

---

Family and Friends as Social Environments and Their Relationship to Young Adolescents' Use of Alcohol, Tobacco, and Marijuana

Author(s): John D. Hundleby and G. William Mercer

Source: *Journal of Marriage and Family*, Vol. 49, No. 1 (Feb., 1987), pp. 151-164

Published by: [National Council on Family Relations](#)

Stable URL: <http://www.jstor.org/stable/352679>

Accessed: 22-02-2016 20:45 UTC

## REFERENCES

Linked references are available on JSTOR for this article:

[http://www.jstor.org/stable/352679?seq=1&cid=pdf-reference#references\\_tab\\_contents](http://www.jstor.org/stable/352679?seq=1&cid=pdf-reference#references_tab_contents)

You may need to log in to JSTOR to access the linked references.

---

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



National Council on Family Relations and Wiley are collaborating with JSTOR to digitize, preserve and extend access to *Journal of Marriage and Family*.

<http://www.jstor.org>

# Family and Friends as Social Environments and Their Relationship to Young Adolescents' Use of Alcohol, Tobacco, and Marijuana

JOHN D. HUNDLEBY  
*University of Guelph, Ontario*

G. WILLIAM MERCER\*  
*Ministry of Attorney General, British Columbia*

*This study examines the role of family and friends in accounting for alcohol, tobacco, and marijuana use among young adolescents. The sample included 1,008 males and 1,040 females with a mean age of 14.5 years. Lack of parental affection, concern, involvement, and modeling appeared to be central factors in the family's influence, which accounted for up to 22% of the variance in drug use. Friends' delinquency and use of drugs largely determined the influence of friendship, which accounted for up to 40% of adolescent drug use. Comparisons are made between characteristics of family and friends.*

Family and friends have differing influences upon young people, and these in turn depend on chronological or biological age, culture, historical time, sex, personal characteristics, and the behavior in question. Influence as causation is difficult to demonstrate unequivocally; however, what can be shown is the extent of covariation between family or friendship characteristics and the behavior of interest. Such descriptive information is one source from which causative theories may be developed. This study concerns the extent to which drug use by young adolescents is related to characteristics of both their family and their friends.

The importance of both family and friends in the prediction of drug use has been recognized for some time. However, research in this area has

proceeded in a largely piecemeal fashion, with the majority of studies examining adolescents' drug use in terms of a limited number of variables, so that it is difficult to judge the relative contribution of individual variables within a total set of variables or the relative predictive power of different sets of variables.

The purpose of this study is to generate a broad and, within reason, inclusive assessment of both family and friendship and to relate these to adolescent use of alcohol, tobacco, and cannabis. To some extent this is an empirical venture without dependence upon any one theory, although various theories as well as prior research inevitably influence the selection of measures. It is our belief that integrative studies of this kind have a part to play in furthering theory and knowledge.

A number of previous findings have shown a relationship between the family environment and the use of drugs among adolescents. It has been generally found that a positive, loving bond between parent and child is linked to reduced likelihood of the child's drug use (Adler and Lotecka, 1973; Baer and Corrado, 1974; Block, 1975; Braucht, Brakarsh, and Follingstad, 1973;

Psychology Department, University of Guelph, Guelph, Ontario, Canada, N1G 2W1.

\*Research Director, Police Services, Ministry of the Attorney General, 207-815 Hornby St., Vancouver, British Columbia, Canada, V6Z 2E6.

Globetti, 1973; Hundleby and Girard, 1980; Jessor and Jessor, 1977; Kandel, Kessler, and Margulies, 1978; Mercer, 1975; Mercer, Hundleby, and Carpenter, 1978; Mercer and Kohn, 1980; Spevak and Pihl, 1976; Streit, Halsted, and Pascale, 1974; Tec, 1970). Both the effect of the overall family environment and of the individual relationships among the family members appear to be relevant in predicting adolescents' drug use.

Related to the trust and concern of parents is family cohesiveness, which has generally been negatively associated with drug use (Bogg and Hughes, 1973; Chein, Gerard, Lee, and Rosenfield, 1964; Craig and Brown, 1975; Streit and Oliver, 1972). Spevak and Pihl (1976) found that involvement by the adolescent in family decisions was associated with less drug involvement. Parents' regard for each other is also included in this list of negative correlates (Graven and Schaeff, 1982; Hendin, Pollinger, Ulman, and Carr, 1981; Mercer et al., 1978).

The relationship between parental discipline and adolescent drug use is less clear. That lax discipline, possibly interpreted by the adolescent as disinterest, may be associated with higher levels of drug use can be inferred from Hunt (1974) and Jessor and Jessor (1977). On the other hand, Clarke, Eyles, and Evans (1972) found no association between parental discipline and adolescent smoking, while Kandel and associates (1978) found that consistency of punishment was not a predictor of initiation to hard liquor, marijuana, and other hard drugs. They also found that parental rules about friends gave inconclusive correlates with drug use. Akers, Krohn, Lanza-Kaduce, and Radosevich (1979) suggest a U-shaped function, with reduced use of marijuana being associated with the middle ranges of severity of punishment.

Modeling also appears to influence drug use behaviors, as a positive relationship has generally been found between parents' and adolescents' drug use, especially with regard to the drug use of the same-sexed parent (e.g., Adler and Lotecka, 1973; Harburg, Davis, and Caplan, 1982; Hawker, 1978; Jensen and Brownfield, 1983; Kandel, 1975; Lombillo and Hain, 1972; Malcolm and Shepard, 1978; Newcomb, Huba, and Bentler, 1983; Schneider, Sangsingkeo, and Punnahitano, 1977; Smart, 1971; Smart and Fejer, 1972; Tec, 1974; Williams, 1973).

A number of other family-related variables are positively correlated with drug use. These include nonattendance at religious services (Mercer and Smart, 1974) and coming from a broken home (Blechman, 1982; Brook, Whiteman, and Gordon, 1983; Cowan and Roth, 1972; Craig and

Brown, 1975; Mercer and Smart, 1974; Rosenberg, 1968; Tec, 1974). However, the evidence on the latter variable is not unanimous, as Kandel and associates (1978) found nonsignificant results except in the case of the use of hard liquor. Parental socioeconomic status has been linked with adolescent drug use, although the association is not extensive and what prediction there is will depend on the population and time in question (Clarke et al., 1972; Fejer and Smart, 1972; Jessor and Jessor, 1977; Josephson, 1974; Kandel et al., 1978; Tec, 1974). Finally, family size has shown a slight relationship to drug use (Block, 1975; Bogg and Hughes, 1973; Craig and Brown, 1975; Kamali and Steer, 1976), as has the sociability of the family (Mercer et al., 1978).

Turning from family to friends, there can be little doubt that characteristics of friends are firm and substantial correlates of adolescents' drug use. Principal correlates are the use of drugs by friends and the extent of delinquent behavior in general. More subtle attributes of friendship do not appear to have substantial predictive power, nor have they had extensive investigation.

