

Family structure and substance use problems in adolescence and early adulthood: examining explanations for the relationship

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ABSTRACT

Aims Our study has two goals: to evaluate variation in symptoms of substance abuse/dependence by family structure and to examine several potential explanations for this association, including differences in socio-economic status, social support, social stress and perceived approval and use of substances by family and friends. **Design** Ordinary least squares (OLS) regression is used to examine the association between family type and problematic substance use and to assess the hypothesized mediators. **Setting** Data were collected between 1998 and 2000 as part of a study of the prevalence and social distributions of psychiatric and substance use disorders. The study involved face-to-face interviews with a representative sample of young adults in a South Florida community. **Participants** Respondents ($n = 1760$) were between 18 and 23 years of age. Approximately 25% were of Cuban origin, 25% other Caribbean basin Hispanic, 25% African American and 25% non-Hispanic white. **Measurements** Four family types are examined: mother–father families, single-parent families, single-parent families that include other adult relative(s) and stepfamilies. Problematic substance use is measured by a set of 22 substance abuse/dependence symptoms. **Findings** Controlling for race–ethnicity and gender, respondents from single-parent families report a significantly higher level of problematic substance use than those from mother–father families. Although nearly all explanations receive support, we find the strongest evidence for differential association with deviant peers and exposure to stress. **Conclusions** Our findings suggest that—rather than representing a unique and independent predictor of substance use problems—family structure can be viewed as a marker of the unequal distribution of factors influencing the risk of problematic substance use.

Keywords Deviant peers, family process, family structure, SES, social stress, substance use.

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INTRODUCTION

Risk of substance use problems during adolescence and young adulthood varies by the structure of one's family of origin (e.g. Stern, Northman & Van Slyck 1984; Burnside *et al.* 1986; Selnow 1987; Flewelling & Bauman 1990; Needle, Su & Doherty 1990; Turner, Irwin & Millstein 1991; Hoffman 1993; Adlaf & Ivis 1996; Albrecht, Amey & Miller 1996; Suh, Schutz & Johanson 1996; Amey & Albrecht 1998; Gil, Vega & Biafora 1998; Aquilino & Supple 2001; see Fawzy *et al.* 1987 for an exception). Individuals from households in which neither parent was present face the greatest risk, while mother–father fami-

lies confer the strongest protection (Adlaf & Ivis 1996; Albrecht *et al.* 1996; Suh *et al.* 1996). Compared with those from mother–father families, a significantly increased risk also has been observed for adolescents and young adults who grew up in either stepfamilies or single-parent families (Stern *et al.* 1984; Burnside *et al.* 1986; Selnow 1987; Flewelling & Bauman 1990; Needle *et al.* 1990; Turner *et al.* 1991; Hoffman 1993; Adlaf & Ivis 1996; Albrecht *et al.* 1996; Suh *et al.* 1996; Amey & Albrecht 1998; Aquilino & Supple 2001). However, elevated risk is not found among those from single-parent households that include an additional adult relative (Suh *et al.* 1996; Gil *et al.* 1998).

The relationship between family configuration and substance use appears to be robust. Family structure differences have been observed across substances, including tobacco (Hundley & Mercer 1987; Adlaf & Ivis 1996; Amey & Albrecht 1998), alcohol (Burnside *et al.* 1986; Adlaf & Ivis 1996) and marijuana and other illicit drugs (Adlaf & Ivis 1996; Amey & Albrecht 1998). The patterns also are found across a range of measures, such as life-time use (Flewelling & Bauman 1990; Turner *et al.* 1991), initiation of drug use (Suh *et al.* 1996; Gil *et al.* 1998), use in the past month (Albrecht *et al.* 1996) or year (Adlaf & Ivis 1996) and problematic substance use (Needle *et al.* 1990; Adlaf & Ivis 1996).

Efforts to account for these patterns have generated several prominent hypotheses. One explanation focuses on differences across family types in the dynamics operating within families, such as the quality of parent-child interaction (Amey & Albrecht 1998) and the degree of limit-setting by parents (Dornbusch *et al.* 1985). These explanations draw on several theoretical perspectives, including social learning (Bandura 1977) and social control theories (Hirschi 1969). A second set of explanations centers on factors that—although sometimes viewed as operating outside of families—may influence, or be influenced by, family structure and processes. Such factors include friendship networks, social stress and socio-economic inequality. Explanations focusing on these factors derive from the theories of differential association (Sutherland 1947), strain (Merton 1968) and social stress (Pearlin *et al.* 1981).

