk behaviors among youth in two-parent households. Identifying youth who are at increased risk is important, although none of the demographic factors examined in this study are likely to be the focus of intervention activities. Appropriate interventions should be developed and implemented for youth who are at elevated risk; programs focusing on youth development, and more specifically on youth assets, are promising approaches.

The results also suggest that some youth assets may be more important for youth residing in one-parent households than for youth in two-parent households. This is supported by the fact that significant relationships between youth assets and all four risk behaviors emerged in analyses of the one-parent stratum, whereas just one youth asset was significant in the two-parent stratum.

As previously mentioned, earlier studies that control for the potential influence of family structure have found significant associations between youth assets and risk behaviors. Our findings suggest that those results may have been at least partially driven by the influence of one-parent household data. All of the significant and nonsignificant relationships between assets and risk behaviors found in this study for one-parent households (except for the link between assets and never having had sexual intercourse) were also found in the unstratified analyses.

Differences in sample size and the resulting differences in statistical power to detect significant associations could explain why several relationships between youth assets and risk behaviors were significant in one-parent households but not in two-parent households. Compared with youth living in two-parent households, those in one-parent households were more numerous in each analysis. As a result, there was more statistical power to detect significant dif-

ferences in the one-parent household stratum than in the two-parent stratum. However, the potential bias is mitigated by two facts. First, the significant odd ratios for the one-parent household youth were fairly substantial. Second, the point estimates of all significant odds ratios for youth living in one-parent households were higher than those for youth in two-parent households, although this difference was not statistically tested. These results may suggest that although all youth can benefit from assets, youth living in one-parent households may stand the most to gain from assets' potential protective influence.

Analyses of the association between youths' total number of assets and the likelihood that they had participated in sexual risk behaviors also seem to support the notion that assets may be more important for youth residing in one-parent households than for youth in two-parent households. The total number of assets was associated with three of the four sexual risk behaviors among youth in one-parent households, but with only one risk behavior among youth in two-parent households.

One relevant question is whether results that suggest the importance of family structure for associations between assets and sexual risk behaviors hold true for other youth risk behaviors. Unpublished data from our work suggests that the pattern may persist for youth aggression and delinquent behavior, but not for alcohol, drug and tobacco use. Future studies should more thoroughly investigate how relationships between youth assets and sexual risk behaviors vary according to family structure, and should also examine associations between assets, family structure and nonsexual risk behaviors.

Findings for the family communication asset provide some support for the idea that an increase in the quality of parent-child relationships may be associated with a reduction in sexual risk behavior. In this study, the asset was a multi-item construct that assessed aspects of the parent-child relationship such as parents' attempts to understand youths' point of view and youths' discussion of their problems with parents. This construct included items similar to those used in other studies that have assessed the quality of mother-child relationships and parental emotional support. Among youth in one-parent households, having the family communication asset was significantly associated with increased odds of birth control use at last sexual intercourse but not with other outcomes, including several that were outcomes of interest in other studies.

One particularly interesting finding was that parental education and the peer role models asset interacted to predict a lack of current sexual activity, although the small sample size of 32 youth indicates that the results should be interpreted with caution. The asset was significant only for youth residing in one-parent households whose parents had less than a high school education. Having the peer role models asset was also significantly associated with birth control use at last sexual intercourse among youth in one-parent households. Other researchers have suggested that susceptibility to peer influence may be greater for youth

who live in one-parent or stepparent households.²⁰ Our results support that inference for one-parent households and, more notably, suggest that peer influence on sexual risk behavior may be positive, rather than negative, for youth in this environment.

The link between the good health practices asset and delay of first intercourse among youth in one-parent households corresponds with reported associations between participation in organized sports and a reduction in sexual risk behavior.²¹ In our study the asset was narrowly defined as health behaviors related to exercise and nutrition. Further research is needed to determine why and how this and other assets are associated with a reduction in risk behaviors. Regardless of how one interprets the role of family structure in the relationships between assets and risk behaviors, the overall findings of this study suggest that youth in one-parent households may benefit more from these assets than youth in two-parent households.

Finally, it is important to note that most of the parents (79%) in one-parent households were mothers. Parent gender was thus examined for significant associations with the outcomes investigated in this study; no such associations were found. The question of whether risk behaviors vary with gender differences between parents and youth (e.g., risk behaviors of boys in mother-only households versus those of boys in father-only households) is important but was not pursued because of the limited number of male parents within the one-parent households in our study.