Many studies demonstrate a link between adolescents' friends' and their own use of drugs (Brook, Lukoff, and Whiteman, 1977; Chein et al., 1964; Elliott, Huizinga, and Ageton, 1985; Jessor and Jessor, 1977; Kandel et al., 1978; Tec, 1974). Less clear is our information on the process by which friendship plays such an important role. Friends are likely to be major suppliers of drugs; friends act as models; patterns of drug use may act as determiners in the selection of friends and the maintenance of a stable bond. The extent of adolescents' friends' delinquent behavior (excluding drug use) also shows firm correlations with adolescents' own drug use (Braucht et al., 1973; Elliott et al., 1985; Gorsuch and Butler, 1976; Jessor and Jessor, 1977). Modest, inconclusive, or zero correlations have been observed for cohesiveness of the friendship group (Brook et al., 1977; Jessor and Jessor, 1977; Kandel et al., 1978). There is also a suggestion that adolescent drug-users may perceive numerically *more* persons as friends than do nonusers (Craig and Brown, 1975; Hemminki, Russanen, and Mattila, 1973). This would be consonant with the association between drug use and social behavior (Hundleby, 1986; Hundleby, Carpenter, Ross, and Mercer, 1982), but within psychiatrically hospitalized groups it does not appear to hold and may indeed be reversed (Westermeyer and Walzer, 1975).

Some consideration has been given to the interaction between family and friends in accounting for adolescent drug use (Elliott et al., 1985;

Glynn, 1981), but research results are scanty, apart from linking increased usage with friendship and peer influences and decreased usage with family influences. The rise in influence of friends and decrease in influence of parents and family is well documented. Far less clear, however, is information on the conditions under which this changing influence takes place and differential effects depending upon the behavior in question (Bowerman and Kinch, 1959; Brittain, 1963; Condry and Siman, 1974; Emmerich, 1978; Glynn, 1981; Kandel, 1973; Larson, 1972, 1974; Tudor, Peterson, and Elifson, 1980). It is also reasonable to suppose that the influence of family and friends will depend upon the particular drug in question.

METHOD

*Subjects*

The subjects in this study consisted of a stratified sample of 1,008 male and 1,040 female ninth grade students from 40 Ontario schools. The principles of stratification were: region in Ontario, school size, and public or private (Roman Catholic) school system. Apart from a reduced contribution from the Metropolitan Toronto public schools due to a teacher strike, this sample can be regarded as representative of ninth grade students in Ontario. The respondents' mean age was 14.5 years.

Students were tested in their schools by persons trained and experienced in dealing with adolescents. Teachers were not present during the testing. Students were assured as to the anonymity and confidentiality of their responses, and their written comments indicated that the questionnaires were taken seriously and the project was regarded as worthwhile. This research was part of a larger study of adolescent environments and individual differences.

*Measures*

*Drug use.* Students were asked to indicate on a 9-point scale the extent to which they used each of several drugs over the previous 6 months (not at all, once, 2 to 5 times, 6 to 15 times, 16 to 30 times, 31 to 60 times, 61 to 120 times, 121 to 250 times, more than 250 times). This article focuses on tobacco, marijuana and alcohol—the substances of most frequent use and therefore of particular current concern. Drugs such as heroin were consumed too infrequently to justify inclusion. The measure for alcohol was the aggregate of wine, beer, and spirits.

A scale similar to the above was also presented for "ever used in lifetime." This, along with the inclusion of two imaginary drugs, provided a par-

tial check on veracity. The issue of the extent to which self-report measures of drug use or family characteristics provide accurate and useful data has had considerable discussion (Bauman, Koch, and Bryan, 1982; Hundleby et al., 1982; Single, Kandel, and Johnson, 1975). On the basis of our present knowledge it would seem that self-report indices provide valid information, providing that certain procedures are followed and certain checks are made (e.g., evidence of good rapport, pretesting of measures, repeated or similar measures, value of study as perceived by subjects, and confidence in assurances as to anonymity and confidentiality).

*Family characteristics.* The selection of theoretical constructs or potential major determiners of adolescent drug use covered a broad range, as the aim was to include measures that had shown at least 4% of criterion variance accounted for in results from previous studies. However, as this would have biased the measures in the direction of conventionality, it was decided to include measures for which a 4% predictive variance seemed likely or at least strongly arguable. This modification increased the subjectivity of selection, but the potential gain appeared to outweigh the loss in objectivity and, with a large sample, was not likely to lead to errors in interpretation.

For information and suggestions on predictive measures, the following sources were utilized: printed material (articles, books, research reports, existing tests); discussions with adults dealing directly with adolescents; and discussions with adolescents, combined with results from a daily diary form used by a small group of ninth graders.

Regarding parental style of control and interaction, some emphasis was given to the Bronfenbrenner conceptualizing of childrearing practices and to later psychometric analyses (Seigleman, 1965; Mercer, 1975; Mercer et al., 1978; Mercer and Kohn, 1980).

The following indices (with abbreviated examples of salient items) were used as measures of family characteristics. Indices marked with an asterisk were derived from factor analyses, while those not so marked came from simple items or unweighted aggregates.

1. General Family Characteristics

- a. \*Trust and concern: Family respects me. Parents trust me. Family is proud and pleased with me.
- b. \*Socioeconomic status: Education level of parents. Socioeconomic level of father.
- c. \*Sociability: Family often has neighbors dropping in to visit. Frequency of parties or

- dinner guests. Family visits to friends and relatives.
- d. \*Excitability: Family gets pretty emotional at times. Family is very calm and never gets excited (-).
  - e. \*Interparent affection: Parents really love each other. Parents don't talk to each other (-). Parents like to do things together.
  - f. \*Indifference: Family keeps to itself. Family members seldom speak their minds. Family never plans things well ahead.
  - g. \*Extent of within-family communication: Extent of family talk at dinner. Frequency of family eating together.
  - h. \*Orderliness: Having set rules in family. Things tend to keep on schedule.
  - i. \*Vocational achievement concern: Parents don't care if she gets good or bad grades (-). Family thinks her being successful isn't important (-). (Found only in the female sample.)
  - j. Religiosity: Frequency of each parent attending religious services.
  - k. Living with both natural parents (i.e., not a broken home).
  - l. Father, rather than mother, seen as boss in family.
  - m. Family mobility: Number of times family has moved.
  - n. Friendly family/neighbor relations: Extent that family "gets on" with neighbors.
  - o. Family size: Parent figures plus siblings.
2. Father's Style of Control and Interaction with Boy or Girl
    - a. \*Father's positive control: Punishes by taking away favorite things. Forbids boy to do things boy especially enjoys.
    - b. \*Father's willing involvement with boy: Enjoys talking with boy. Helps boy with hobbies or handiwork.
    - c. \*Father's strictness with boy: Can usually be talked out of punishing boy (-).
    - d. \*Father's achievement concern with boy: Insists that boy makes a special effort in everything he does. Insists that boy gets particularly good marks in school. Expects boy to keep own things in order.
    - e. \*Father's restrictiveness with boy: Tells boy exactly when he should come home. Insists that boy gets permission before going to a movie or to other entertainment.
    - f. \*Father's negative control of boy: Scolds and yells at boy. Used to spank boy.
    - g. \*Father's positive and negative control of girl: As punishment, he sends girl to bed early. Sends her out of room. Hits girl.
  - h. \*Father's willing involvement with girl: Enjoys talking with girl. Is happy when with girl. Is there when girl needs him.
  - i. \*Father's strictness with girl: Can usually be talked out of punishing girl (-).
  - j. \*Father's achievement concern with girl: Insists that girl makes a special effort in anything she does. Expects girl to keep own things in order. Insists girl gets particularly good marks in school.
  - k. \*Father's restrictiveness with girl: Tells girl exactly when she should come home. Insists that girl gets permission before going to a movie or other entertainment. Won't let girl wander around because something might happen to her.
3. Mother's Style of Control and Interaction with Boy or Girl
    - a. \*Mother's positive control of boy: Punishes boy by taking favorite things away. As punishment, she sends boy to bed early.
    - b. \*Mother's willing involvement with boy: Enjoys talking to boy. Is happy when with boy. Is there when boy needs her.
    - c. \*Mother's achievement concern with boy: Expects boy to keep own things in order. Tells boy what jobs have to be done. Insists that boy makes a special effort in anything he does.
    - d. \*Mother's strictness with boy: Can usually be talked out of punishing boy (-). Lets boy off easy when he misbehaves (-).
    - e. \*Mother's restrictiveness with boy: Insists that boy gets permission before going to a movie or other entertainment. Tells boy exactly when he should come home. Won't let boy roam around because something might happen to him.
    - f. \*Mother's negative control of boy: Scolds boy and yells at him. Nags boy. Used to spank boy.
    - g. \*Mother's negative control of girl: Scolds girl and yells at her. Hits girl. Nags girl.
    - h. \*Mother's achievement concern with girl: Expects girl to help around house. Tells girl what jobs have to be done. Insists that girl makes a special effort in anything she does.
    - i. \*Mother's strictness with girl: Can usually be talked out of punishing girl (-). Lets girl off easy when she misbehaves (-).
    - j. \*Mother's positive control of girl: As punishment, she sends girl to bed early. Punishes girl by sending her out of room.
    - k. \*Mother's restrictiveness with girl: Tells girl exactly when she should come home. Insists