Each perspective has received some empirical support; however, determining the relative importance of each is difficult because studies typically focus on single explanations. Studies also have tended to examine life-time or recent use of substances (e.g. Flewelling & Bauman 1990; Turner *et al.* 1991; Adlaf & Ivis 1996; Albrecht *et al.* 1996; Suh *et al.* 1996; Gil *et al.* 1998), as opposed to problematic substance use. As a result, we know more about variation by family structure in the likelihood of experimenting with alcohol and drugs—a relatively common experience in adolescence—than about such variation in the problematic use of substances—an occurrence that is of greater individual and social consequence.

This study was designed to address these limitations. We examine variation in substance use problems across four family types (mother-father families, stepfamilies, single-parent families and single-parent families that include at least one additional adult relative). Substance use problems are indexed by the number of *Diagnostic and Statistical Manual* version IV (DSM-IV) abuse and dependence symptoms present over the preceding year. We explore multiple explanations for the association

between family structure and problematic substance use. Specifically, we consider family structure differences in each of the following: socio-economic status; quality of relationships with friends and family; perceived approval and use of substances by parents, siblings and friends; and exposure to social stress. We examine the relative and collective capacity of these factors to account for family structure differences in problematic substance use.

EXPLANATIONS FOR THE FAMILY STRUCTURE-SUBSTANCE USE ASSOCIATION

Socio-economic status (SES)

One explanation is raised by the stark differences in economic resources across family types. Approximately 30% of all children live in families with annual incomes below \$30 000; however, only 15% of children in two-parent families live in low-income families, compared with 65% of single-mother families, 45% of single-father families and 61% of households with neither parent present (Fields 2003). The argument that these SES differences contribute to variation in risk of substance use across family forms receives support from research revealing that economic deprivation and poor housing predict higher rates of adolescent delinquency and problematic substance use in adulthood (Hawkins, Catalano & Miller 1992). This explanation is also consistent with at least two theoretical perspectives. Social stress theory (Pearlin *et al.* 1981) posits that exposure to stress, including chronic economic deprivation, may lead to substance use, perhaps as a coping mechanism. Strain theory (Merton 1968) also raises the possibility that substance use represents a coping strategy; the more limited access of the economically disadvantaged to legitimate avenues to reach highly valued goals may contribute to their elevated levels of drug use.

However, the relationship between SES and adolescent substance use is not so straightforward; it varies across indicators of SES and measures of use. For example, income is associated positively with frequency of drinking, but education is related negatively to quantity consumed (Casswell, Pledger & Hooper 2003). Consistent with these divergent findings, studies reveal weak support for a mediating effect of SES on the relationship between family structure and substance use (Flewelling & Bauman 1990; Adlaf & Ivis 1996). For example, Flewelling & Bauman (1990) report that the higher risk faced by those in step- and single-parent families persisted with controls included for parents' education. Family structure differences in SES, although considerable, appear to play a limited role in accounting for variation in risk of substance use by family type.

Family processes

Several streams of research suggest that family processes play a role in producing family structure differences in drug use. One draws on social learning theory, which argues that individuals acquire social behavior by modeling or imitating others' behavior (Bandura 1977). Family members are central in shaping behavior, including deviant behavior. As illustrations, parental use of substances is associated consistently with greater use by their offspring (Stephenson, Henry & Robinson 1996; Friedman, Terras & Glassman 2000), and parents' choice of drugs is connected closely with adolescents' drug selection (Johnson & Pandina 1991). Also supporting social learning theory, research finds that adolescents imitate the substance use behavior of older siblings more closely than that of parents (Brook *et al.* 1990b). In addition to actual use of substances by family members, adolescent drug use is influenced strongly by parental permissiveness regarding deviant behavior (Newcomb, Fahy & Skager 1988; Johnson & Pandina 1991).