One possible implication of our findings for practitioners is that specific youth assets may be particularly effective in reducing the sexual risk behaviors of youth residing in one-parent households. Youth development programs that focus on building positive peer role models, aspirations for the future, family communication and good health practices may be most beneficial for youth residing in one-parent households. However, our data are cross-sectional and do not indicate the causal directions of observed relationships; therefore, using these results to design interventions may be premature.

Findings from this study should be viewed in light of other limitations. Youth may have given socially acceptable answers to the sexual risk behavior questions. However, the fact that youth entered their answers into a computer in private may have helped to reduce the potential reporting bias. The question "Have you ever had sexual intercourse?" did not discriminate between consensual and non-consensual intercourse. Thus our sample of youth who had had sexual intercourse may not have been limited to those who had chosen to do so. Finally, the moderately low response rate raises questions about the generalizability of the results. However, we compared the distribution of races, ethnicities and parental income levels in the study sample with census data from the same zip codes and found no significant differences;²² therefore, the sample was likely representative of the neighborhoods.

This is the first published study to find that associations between youth assets and a reduction in several sexual risk

behaviors were significant for youth residing in one-parent households but not for youth residing in two-parent households. These results are particularly relevant because they focus on youth living in one-parent households, who have elevated odds of participating in sexual risk behaviors. The results also suggest some of the mechanisms (i.e., youth assets) that might positively influence the behaviors of youth living in one-parent households. Further research is needed to assess potential causal relationships between youth assets and sexual risk behaviors, and to more thoroughly explore why some youth assets may be more important for youth living in one-parent households than for those in two-parent households.