that girl gets permission before she goes to a movie or other entertainment.

1. \*Mother's willing involvement with girl: Teaches girl anything she wants to learn. Is there when girl needs her. Is happy when with girl.

The repetitiveness of many of the descriptions of variables in the sections on style of control and interaction is justified by the small but interesting differences that do occur on occasion. Indeed, the similarity is remarkable, given that independent factor analyses were carried out in all four cases (i.e., father:boy, father:girl, mother:boy, mother:girl).

4. Family Drug Use Characteristics
  - a. Frequency of father drinking alcohol
  - b. Frequency of mother drinking alcohol
  - c. Frequency of father smoking
  - d. Frequency of mother smoking
  - e. Parents seen as not likely to get upset if boy/girl started drinking

*Scale derivations.* As noted earlier, indices in the above list of measures marked with an asterisk were factor scores developed from factor analyses of sets of items. There were five sets of items in all: General Characteristics, (32 items; 8 factors for boys, 9 factors for girls); Father's Style of Control and Interaction with Boy (6 factors) and with Girl (5 factors); Mother's Style of Control and Interaction with Boy (29 items; 6 factors) and then with Girl (29 items; 6 factors). Principal-axes factors were extracted in each case, with choice as to number of factors being determined by the number of eigenvalues of the correlation matrix greater than unity and by inspection of the plot of eigenvalues. Rotation was direct oblimin. Analyses were separate for each sex. This means that although six analyses were carried out, only three of the analyses would be used for obtaining scores for any one person (i.e., depending on whether the person was a boy or girl). No attempt was made to rotate factors to congruence or to any hypothetical pattern, as independent rotations were closer to the exploratory spirit of this research.

Factor intercorrelations within the General Family Characteristics set were low, with only four for the males and three for the females exceeding 0.3 in values. The highest correlation was +.43 between interparent affection and extent of within-family communication for girls.

The factor analyses of parental Style of Control and Interaction for boys and girls showed close similarities. Both genders and both parents showed the same characteristics, except for

fathers and daughters, where positive and negative control appeared together in a single "fusion" factor.

*Friends' characteristics.* The same general principles and procedures as for family were used for selection of measures of friendship. These included the 4% criterion, use of the same sources (printed materials, etc.), and the same methods of statistical analysis. The variables used are listed below. Indices marked with an asterisk were derived from two factor analyses (one for boys, one for girls).

1. General Friendship Characteristics. There were 8 factors for boys and 8 for girls, 6 being regarded as common to the two analyses.
  - a. Delinquent friends: Friends think it is OK to steal as long as they don't get caught; friends have respect for laws of country (-); number of friends who have trouble with the law or police.
  - b. Extent of joint activities: Watch TV together; visit each other's homes; go on vacation or camp together.
  - c. Friends' divisiveness: Sometimes mean and spiteful to each other; a lot of little quarrels and jealousies.
  - d. Friends' religiosity: Friends believe that religion is an important part of their lives; friends regularly attend religious services.
  - e. Friends' interpersonal warmth and trust: Talk over personal problems with each other; are people with whom boy/girl can discuss family matters; go out of their way to help each other.
  - f. Achievement-oriented friends: Think that going to school is really worthwhile; set high standards of achievement for themselves; tend not to have low grades in school.
  - g. Interpersonal enjoyment: Usually have much fun together; think of each other as friends. (Found only with the boys.)
  - h. Friends' subgroup conformity and alienation: Are easygoing about matters of right and wrong; haven't much time for rules and regulations; tend to talk and dress the same way. (Found only with the boys.)
  - i. Friends' contemplative joint activities: Go on vacation or camp together; have talks on literature or art. (Found only with the girls.)
  - j. Quarrelsome friends: Get annoyed with one another; have quarrels with other people; mean and spiteful to each other. (Found only with the girls.)
  - k. Number of male friends
  - l. Number of female friends

Only two factor intercorrelations were in excess of  $\pm .3$ . These were  $-.39$  between religiosity and achievement orientation, and  $-.33$  between interpersonal warmth and trust and quarrelsome. Both were for boys.

## 2. Friends' Drug Use Characteristics

- a. Extent of friends' drug usage: Aggregate of estimates of friends' use of alcohol, tobacco, marijuana, LSD, speed.
- b. Extent of friends' pressure toward more drug use by boy/girl.

## RESULTS

### Drug Use Frequencies

Regarding the use of beer within the 6 months prior to testing, 27.4% of the males and 38.5% of the females indicated nonuse, 36.3% of the males and 38.5% of the females indicated that they had used it 1 to 5 times, 27.9% of the males and 18.7% of the females indicated that they had used

it 6 to 30 times, and the remaining 8.4% and 4.4% indicated that they had used it 31 or more times. The corresponding figures for males' wine use are 21.5%, 46.7%, 27.9% and 3.9%, while the corresponding figures for females' wine use are 29.7%, 45.9%, 17.9%, and 6.5%. Similarly, the figures for males' liquor use are 32.8%, 39.1%, 22.6%, and 5.5%, while the corresponding figures for females' liquor use are 36.2%, 37.8%, 20.0%, and 6.0%.

Of the males, 40.3% indicated that they had not used tobacco within the 6 months prior to testing, 17.1% indicated that they had used it 1 to 5 times, 11.4% indicated that they had used it 6 to 30 times, and the remaining 31.2% indicated that they had used it more than 30 times. The corresponding figures for the females are 43.1%, 16.7%, 14.0%, and 26.2%.