Parental and sibling use and approval of substances may vary across family types and contribute toward explaining differences in risk of drug use. Research revealing marital status differences in substance use, such as greater use among the divorced and never-married compared with the married (Power, Rodgers & Hope 1999), suggests that family structure shapes the likelihood of observing—and perhaps modeling—parental substance use. Although receiving limited attention in this literature, family structure also may influence both the presence of siblings (including full-, half- and step-siblings) and their influence on adolescents' behavior.

Another family characteristic that may play a role in producing differences in substance use is the quality of relationships. Higher levels of attachment (Brook *et al.* 1990a; Turner *et al.* 1991), greater perceived support (Wills *et al.* 2004), more time spent with the family (Adlaf & Ivis 1996), more frequent family celebrations (Stephenson *et al.* 1996) and greater warmth (Aquilino & Supple 2001) protect against drug use, while negative relationships, such as high levels of family conflict (Aquilino & Supple 2001), predict greater use. These patterns are consistent not only with the extensive literature reporting that social support enhances health (e.g. Broadhead *et al.* 1983; House, Landis & Umberson 1988; Cohen *et al.* 1997) but also perspectives on drug use that draw on social control theory. According to this theory, deviant behavior is produced by low levels of attachment and commitment to institutions, such as the family (Hirschi 1969). In addition to theoretical support, the explanation is supported by research revealing variation in perceived support from family. For example, adolescents in step- and single-parent families report less

support from their parents than do their peers in mother–father families (Gore, Aseltine & Colton 1992). More direct support for this explanation is provided by studies reporting a reduction in the association between family structure and substance use when controls for relationship quality are added (Adlaf & Ivis 1996; Amey & Albrecht 1998).

The link also may be explained by variations in parental supervision and limit-setting. Not surprisingly, weaker parental monitoring and lack of adult supervision after school are associated with greater substance use (Richardson *et al.* 1989; Adlaf & Ivis 1996; Aquilino & Supple 2001). Fewer limits on adolescents' behavior tend to be set by single parents than those in two-parent families; adolescents in single-parent families have more influence over spending money, friends with whom to go out and how late to stay out (Dornbusch *et al.* 1985). These patterns suggest that elevated risk of adolescent substance use in single-parent families may arise, at least in part, because of lower capacity to control their adolescents' behavior. Supporting this suggestion is the fact that the presence of an additional relative in the household of a single parent yields a level of risk equivalent to that of mother–father families (Suh *et al.* 1996; Gil *et al.* 1998). Also consistent is the finding that the level of decision-making power held by adolescents in such families is more similar to that of mother–father than mother-only families (Dornbusch *et al.* 1985).

Friendship networks

Family context may influence the risk of deviant behavior through its effect on friendship networks. Having one's primary emotional needs fulfilled by family relationships may decrease the risk of turning to peers, perhaps risk-taking peers, to meet these needs. Drawing on differential association theory (Sutherland 1947), risks of substance use among adolescents may be influenced by their level of association with deviant peers. As examples of the influence of family ties on peer relationships, greater emotional detachment from parents may increase the influence of peer pressure (Steinberg & Silverberg 1986), and lack of adult supervision after school is associated with greater contact with deviant peers and greater risk of drug use (Richardson *et al.* 1989). Such variation may play a role in explaining the association between family structure and substance use. Supporting this argument, research by Hoffman (1993) finds that adolescents from widowed-parent homes are more likely than their counterparts in mother–father families to select peers with high levels of drug use, which predicts greater marijuana use. A mediating effect of peer networks also is suggested by the work of Steinberg (1987), who reported greater susceptibility to peer pressure among adolescents from

step- and single-parent families, compared with mother–father families.

Peers also are important as sources of social support that can influence the risk of substance use problems. Research tends to find that social support enhances health (Broadhead *et al.* 1983; House *et al.* 1988; Cohen *et al.* 1997). Consistent with this finding, greater parental support lowers the risk of drug use (Brook *et al.* 1990a; Turner *et al.* 1991; Adlaf & Ivis 1996; Stephenson *et al.* 1996; Aquilino & Supple 2001; Wills *et al.* 2004). However, the opposite effect—albeit a weaker one—has been found for support from friends (Wills *et al.* 2004). While strong parental support may tend to reflect greater oversight of adolescent behavior and stronger commitment to conventional norms (both of which reduce the risk of deviant behavior), greater perceived support from peers may indicate a higher level of susceptibility to peer influence and perhaps an attachment to less conventional norms, including those regarding drug use. Although receiving limited attention in prior studies, differences in perceived support from friends may provide a partial explanation for variation in drug use across family types. This possibility receives some support from research revealing differences across family types in the nature of peer relationships, for example, the greater susceptibility to peer pressure among adolescents from single-parent families (Steinberg 1987).