REFERENCES

- Blum R et al., The effects of race/ethnicity, income, and family structure on adolescent risk behaviors, *American Journal of Health Promotion*, 2000, 90(12):1879–1884; Flewelling RL and Bauman KE, Family structure as a predictor of initial substance use and sexual intercourse in early adolescence, *Journal of Marriage and the Family*, 1990, 52(1):171–181; Oman RF et al., An adolescent age group approach to examining youth risk behaviors, *American Journal of Health Promotion*, 2002, 16(3): 167–176; Santelli JS et al., The association of sexual behaviors with socioeconomic status, family structure, and race/ethnicity among U.S. adolescents, *American Journal of Public Health*, 2000, 90(10):1582–1588; Upchurch DM et al., Neighborhood and family contexts of adolescent sexual activity, *Journal of Marriage and the Family*, 1999, 61(4):920–933; and Young EW et al., The effects of family structure on the sexual behavior of adolescents, *Adolescence*, 1991, 26(104):977–986.
- Child Trends, *Family Structure*, Washington, DC: Child Trends, 2002; U.S. Census Bureau, Living arrangements of children under 18 years old: 1960 to present, 2003, <<http://www.census.gov/population/www/socdemo/hh-fam.html>>, accessed June 29, 2004.
- Upchurch DM et al., 1999, op. cit. (see reference 1).
- Davis EC and Friel LV, Adolescent sexuality: disentangling the effects of family structure and family context, *Journal of Marriage and Family*, 2001, 63(3):669–681.
- Ellis BJ et al., Does father absence place daughters at special risk for early sexual activity and teenage pregnancy? *Child Development*, 2003, 74(3):801–821.
- Catalano RF et al., Modeling the etiology of adolescent substance use: a test of the social development model, *Journal of Drug Issues*, 1996, 26(2):429–455; Catalano RF et al., *Positive Youth Development in the United States: Research Findings on Evaluations of Positive Youth Development Programs*, Seattle: U.S. Department of Health and Human Services, 1998; Werner EE and Smith RS, *Vulnerable but Invincible: A Study of Resilient Children*, New York: McGraw-Hill, 1982; and Werner EE and Smith RS, *Overcoming the Odds: High Risk Children from Birth to Adulthood*, Ithaca, NY: Cornell University Press, 1992.
- Leffert N et al., Developmental assets: measurement and prediction of risk behaviors among adolescents, *Applied Developmental Science*, 1998, 2(4):209–230.
- Benard B, Youth service: from youth as problems to youth as resources, *Illinois Prevention Forum*, 1990, 10(2):6–14; and Bogenschneider K, An ecological risk/protective theory for building prevention programs, policies, and community capacity to support youth, *Family Relations*, 1996, 45(2):127–138.
- Benard B, 1990, op. cit. (see reference 8); Bogenschneider K, 1996, op. cit. (see reference 8); and Jessor R, Risk behaviors in adolescence: a psychosocial framework for understanding and action, *Journal of Adolescent Health*, 1991, 12(8):597–605.
- Upchurch DM et al., 1999, op. cit. (see reference 1); Benard B, 1990, op. cit. (see reference 8); Jessor R, 1991, op. cit. (see reference 9); Aspy CB et al., Adolescent violence: the protective effects of developmental assets, *Journal of Counseling & Development*, 2004, 82(3):269–277; Garmez N, Resiliency and vulnerability to adverse developmental outcomes associated with poverty, *American Behavioral Scientist*, 1991, 34(4):416–430; Jessor RJ et al., Protective factors in adolescent problem behavior: moderator effects and developmental change, *Developmental Psychology*, 1995, 31(6):923–933; Kirby D et al., School-based programs to reduce sexual risk behavior: a review of effectiveness, *Public Health Reports*, 1994, 109(3):339–360; Oman RF et al., The association between multiple youth assets and sexual behavior, *American Journal of Health Promotion*, 2004, 19(1):12–18; Scales PC, Developing capable young people: an alternative strategy for prevention programs, *Journal of Early Adolescence*, 1990, 10(4):420–438; and Vesely S et al., The potential protective effects of youth assets from adolescent sexual risk behaviors, *Journal of Adolescent Health*, 2004, 34(5):356–365.
- Catalano RF et al., 1998, op. cit. (see reference 6).
- Benard B, 1990, op. cit. (see reference 8); Aspy CB et al., 2004, op. cit. (see reference 10); Oman RF et al., 2004, op. cit. (see reference 10); Vesely S et al., 2004, op. cit. (see reference 10); Hawkins JD et al., Preventing adolescent health-risk behaviors by strengthening protection during childhood, *Archives of Pediatrics and Adolescent Medicine*, 1999, 153(3):226–234; Oman RF et al., Adolescent alcohol and drug use and the potential protective effect of youth assets, *American Journal of Public Health*, 2004, 94(8):1425–1430; and Resnick MD et al., Protecting adolescents from harm: findings from the National Longitudinal Study of Adolescent Health, *Journal of the American Medical Association*, 1997, 278(10):823–832.
- Aspy CB et al., 2004, op. cit. (see reference 10); and Oman RF et al., 2004, op. cit. (see reference 12).
- Metromail Corp., *Cole Digital Directory: The Cross-Reference Directory on CD-ROM*, <<http://www.experian.com/marketsharecd/>>, accessed Aug. 11, 2004.
- Oman RF et al., 2002, op. cit. (see reference 1).
- Card JJ et al., *Prevention Minimum Evaluation Data Set (PMEDS)*, third ed., Los Altos, CA: Sociometrics Corp., 1999.
- Oman RF et al., Reliability and validity of the Youth Asset Survey (YAS), *Journal of Adolescent Health*, 2002, 31(3):247–255.
- SPSS, *SPSS Base 10.0 Applications Guide*, Chicago: SPSS, 1999.
- Vesely S et al., 2004, op. cit. (see reference 10).
- Flewelling RL and Bauman KE, 1990, op. cit. (see reference 1); and Steinberg L, *The Role of the Family in Adolescent Development: Preventing Risk, Promoting Resilience. Children, Youth, and Families at Risk Program Initiative*, vol. 2, San Diego: U.S. Department of Agriculture, 2001.
- Erkut S and Tracy A, *Protective Effects of Sports Participation on Girls' Sexual Behavior*, Wellesey, MA: Center for Research on Women, 2000; Pate RR et al., Participation and health-related behaviors among U.S. youth, *Archives of Pediatrics and Adolescent Medicine*, 2000, 154(9): 904–911; and Sabo D et al., *The Women's Sports Foundation Report: Sport and Teen Pregnancy*, East Meadow, NY: Women's Sports Foundation, 1998.
- U.S. Census Bureau, 2000 census of population and housing, summary file 3, generated using American Fact Finder, <http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_lang=en&_ts=>>, accessed Aug. 11, 2004.

Acknowledgments

This project was supported under a cooperative agreement from the Centers for Disease Control and Prevention (CDC) through the Association of Schools of Public Health (ASPH) grant U36/CCU300430-22 and under cooperative agreement U88/CCU612534 from the CDC, awarded to the Oklahoma Institute for Child Advocacy. The contents of this article are solely the responsibility of the authors and do not necessarily represent the views of the CDC or ASPH. The authors thank Sharon Rodine and LaDonna Marshall of the Oklahoma Institute for Child Advocacy for their comments on the manuscript.

Author contact: roy-oman@ouhsc.edu