Regarding the use of marijuana or hashish, 73.7% of the males and 81.5% of the females had not used it within the previous 6 months, 13.0%

TABLE 1. REGRESSION AND SIMPLE CORRELATION ANALYSIS FOR GENERAL FAMILY CHARACTERISTICS

General Family Characteristic	Subject's Use of Drugs					
	Tobacco (6 mo.)		Marijuana (6 mo.)		Alcohol (6 mo.)	
	beta	r	beta	r	beta	r
<b>Analyses of boys</b>						
Trust and concern	-.17**	-.21	-.16**	-.20	-.10*	-.13
SES and parents' education	-.10**	-.12	—	-.07	—	-.08
Social activity and entertaining	+.11**	+.04	+.15**	+.08	+.22**	+.15
Excitability	—	+.03	—	+.04	—	-.01
Interparent affection	+.13**	-.05	—	-.08	+.08*	-.02
Indifference	+.12**	+.18	—	+.15	+.13**	+.14
Within-family communication	—	-.12	+.09**	-.15	-.10**	-.13
Orderliness	—	-.09	-.10**	-.16	—	-.11
Parents' religiosity	—	-.06	-.09**	-.12	—	-.10
Living with both parents	-.13**	-.12	—	-.05	—	+.04
Father as boss in family	—	+.03	—	+.05	—	+.03
Family mobility	—	+.04	—	+.03	—	+.02
Friendly family/neighbor relations	—	-.05	—	-.04	-.08**	-.06
Family size	—	+.07	—	+.05	—	-.03
<b>Analyses of girls</b>						
Trust and concern	-.21**	-.27	-.16**	-.22	-.19**	-.20
SES and parents' education	—	-.02	—	+.00	—	+.03
Social activity and entertaining	+.13**	-.03	—	-.06	+.13**	+.03
Excitability	—	+.07	+.07*	+.08	—	+.07
Interparent affection	—	-.15	—	-.15	—	-.13
Passiveness-indifference	+.09*	+.18	—	+.15	—	+.06
Within-family communication	—	-.17	-.09**	-.18	—	-.12
Orderliness	—	-.14	—	-.05	—	-.10
Vocational achievement and concern	—	-.11	—	-.07	-.07*	-.10
Parents' religiosity	-.14**	-.18	-.10**	-.14	-.09**	-.12
Living with both parents	—	-.13	—	-.12	—	-.07
Father as boss in family	—	-.02	—	-.03	—	-.01
Family mobility	+.11**	+.16	—	+.09	—	+.09
Friendly family/neighbor relations	—	-.07	—	-.09	—	-.05
Family size	—	+.06	—	-.00	-.07*	-.04

Note: Only significant beta weights are reported. For this number of subjects, simple correlations of .06 and .08 are significant at the .05 and .01 levels, respectively. This holds for Tables 1-4.

\* $p < .05$ . \*\* $p < .01$ .

of the males and 8.7% of the females had used it 1 to 5 times, 7.7% of the males and 6.6% of the females had used it 1 to 5 times, 7.7% of the males and 6.6% of the females had used it 6 to 30 times, and the remaining 5.6% and 3.2% had used it more than 30 times.

The use of these three drugs was positively correlated (Mercer and Hundleby, 1978), as other researchers have found.

*Regression Analyses: Family*

Four analyses were carried out for each sex, with each analysis containing a set of conceptually linked characteristics. The sets were: General Family Characteristics; Father's Style of Control and Interaction with Boy or Girl; Mother's Style of Control and Interaction with Boy or Girl; Family Drug Use Characteristics.

Table 1 presents the correlation and regression results for General Family Characteristics for both boys and girls. Considering the drugs together, it is clear that trust and concern is the major predictor for both boys and girls.

Table 2 presents the results for the four sets of control and interaction variables. Parental willing involvement is the major correlate for both parents and for both sexes of adolescents. Parental strictness appears as the second most important correlate (though not for fathers and girls). Values are low in general.

Results for the set of measures dealing with parental drug use are given in Table 3. All values are positive, as would be expected, and tend to be higher for parents' use of alcohol than for tobacco. Correlations between parents' use of alcohol and the adolescent's use of alcohol range from  $r = +.2$  to  $r = +.3$ .

Results showing the amount of variance accounted for by each set of family variables, by sets of combination, and by sets uniquely above other sets (or combinations of sets) are given in Table 6. Age was included as a potential covariate and showed negligible relevance (except for the case of marijuana and boys, where the correlation is  $+ .24$ ). This was not unexpected, of course, since the study included only ninth graders, thereby restricting age variation.

TABLE 2. REGRESSION AND SIMPLE CORRELATION ANALYSES FOR PARENTS' STYLE OF CONTROL AND INTERACTION WITH BOY OR GIRL

Style of Control and Interaction	Subject's Use of Drugs					
	Tobacco (6 mo.)		Marijuana (6 mo.)		Alcohol (6 mo.)	
	beta	r	beta	r	beta	r
<b>Analyses of father with boys</b>						
Father's positive control	—	+ .05	-.10*	-.04	—	-.00
Father's willing involvement	-.15**	-.15	-.11**	-.11	-.08*	-.06
Father's strictness	-.08**	-.07	-.08*	-.07	-.09**	-.09
Father's achievement concern	—	-.04	—	-.08	—	-.03
Father's restrictiveness	—	-.02	—	-.05	—	-.04
Father's negative control	—	+ .09	—	+ .01	—	-.00
<b>Analyses of mother with boys</b>						
Mother's positive control	—	-.01	—	-.02	—	-.15
Mother's willing involvement	-.18**	-.19	-.14**	-.17	-.15**	-.15
Mother's strictness	-.09**	-.09	-.11**	-.11	-.08	-.09
Mother's achievement concern	—	-.02	—	-.09	—	-.04
Mother's restrictiveness	—	-.02	-.09*	-.09	—	-.08
Mother's negative control	—	+ .09	—	+ .04	—	+ .02
<b>Analyses of father with girls</b>						
Father's positive control and negative control	—	+ .14	—	+ .08	—	+ .07
Father's willing involvement	-.23**	-.22	-.16**	-.17	-.18**	-.15
Father's strictness	-.11**	-.01	—	-.00	-.12**	-.05
Father's achievement concern	—	+ .02	—	+ .06	—	+ .01
Father's restrictiveness	—	+ .07	—	+ .01	—	+ .04
<b>Analyses of mother with girls</b>						
Mother's positive control	—	+ .05	-.12**	-.01	-.10*	+ .00
Mother's willing involvement	-.25**	-.27	-.14**	-.18	-.21**	-.21
Mother's strictness	-.19**	-.12	-.14**	-.10	-.18**	-.12
Mother's achievement concern	—	-.06	-.08**	-.08	—	-.04
Mother's restrictiveness	+ .12**	+ .07	+ .12**	+ .04	+ .15**	+ .05
Mother's negative control	+ .09*	+ .19	+ .13**	+ .15	—	+ .13

\* $p < .05$ . \*\* $p < .01$ .