Social stress

Another explanation for family structure differences in substance use focuses on differential exposure to social stress. Research finds consistently that greater stress is associated with worse health (Pearlin 1989; Aneshensel 1992; Turner & Lloyd 1995), including greater risk of problematic substance use (Turner & Lloyd 2003). The differential exposure to stress explanation receives support from studies revealing that the risk of experiencing eventful and chronic stressors varies by family composition (Gore *et al.* 1992; Aseltine 1996). For example, Gore *et al.* (1992) report that adolescents in step- and single-parent families experience more life events not only in their own lives, but also the lives of friends and family members.

Although this explanation is plausible, determining its contribution is complicated by the tendency to focus on particular and limited indexes of stress exposure, such as financial strain or recent life events. As argued more than a decade ago, recent life events alone—however adequately assessed—cannot evaluate variation in stress exposure meaningfully (McLean & Link 1994; Wheaton 1994). In addition to this more general critique, little attention has been given in this literature to the stress stemming from discrimination. This source of stress is relevant to examinations of families and health given the

clear race–ethnic differences in family structure (Fields 2003) and the greater exposure of non-whites to all forms of discrimination (Kessler *et al.* 1999). Taken together, these patterns suggest that individuals from single-parent families are more likely to experience discrimination and suffer its effects on substance use problems (Whitbeck *et al.* 2001). Differential exposure to discrimination also may stem from the persisting stigma associated with various non-traditional family forms. Qualitative work has shown that single parents tend to be faced with both negative stereotypes and unfair treatment (Seccombe, James & Walters 1998; Sidel 1998).

These explanations for variation in problematic substance use across family types—socio-economic status, family processes, friendship networks and social stress—have tended to be examined in isolation. As a result, the relative contribution of each has been difficult to evaluate. In this paper we address this issue by including measures of each of the following potential mediators of the relationship between family structure and problematic substance use: (1) family socio-economic status; (2) family processes, indexed in terms of perceived family support, parenting style, family substance use and parental and sibling attitudes about substance use; (3) friendship networks, measured as perceived friend support and friends' use and approval of substances; and (4) social stress, indexed by recent exposure to eventful and chronic stressors, discrimination stress and number of life-time experiences of major and potentially traumatic events. We test the hypothesis that each of these factors operates as a mediator of the relationship between family structure and problematic substance use. We do not make predictions regarding the relative significance of each; however, our study is designed to permit such examinations. Given the wide range of potential explanations that we examine, we also test the hypothesis that this set of factors, taken together, largely accounts for family structure variation in problematic substance use.

MATERIALS AND METHODS

This paper is based on data from a representative sample of young adults in a South Florida community. The sample was drawn randomly from a larger population of young adolescents studied between 1990 and 1993 (Vega & Gil 1998). Because the previous study included only a small number of females, a supplementary sample was drawn randomly from the original 6th/7th grade class rosters to achieve equivalent numbers of males and females for the present study. Between 1998 and 2000, we interviewed 1803 respondents between 18 and 23 years of age (92% were between 19 and 21 years), and all analyses presented here are based on data from those interviews. A detailed description of the sampling

process and evidence for the representativeness of the study sample have been presented elsewhere (Turner & Gil 2002; Turner & Lloyd 2003).

A noteworthy feature of this sample is its race-ethnic composition. The sample was drawn such that approximately 25% are of Cuban origin, 25% other Caribbean basin Hispanic, 25% African American and 25% non-Hispanic white. Our approach in drawing this sample was in accord with a growing consensus in the field that race is more a social than a biological categorization that is akin to ethnic status (Williams 1997; Williams, Spencer & Jackson 1999) and that there are important cultural variations within ethnic statuses. In an effort to minimize the effects of such variations on results, we have distinguished Cubans from other Hispanics and limited inclusion within this latter category to Hispanics from countries in the Caribbean basin. For the same reason, Haitians and other Caribbean blacks were not studied and are not included in the African American subsample.