TABLE 3. REGRESSION AND SIMPLE CORRELATION ANALYSES FOR PARENTAL DRUG USE MEASURES

Family Drug Use Characteristic	Subject's Use of Drugs					
	Tobacco (6 mo.)		Marijuana (6 mo.)		Alcohol (6 mo.)	
	beta	r	beta	r	beta	r
Analyses of boys' families						
Frequency of father drinking alcohol	—	+.08	—	+.07	+.09*	+.20
Frequency of mother drinking alcohol	—	+.05	—	+.06	+.11**	+.21
Frequency of father smoking	+.12**	+.15	+.08**	+.11	—	+.09
Frequency of mother smoking	+.07*	+.10	—	+.08	+.09**	+.12
Parents seen as not likely to be upset if boy started drinking alcohol	+.08*	+.09	+.11**	+.13	+.15**	+.19
Analyses of girls' families						
Frequency of father drinking alcohol	+.12**	+.16	+.10**	+.14	+.14**	+.27
Frequency of mother drinking alcohol	—	+.14	—	+.13	+.14**	+.30
Frequency of father smoking	—	+.06	—	+.00	—	+.03
Frequency of mother smoking	+.12**	+.14	—	+.05	—	+.07
Parents seen as not likely to be upset if girl started drinking alcohol	—	+.08	—	+.06	+.16**	+.19

\* $p < .05$ . \*\* $p < .01$ .

From Table 6 it can be seen that from 10% to 22% of self-reported use of tobacco, marijuana, or alcohol was accounted for by self-reported family characteristics. The major contributor to this effect in each case is the set of General Family Characteristics, with the major contributor to this set (see Table 1) being trust and concern.

#### Regression Analysis: Friends

Tables 4 and 5 present the correlation and regression results for General Friendship and Friends' Drug Usage Characteristics. It is clear that having delinquent and/or drug-using friends dominates the set of predictions. Achievement

TABLE 4. REGRESSION AND SIMPLE CORRELATION ANALYSES FOR GENERAL FRIENDSHIP CHARACTERISTICS

General Friendship Characteristic	Subject's Use of Drugs					
	Tobacco (6 mo.)		Marijuana (6 mo.)		Alcohol (6 mo.)	
	beta	r	beta	r	beta	r
Analyses of boys						
Delinquent friends	+.35**	+.36	+.42**	+.33	+.42**	+.32
Extent of joint activities	—	+.04	+.06*	+.09	+.13**	+.15
Friends' divisiveness	—	+.01	-.10**	-.03	-.10**	-.04
Religiosity of friends	—	-.13	—	-.11	-.06*	-.14
Friends' interpersonal warmth and trust	+.14**	-.00	+.11**	+.04	+.08*	+.05
Achievement-oriented friends	—	-.24	—	-.16	+.13**	-.12
Interpersonal enjoyment	—	-.08	—	-.03	—	-.03
Friends' subgroup conformity and alienation	—	+.13	—	+.16	—	+.17
Number of male friends	—	+.09	—	+.11	—	+.12
Number of female friends	+.12**	+.19	+.09**	+.18	+.13**	+.22
Analyses of girls						
Delinquent friends	+.47**	+.48	+.37**	+.37	+.45**	+.41
Extent of joint activities	—	+.09	—	+.05	—	+.15
Friends' divisiveness	+.08**	+.10	—	+.07	+.07*	+.07
Friends' religiosity	-.13**	-.31	—	-.19	—	-.20
Friends' interpersonal warmth and trust	+.17**	+.10	+.20**	+.10	+.24**	+.20
Achievement-oriented friends	—	-.27	—	-.23	—	-.18
Friends' contemplative joint activities	—	-.02	+.09**	+.05	+.06*	+.06
Quarrelsome friends	-.11**	+.12	—	+.13	—	+.08
Number of male friends	+.08**	+.21	—	+.09	+.08**	+.20
Number of female friends	—	+.02	—	+.01	—	+.02

TABLE 5. REGRESSION AND SIMPLE CORRELATION ANALYSES FOR FRIENDSHIPS' DRUG USAGE CHARACTERISTICS

Friends' Drug Usage Characteristic	Subject's Use of Drugs					
	Tobacco (6 mo.)		Marijuana (6 mo.)		Alcohol (6 mo.)	
	beta	r	beta	r	beta	r
Boys (n = 1,008)						
Extent of friends' drug usage (alcohol, tobacco, marijuana, LSD, speed)	+.50**	+.50	+.53**	+.52	+.49**	+.49
Extent of friends' pressure	—	+.06	-.11**	-.05	—	+.05
Girls (n = 1,040)						
Extent of friends' drug usage (alcohol, tobacco, marijuana, LSD, speed)	+.60**	+.60	+.52**	+.51	+.52**	+.52
Extent of friends' pressure	-.05*	+.05	-.07**	+.01	—	+.12

orientation shows negative correlations with drug usage but has no significant regression weight (except for boys' use of alcohol, where a low but significant negative weight is observed). In sum, it seems that general friendship characteristics account for slightly less than 25% of drug use, while friends' drug usage characteristics account for rather more than 25% (see Table 6).

*Regression Analysis: Family and Friends*

Table 6 presents the results for combined family and friendship characteristics. It is clear that both family and friends can contribute substantially and uniquely to criterion variance. This is most marked, however, in the characteristics of friends, which can add between .15 and .20 to total predicted variance, while the unique variance of families adds only between .03 and .08. Care must

be taken in interpretation here, for friendship characteristics may well be due in part to parental characteristics; indeed, it is not implausible that the reverse may also take place (i.e., characteristics of friends may lead to a change in parental behavior).

DISCUSSION

Present results suggest that from 10% to 22% of the variance in self-reported drug use can be accounted for on the basis of questionnaire information on family provided by the adolescents in our sample. The percentage from knowledge of friendship characteristics is rather higher—from 25% to 39%. In both cases the percentages are heavily affected by the inclusion of variables involving drug use by others (i.e., by parents or friends). In terms of the unique contribution of

TABLE 6. PROPORTIONS OF VARIANCE OF STUDENTS' DRUG USE DURING PREVIOUS SIX MONTHS AS PREDICTED BY SETS OF FAMILY AND FRIENDSHIP CHARACTERISTICS

Regression Combination	Subject's Use of Drugs					
	Tobacco (6 mo.)		Marijuana (6 mo.)		Alcohol (6 mo.)	
	Boys R <sup>2</sup>	Girls R <sup>2</sup>	Boys R <sup>2</sup>	Girls R <sup>2</sup>	Boys R <sup>2</sup>	Girls R <sup>2</sup>
E2a = General family characteristics	.10	.13	.10	.09	.10	.08
E2b = Father's control and interaction	.03	.06	.02	.03	.01	.03
E2c = Mother's control and interaction	.05	.11	.05	.07	.03	.08
E2a + E2b + E2c	.12	.18	.12	.12	.12	.13
E2d = Family drug use characteristic	.03	.05	.03	.03	.09	.13
Age	.03	.01	.06	.01	.02	.00
Age + E2a	.11	.14	.13	.09	.11	.08
Age + E2a + E2b + E2c	.13	.18	.15	.12	.13	.13
Age + E2a + E2b + E2c + E2d	.14	.20	.16	.13	.19	.22
E3a = Friends' general characteristics	.17	.29	.16	.18	.18	.26
E3b = Friends' drug usage characteristics	.25	.36	.28	.26	.24	.27
Age + E3a	.18	.29	.20	.18	.19	.26
Age + E3b	.25	.36	.30	.26	.24	.28
Age + E3a + E3b	.28	.40	.32	.28	.28	.33
Age + E2a + E2b + E2c + E3a	.23	.34	.24	.23	.24	.30
Age + E2a + E2b + E2c + E2d + E3a + E3b	.32	.45	.35	.32	.34	.41

one set over the other, parents added between 3% and 8% to friends, while friends added between 15% and 25% to parents. If we consider the sets of variables excluding direct drug-use associations, the parents added from 4% to 5% to friends, and friends added from 9% to 17% to parents. The inference is that both sets are important but that friendship correlates predominate and that the overlap is substantial.

In broad terms the magnitude of results is not unexpected, although others have found higher correlations (e.g., Elliott et al., 1985; Jessor and Jessor, 1977). First, the focus here is on only two facets of the environment (albeit important ones). Other variables, such as the home (e.g., its physical properties), the neighborhood, and the school, are potentially associated with drug use, although probably at a lower level (Jessor and Jessor, 1977). A second consideration limiting association would be the advent of puberty and its attendant psychological changes, plus individual differences in the effects of puberty that make the period unstable to some degree for predictive purposes. Third, there is unreliability of measurement. Fourth, our sets of variables did not take account of any notion of pattern among characteristics (Chein et al., 1964; Kaufman and Kaufmann, 1981), this being a difficult but potentially rewarding avenue of research. Another potential for bias is introduced by the use of self-reports as a source of information on family, friends, and drug usage, although alternative sources of data (e.g., social worker visits to the home) are troublesome and not without their own biases. Furthermore, our criteria of drug usage may well be oversimplified (cf. Kandel, 1975). Gradations from nonuser to initiate, from initiate to regular user, and from regular to high user (and dependence) may mark changes in the effects of family variables, and these changes may not be of a linear kind. Yet another consideration to be taken into account is the effect of multiple drug use (Sadava, 1984). A youth who smokes 50 cigarettes a day but is not involved with other drugs is surely at a different point in terms of prediction than a youth with the same cigarette consumption who is heavily involved with other drugs. For these and other reasons we would not expect substantially higher levels of prediction than were obtained.

#### *Family and Parental Affection, Concern, and Involvement*

The importance of a group of variables including parental affection, concern, and involvement (briefly termed *parental affection*) has been known for some time (e.g., Coopersmith, 1967).

Central to this cluster are trust and concern, indifference (-), willing involvement, and negative control (-). Support for the importance of parental affection comes out very clearly in the present research. Excluding parental drug use measures, 20 out of the 29 correlations between family characteristics and drug use having values of  $r \geq \pm .15$  are directly in this cluster.

From a theoretical point of view it would have been interesting to observe how the predictive power of parental affection might change as a result of interaction with parental deviance (e.g., criminality, alcoholism). Such information on parents was not available, however.

Consideration of parental affection inevitably leads to certain measurement issues. Of particular importance is the potential for discrepancy between indices from independently recorded observations of parental behavior and the adolescent's perception of parental behavior. Present data, as in many if not most studies, depend upon the adolescent's own perception. Even though a large number of items involve reporting on specific behaviors, it would be unwise to assume a complete overlap with information from other sources, had these been available.

Cohesiveness is represented by interparent affection and within-family communication, and is probably linked to parental affection. Both show negative, but modest, correlations with drug use.

#### *Some Indices with Low or Zero Predictive Power*

The main characteristics relevant to parental discipline and control are positive control, strictness, restrictiveness, and negative control. In no case did we find a clear and notable result (say,  $r \geq \pm .2$ ) and there is little alternative but to conclude that the relation of these variables to adolescent drug use is minimal. Why this is so is far from clear, but it is not unexpected, considering previous research.

Previous evidence on parents' socioeconomic status and their offsprings' use of drugs suggests only a small association at best. Consistent with this, in the present research the correlations for boys were negative (with lower SES linked to higher usage rates) and significant but trivial in magnitude, while those for girls were nonsignificant.

Correlations with living with both parents (i.e., not in a broken home) are negative, except for boys and use of alcohol, and of low magnitude. This finding may support the earlier suggestion by Gorsuch and Butler (1976) that it is the style of the parent-child relationship rather than the broken home as such that is important.

The absence of substantial results for parental concern over achievement for girls is rather surprising. However, it may be that parental ambition and desire for order and respectability are what girls perceive, rather than concern over the adolescent's welfare.

#### *Parental Drug Use and the Modeling of Behavior*

In general, we would have expected to find young people closer in behavior to the parent of the same sex and that their use of a particular drug (tobacco or alcohol, in this case) would be closer to the parent's use of that drug than to any other drug. Present results give only limited support to these expectations, however. Adolescent drinking of alcohol appears to be more predictable than adolescent smoking. Girls' smoking of tobacco or marijuana and their drinking of alcohol are predicted better from parental alcohol use than tobacco use. It would appear that for girls, but less so for boys, the extent of parental drinking has a notable and rather general effect upon drug use, although the effect is greatest on alcohol use, as we would expect.

#### *Family in General versus Mother and Father*

Global indices characterizing the family might appear to fare better for predictive purposes than variables regarding individual parents. Such a conclusion would be unwarranted, however. The two sets of individual parent variables were fewer in number and dealt with a fairly specific set of parental descriptors, with emphasis on discipline and willingness to interact. Further, our concern was with measures at the first-order level, and the possibilities of interaction between the parents were not explored. For example, a demanding mother and a submissive father may have particular relevance for boys, even though having a demanding mother and a submissive father, taken independently, have no effect. That such patterns might be important was suggested some time ago (e.g., by Chein et al., 1964), concerning adolescent use of heroin. Further, even though the sets of measures concerning individual parents show a lower magnitude of predictive variance than does the set of general characteristics, they do contribute small, and in some cases non-negligible, amounts of unique variance over and above the general characteristics (i.e., .02, .05, .02, .03, .02, .05).

#### *Friends' Drug Use and Delinquency*

*Major correlates.* The extent to which drugs are consumed by friends accounts for almost all of the predictive power of the coverage of friendship characteristics ( $r = +.49$  to  $r = +.60$ ). This

comes as no surprise, given past research (e.g., Akers et al., 1979; Kandel et al., 1978; White, Johnson, and Horowitz, 1986) and provide further support for the differential association-social learning interpretation of adolescent drug use. Of greater interest now is the investigation of the process by which this bond is formed and the conditions under which individual differences in bonding take place. This next step will not be easy, as it will surely entail moving from molar to more precise and limited constructs. A related issue will be consideration of the effects of availability or differential opportunity to engage in drug-related behavior, which may well differ from one friendship to another. A further issue is the extent to which drug-using friends are seen as more warm, trusting, and interpersonally rewarding. Correlations between having friends that are drug-using and interpersonally warm and trusting (not reported here in detail) are low positive, a finding that gives moderate support to the suggestion that friendships within a drug-using milieu are particularly reinforcing.