Overall, 70.1% of those sampled were successfully recruited to the study. Most interviews were carried out face-to-face in the homes of respondents. Thirty percent were conducted by telephone and aided by mailed response booklets. Consistent with evidence that in-person and phone interviews yield generally comparable data (Aktan *et al.* 1997; Rohde, Lewinsohn & Seeley 1997; Midanik *et al.* 1999), our analyses revealed no association between interviewing mode and the presence versus absence of an affective or anxiety diagnosis (0.25 and 0.27 prevalence for in-person and phone interviews, respectively; NS). Although we observed a slight difference in number of reported adversities across interviewing mode (8.4 versus 7.8 for in-person and phone interviews, respectively; $P < 0.05$), the fact that higher stress exposure corresponds with a lower prevalence of disorder suggests an absence of bias associated with interviewing mode. A more detailed description of the sample and field procedures has been presented previously (Turner & Avison 2003; Turner, Taylor & Van Gundy 2004). For the present analyses, the data are weighted to population values with respect to gender and race-ethnicity. Cases with missing data on family structure, race or substance use problems were excluded, yielding a sample of 1760 respondents.

Measures

A major strength of the data employed in this study is the measurement of substance use problems. Respondents were asked a set of 22 items referring to experiences indicative of substance abuse or dependence, such as having health problems as a result of substance use, missing work or school because of substance use, being unable to resist the urge to use substances or having withdrawal

symptoms. For each item, respondents were asked to indicate which of 10 substances had produced the symptom, and information on the first and last experience of the symptom was collected for each drug mentioned by the respondent. The symptom count used in these analyses is the number of symptoms experienced in the last year. Regardless of the number of drugs mentioned by the respondent, each symptom is counted only once ($\alpha = 0.84$). Because the resulting measure was highly skewed, a log transformation was employed in analyses; this reduced the skewness statistic from 1.79 to 1.03.

Respondents were asked to indicate with whom they lived between the ages of 13 and 18: mother, father, stepmother, stepfather, grandmother, grandfather, aunt, uncle, sister, brother, foster parent or other people. Because the data did not permit the determination of whether brothers, sisters or 'others' acted in caretaking roles, and too few respondents reported living in foster families, these responses were not examined. As many of the resulting combinations were too infrequent to permit separate analysis, they were collapsed, where possible, into four family types: mother-father families, single-parent families, extended single-parent families (i.e. single-parent families that include at least one additional adult relative) and families that include a step-parent. The single-parent, extended single-parent, and stepfamily categories each included a wide range of configurations. For example, the stepfamilies could contain mothers or fathers; moreover, either of these could include grandparent(s). Examination of variation within each of these family forms, however, is not possible because the majority of step- and single-parent families are headed by mothers.

Socio-economic status is estimated by a composite score based on parents' income level, occupational category (Hollingshead 1957) and educational attainment. These data are from parental reports (almost exclusively from mothers) rather than the young adult participants, except where interviews with a parent could not be obtained. Thirty-minute parent telephone interviews were conducted in all instances in which both the participant and parent consented. A total of 1200 parent interviews were completed (66%). Scores on the three status dimensions were standardized, summed and divided by the number of status dimensions on which data were available. In our view, consideration of all dimensions on which data were obtained is likely to provide a good estimate of the general socio-economic circumstance of study participants during adolescence. This strategy also avoids the substantial losses to sample size yielded by consideration of single dimensions.

Several dimensions of family process are examined: perceived family support, parenting style and use and approval of substances by family. Perceived family support is composed of two scales that have been

standardized and summed ($\alpha=0.82$): positive family relations ($\alpha=0.91$; eight items) and family cohesion ($\alpha=0.86$; five items). The first indexes the extent to which the respondent feels loved and cared for by her/his family while the second taps the respondent's level of integration within her/his family. Because these scales capture similar constructs (and correlate at 0.70), we combined them to provide a measure of the overall quality of family ties. We also include a measure of authoritative parenting style (i.e. the provision of clear behavioral expectations combined with support for meeting them), which has been associated with decreased risk of substance use (Baumrind 1991). Our scale is drawn from four items asking young adults about each parent's style (Buri 1991). Scales were created for mothers ($\alpha=0.75$) and fathers ($\alpha=0.80$); these scales were correlated at 0.41. Where both parents were present, they were averaged to achieve a representation of the general experience of each study participant.