The second major friendship correlate is delinquent behavior by friends, and this result confirms an association that has been known for some time (Braucht et al., 1973; Gorsuch and Butler, 1976; Jessor and Jessor, 1977). There is reason to view drug use by adolescents as part of a syndrome of deviant behaviors, including delinquent and sexual behavior (Donovan and Jessor, 1985; Hundleby, 1986). It follows that this pattern of behaviors would also be observed in friends.

*Minor correlates.* Low negative correlations were found for achievement-oriented friends ( $r = -.12$  to  $r = -.27$ ) and for friends' religiosity ( $r = -.11$  to  $r = -.31$ ). This is consistent with the adolescent's own achievement and religious behavior, both of which are low but stable negative correlates of drug use (Hundleby, in press).

It is interesting to note that the number of friends of the opposite sex shows low positive correlations with adolescents' own drug use. This is to be expected on the basis of the deviant behavior syndrome referred to above.

#### *Parents and Friends*

Inadequate though our understanding of both family and friendship influences may be, we have even less established knowledge of their interaction and joint effect (Glynn, 1981). On the basis of this study we have little choice but to conclude that there appear to be no major linkages between parental and friendship characteristics.

To be sure, parental and friendship influences are not independent. Having delinquent friends is negatively associated with most of the parental

characteristics indicating affection, trust, and concern, but all correlations are low. The religiosity of parents and of friends are also correlated.

There is no support for the notion that those young people receiving little in the way of affection from parents automatically receive it from their peers. Measures such as friends' interpersonal warmth and trust and friends' divisiveness show no correlations greater than  $\pm .2$  with parental trust and concern, indifference, or willing involvement. If parents are seen as unrewarding, it appears that this is of little assistance in determining whether friends are seen as rewarding (and vice versa).

These results come from an approximately representative sample of adolescents and may well not hold for comparisons involving those boys and girls who are more deeply involved in drug usage (as indicated by medical or correctional action). For teenagers in that highly troubled group the complexities of family and friendship dynamics will be more extreme, and the potential for substantial relationships could well be higher.

In summary, we may draw the following conclusions from the findings of this study of drug use among ninth graders: (a) Characteristics of parents or family appear to account for less variation in adolescent drug use than do characteristics of friends. (b) Notable correlates based upon the family include a syndrome of parental affection, support, and trust, and parental smoking of tobacco and drinking of alcohol. (c) Notable correlates based upon friends are drug use by friends (the most predictive of all measures); delinquency by friends; and friends' lack of achievement orientation and lack of religiosity.

#### REFERENCES

- Adler, Peter T., and Lynn Loteka. 1973. "Drug use among high school students: Patterns and correlates." *International Journal of the Addictions* 8: 537-548.
- Akers, Ronald L., Marvin D. Krohn, Lon Lanza-Kaduce, and Marcia Radosevich. 1979. "Social learning and deviant behavior: A specific test of a general theory." *American Sociological Review* 44: 636-655.
- Baer, Daniel J., and James J. Corrado. 1974. "Heroin addict relationships with parents during childhood and early adolescent years." *Journal of Genetic Psychology* 124: 99-103.
- Bauman, Karl E., Gary C. Koch, and Elizabeth S. Bryan. 1982. "Validity of self-reports of adolescent cigarette smoking." *International Journal of the Addictions* 17: 1131-1136.
- Blechman, Elaine A. 1982. "Conventional wisdom about familial contributions to substance abuse." *American Journal of Drug and Alcohol Abuse* 9: 35-53.
- Block, J. Richard. 1975. "Behavioral and demographic correlates of drug use among students in grades 7-12." In D. J. Letieri (ed.), *Predicting Adolescent Drug Abuse: A Review of Issues, Methods, and Correlates*. Rockville, MD: National Institute on Drug Abuse.
- Bogg, Richard A., and J. Wesley Hughes. 1973. "Correlates of marijuana usage." *International Journal of the Addictions* 8: 489-504.
- Bowerman, Charles E., and John W. Kinch. 1959. "Changes in family and peer orientation of children between the fourth and tenth grades." *Social Forces* 37: 206-211.
- Braucht, G. Nicholas, Daniel Brakarsh, and Diane Follingstad. 1973. "Deviant drug use in adolescence: A review of psychosocial correlates." *Psychological Bulletin* 79: 92-106.
- Brittain, Clay V. 1963. "Adolescent choices and parent-peer cross-pressures." *American Sociological Review* 28: 385-391.
- Brook, Judith S., Irving F. Lukoff, and Martin White-man. 1977. "Peer, family and personality domains as related to adolescent drug behavior." *Psychological Reports* 41: 1095-1102.
- Brook, Judith S., Martin Whiteman, and Ann S. Gordon. 1983. "Stages of drug use in adolescence: Personality, peer, and family correlates." *Developmental Psychology* 19: 269-277.
- Chein, Isador, Donald L. Gerard, S. Robert Lee, and Eva Rosenfield. 1964. *The Road to Narcotics, Delinquency, and Social Policy*. New York: Basic Books.
- Clarke, Ronald V., H. J. Eyles, and M. Evans. 1972. "The incidence and correlates of smoking among delinquent boys committed to residential training." *British Journal of Addictions* 67: 65-71.
- Condry, John, and Michael L. Siman. 1974. "Characteristics of peer- and adult-oriented children." *Journal of Marriage and the Family* 36: 543-554.
- Coopersmith, Stanley. 1967. *The Antecedents of Self-Esteem*. San Francisco: W. H. Freeman.
- Cowan, Ronald, and Rodney Roth. 1972. "The turned-on generation: Where will they turn to?" *Journal of Drug Education* 2: 39-47.
- Craig, Scarlett R., and Barry S. Brown. 1975. "Comparison of youthful heroin users and nonusers from one community." *International Journal of the Addictions* 10: 53-64.
- Donovan, John E., and Richard F. Jessor. 1985. "Structure of problem behavior in adolescence and young adulthood." *Journal of Consulting and Clinical Psychology* 53: 6, 890-904.
- Elliott, Delbert S., David Huizinga, and Suzanne Ageton. 1985. *Explaining Delinquency and Drug Use*. Beverly Hills, CA: Sage.
- Emmerich, Helen J. 1978. "The influence of parents and peers on choices made by adolescents." *Journal of Youth and Adolescence* 7: 175-180.
- Fejer, Diane, and Reginald Smart. 1972. "Drug use, anxiety, and psychological problems among adolescents." *Ontario Psychologist* 4: 10-21.