Substance use by family members, as reported by the young adult, is captured by a three-item, standardized scale ($\alpha=0.65$) indicating how many members engage in each of the following activities: drinking alcohol heavily, using marijuana or using other illegal drugs. Two measures refer specifically to the attitudes and behaviors of parents. Parental use of substances is indicated by a count of the following substances ever used by the respondent's parent(s): alcohol, marijuana, cocaine or crack or any other illegal substance. Parental approval is a standardized scale composed of four items ($\alpha=0.73$) indicating perceived approval of the use of various substances. A similar four-item scale assesses perceived sibling approval of substance use ($\alpha=0.78$). Approximately 13% of respondents did not report having a sibling while they were growing up; these respondents were assigned the mean on the scale (i.e. zero), and the presence of a sibling is controlled in the analyses. Higher values on these measures indicate greater use and higher levels of approval of substance use.

Two dimensions of friend networks are examined: perceived support and use and approval of substances. Friend support is represented by a standardized scale composed of eight items ($\alpha=0.91$) indicating the degree to which the respondent feels close to and appreciated by her/his friends. A standardized scale of perceived approval of use by one's friends ($\alpha=0.72$; four items) parallels the parent and sibling scales. The standardized scale of substance use ($\alpha=0.76$; three items) indicates how many friends engage in each of the following activities: drinking alcohol heavily, using marijuana or using other illegal drugs.

Two measures indicate stress exposure. The first is composed of four indices of recent stressful experience: (1) family stress ($\alpha=0.82$; five items); (2) the sum of 36

chronic stresses, such as having difficulties at work or conflict with one's partner/boyfriend/girlfriend; (3) a count of up to 33 events that have occurred in the past year, such as going onto welfare or experiencing a serious accident or injury; and (4) a scale of everyday discrimination, referring to unfair treatment of a more chronic than episodic nature, such as being treated with less respect or courtesy than others ($\alpha=0.85$; nine items). These four measures correlate with one another between 0.23 and 0.42. To achieve a more comprehensive estimate of differences in recent exposure to social stress, these four measures were standardized and summed. The second measure is a count of up to 33 major and potentially traumatic events, experienced at any time in one's life (e.g. experiencing or witnessing violence). Also included in this count are reports of up to seven events of major discrimination (e.g. being denied housing or a job/promotion). These events are viewed as potentially traumatic events because, unlike some of the more mundane sources of stress, they are likely to have significant consequences for one's life chances. The measures of stress exposure employed in these analyses have been described in detail elsewhere (Turner & Avison 2003).

We include race and gender in our analyses in light of both the well-established links between race, gender and substance use and the elevated prevalence of single-parent families among African Americans. Gender is coded 1 for females, and four dichotomous variables indicate race [African American, Cuban, other Hispanic and white (treated as reference category)]. Although supported by strong theoretical rationales, we do not examine the possibility that race-ethnicity and/or gender moderate the association between family structure and substance use. Our sample does not contain adequate numbers of respondents of each race-ethnicity and gender combination in each of the four family forms to permit these analyses.

Analytical strategy

We use ordinary least squares (OLS) regression to model the association between family structure and symptoms of substance abuse/dependence. We treat factors that have been shown to be correlated with family structure and drug or alcohol use as mediators of the family structure-substance use link. We followed the standard procedure for testing for mediating relationships (Baron & Kenny 1986), which involved the examination of relevant bivariate relationships as well as the change in the coefficients for family structure generated in multivariate OLS analyses with the inclusion of a hypothesized mediator. The sample size is 1760 for all analyses, which permits direct comparisons across regression models.