- Globetti, Gerald. 1973. "Teenage drinking in a community characterized by prohibition norms." *British Journal of the Addictions* 68: 275-279.
- Glynn, Thomas J. 1981. "From family to peer: A review of transitions of influence among drug-using youth." *Journal of Youth and Adolescence* 10: 363-383.
- Gorsuch, Richard L., and Mark C. Butler. 1976. "Initial drug abuse: A review of predisposing social psychological factors." *Psychological Bulletin* 83: 120-137.
- Graven, David B., and Robin D. Schaefer. 1982. "Family life and levels of involvement in an adolescent heroin epidemic." *Chemical Dependencies* 4: 187-208.
- Harburg, Ernest, Deborah R. Davis, and Roberta Caplan. 1982. *Journal of Studies on Alcohol* 43: 497-516.
- Hawker, Ann. 1978. *Adolescents and Alcohol*. London: B. Edsall.
- Hemminki, Elina, Aila Russanen, and Antti Mattila. 1973. "Drug use among school children in Helsinki." *British Journal of Addictions* 68: 159-165.
- Hendin, Herbert, Ann Pollinger, Richard Ulman, and Arthur C. Carr. 1981. *Adolescent Marijuana Abusers and Their Families*. NIDA Research Monograph 40. Rockville, MD: U.S. Dept. of Health and Human Services.
- Hundleby, John D. In press. "Adolescent drug use in a behavioral matrix: A confirmation and comparison of the sexes." *Addictive Behaviors*.
- Hundleby, John D., Richard A. Carpenter, R. J. Alexander Ross, and G. William Mercer. 1982. "Adolescent drug use and other behaviors." *Journal of Child Psychology and Psychiatry* 23: 61-68.
- Hundleby, John D., and Suzanne Girard. 1980. "Home and family correlates of prior drug involvement among institutionalized male adolescents." *International Journal of the Addictions* 15: 689-699.
- Hunt, Denise G. 1974. "Parental permissiveness as perceived by the offspring and the degree of marijuana usage among offspring." *Human Relations* 27: 267-285.
- Jensen, Gary F., and David Brownfield. 1983. "Parents and drugs." *Criminology* 21: 543-554.
- Jessor, Richard R., and Shirley L. Jessor. 1977. *Problem Behavior and Psychosocial Development*. New York: Academic Press.
- Josephson, Eric. 1974. "Trends in adolescent marijuana use." In Eric Josephson and Eleanor E. Carroll (eds.), *Drug Use: Epidemiological and Sociological Approaches*. New York: Halstead-Wiley.
- Kamali, Khosrow, and Robert A. Steer. 1976. "Polydrug use by high school students: Involvement and correlates." *International Journal of the Addictions* 11: 337-343.
- Kandel, Denise B. 1973. "Adolescent marijuana use: Role of parents and peers." *Science* 181: 1067-1070.
- Kandel, Denise B. 1975. "Stages in adolescent involvement in drug use." *Science* 190: 912-914.
- Kandel, Denise B., Ronald C. Kessler, and Rebecca Margulies. 1978. "Antecedents of adolescent initiation into stages of drug use: A developmental analysis." In Denise B. Kandel (ed.), *Longitudinal Research on Drug Use*. New York: John Wiley and Sons.
- Kaufman, Edward, and Pauline Kaufmann. 1981. "Family structures of drug dependent individuals." In A. J. Schecter (ed.), *Drug Dependence and Alcoholism* (Vol. 2). New York: Plenum.
- Larson, Lyle E. 1972. "The influence of parents and peers during adolescence: The situation hypothesis revisited." *Journal of Marriage and the Family* 34: 67-74.
- Larson, Lyle E. 1974. "An examination of the salience hierarchy during adolescence: The influence of the family." *Adolescence* 9: 317-332.
- Lombillo, Jose R., and Jack D. Hain. 1972. "Patterns of drug use in a high school population." *American Journal of Psychiatry* 128: 836-841.
- Malcolm, Susan, and Ron J. Shephard. 1978. "Personality and sexual behavior of the adolescent smoker." *American Journal of Drug and Alcohol Abuse* 5: 87-96.
- Mercer, G. William. 1975. *A Model of Adolescent Drug Use*. Unpublished doctoral dissertation, York University, Toronto, Ontario.
- Mercer, G. William, and John D. Hundleby. 1978. "Patterns of adolescent drug use." *British Journal of Addiction* 73: 121.
- Mercer, G. William, John D. Hundleby, and Richard A. Carpenter. 1978. "Adolescent drug use and attitudes toward the family." *Canadian Journal of Behavioural Science* 10: 79-90.
- Mercer, G. William, and Paul M. Kohn. 1980. "Child-rearing factors, authoritarianism, drug use attitudes, and adolescent drug use: A model." *Journal of Genetic Psychology* 136: 159-171.
- Mercer, G. William, and Reginald G. Smart. 1974. "The epidemiology of psychoactive and hallucinogenic drug use." In R. J. Gibbons, Y. Israel, R. E. Popham, W. Schmidt, and R. G. Smart (eds.), *Research Advances in Alcohol and Drug Problems* (Vol. 1). New York: John Wiley and Sons.
- Newcomb, Michael D., George J. Huba, and Peter M. Bentler. 1983. "Mothers' influence on the drug use of their children: Confirming tests of direct modeling and mediational theories." *Developmental Psychology* 19: 714-726.
- Rosenberg, C. M. 1968. "Young drug addicts: Addiction and its consequences." *Medical Journal of Australia* 1: 1031-1033.
- Sadava, Stan W. 1984. "Concurrent multiple drug use: Review and implications." *Journal of Drug Issues*: 623-636.
- Schneider, Robert J., Phon Sangsingkeo, and Sarin Punnahitano. 1977. "A survey of Thai student use of illicit drugs." *International Journal of the Addictions* 12: 227-239.
- Seigleman, Marvin. 1965. "Evaluation of Bronfenbrenner's questionnaire for children concerning parental behavior." *Child Development* 36: 163-174.
- Single E., D. B. Kandel, and B. D. Johnson. 1975. "The reliability and validity of drug use responses in a large scale longitudinal survey." *Journal of Drug Issues* 5: 426-443.
- Smart, Reginald G. 1971. "Illicit drug use in Canada: A review of current epidemiology with clues for prevention." *International Journal of the Addictions* 6: 383-405.

- Smart, Reginald G., and Diane Fejer. 1972. "Drug use among adolescents and their parents: Closing the generation gap in mood modifiers." *Journal of Abnormal Psychology* 79: 153-160.
- Spevack, Michael, and R. O. Pihl. 1976. "Nonmedical drug use by high school students: A three year survey study." *International Journal of the Addictions* 11: 755-792.
- Streit, Fred, and Hilory G. Oliver. 1972. "The child's perception of the family and its relationship to drug use." *Drug Forum* 1: 283-289.
- Streit, Fred, Donald L. Halsted, and Pietro J. Pascale. 1974. "Differences among youthful users and non-users of drugs based on their perceptions of parental behavior." *International Journal of the Addictions* 9: 749-755.
- Tec, Nechama. 1970. "Family and differential involvement with marijuana: A study of suburban teenagers." *Journal of Marriage and the Family* 32: 656-662.
- Tec, Nechama. 1974. *Grass is Green in Suburbia*. New York: Libra Publishers.
- Tudor, Cynthia G., David Petersen, and Kirk W. Elifson. 1980. "An examination of the relationship between peer and parental influences and adolescent drug use." *Adolescence* 15: 783-798.
- Westermeyer, Joseph, and Virginia Walzer. 1975. "Sociopathy and drug use in a young psychiatric population." *Diseases of the Nervous System* 36: 673-677.
- White, Helene R., Valerie Johnson, and Allan Horowitz. 1986. "An application of three deviance theories to adolescent substance use." *International Journal of the Addictions* 21: 347-366.
- Williams, Allan F. 1973. "Personality and other characteristics associated with smoking amongst young teenagers." *Journal of Health and Social Behavior* 14: 374-380.