Because of our interest in examining mediating effects, we enter variables into the regression models in

several steps. First, we regress symptoms of substance abuse/dependence on gender and race-ethnicity. The next step adds family structure variables. The seven subsequent steps permit tests of the hypothesis that each of the following hypothesized mediators provides a partial explanation for the association between family composition and problematic substance use: (1) SES, (2) social support from family, (3) authoritative parenting, (4) approval and use of substances by family, (5) social support from friends, (6) approval and use of substances by friends and (7) social stress. The final equation includes all the hypothesized mediators simultaneously, permitting a test of the hypothesis that the factors collectively account for the relationship between family type and problematic substance use. Because many of the variables are associated significantly with one another (e.g. authoritative parenting and perceived family support), multi-collinearity was examined in all models using tolerance tests but did not suggest any problems; the lowest tolerance values, approximately 0.50, were found for the dichotomous race variables.

RESULTS

Means of all variables are presented in Table 1 with significant differences between family types noted. Respondents who spent their adolescent years in single-parent

families that included at least one other adult relative report significantly fewer symptoms of substance abuse/dependence than their counterparts from such homes that did not contain additional caretakers. Variation also is found in the socio-demographic profiles of the four family types. Race differences in family type are consistent with current trends in family demography. Significantly higher proportions of white respondents lived in mother-father families, compared with African Americans and non-Cuban Hispanics. Both types of single-parent families are more prevalent among African Americans than respondents from other race-ethnic groups; over half of African Americans grew up in single-parent families. Race-ethnic differences in the prevalence of stepfamilies are less striking.

Examination of the associations between family type and the hypothesized mediators suggests that mother-father families offer some protection against problematic substance use. Socio-economic status is significantly higher in mother-father families and stepfamilies compared with both types of single-parent families. Although all relevant comparisons do not reach significance, respondents from mother-father families appear uniquely advantaged relative to their peers from other family types; they have high levels of perceived family support and authoritative parenting, lower exposure to stress and life-time traumas, lower substance use by

Table 1 Means of variables by family structure.

Variable	Mother-father families (n = 979)	Single-parent families (n = 386)	+ other adult relative(s) (n = 169)	Single-parent families Stepfamilies (n = 226)
Substance abuse/dependence symptoms (past year)	1.446 (2.45)	1.675 (2.90) ^p	1.001 (2.19) ^s	1.458 (2.73)
Female	0.464 ^t	0.490	0.554	0.577 ^m
White	0.690 ^{h,b}	0.166 ^b	0.016 ^{c,h,b}	0.127
Cuban	0.626 ^b	0.160 ^b	0.072 ^{w,b}	0.142
Other Hispanic	0.562 ^{w,b}	0.205 ^b	0.079 ^{w,b}	0.155
African American	0.354 ^{w,c,h}	0.329 ^{w,c,h}	0.217 ^{w,c,h}	0.100
Socio-economic status	0.194 (1.00) ^{s,p}	-0.210 (0.88) ^{m,t}	-0.343 (0.82) ^{m,t}	0.103 (0.90) ^{s,p}
Family support	0.316 (1.69) ^{s,p,t}	-0.367 (1.93) ^m	-0.455 (2.06) ^m	-0.233 (1.83) ^m
Authoritative parenting style	0.071 (0.91) ^{p,t}	-0.046 (0.94)	-0.144 (1.04) ^m	-0.119 (1.01) ^m
Family's substance use	-0.050 (0.97)	0.089 (1.08)	0.057 (0.99)	0.002 (1.00)
Number of substances used by parent(s)	1.155 (0.77) ^{s,t}	1.345 (1.06) ^{m,t}	1.340 (1.00) ^t	1.631 (1.09) ^{m,s,p}
Parents' substance use approval	-0.097 (0.83) ^p	0.033 (1.20)	0.141 (1.20) ^m	0.068 (1.08)
Siblings' substance use approval	-0.023 (0.97)	-0.042 (1.00)	0.028 (1.11)	-0.058 (0.99)
Has any sibling(s)	0.908 ^{s,p}	0.816 ^m	0.747 ^{m,t}	0.877 ^p
Friend support	0.044 (0.95)	-0.071 (1.03)	-0.050 (1.08)	-0.028 (1.04)
Friends' substance use	0.032 (0.97) ^p	0.074 (1.09) ^p	-0.364 (0.80) ^{m,s,t}	0.040 (1.02) ^p
Friends' substance use approval	-0.027 (0.96) ^p	0.042 (1.03) ^p	-0.238 (1.00) ^{m,s}	-0.014 (1.05)
Social stress	0.298 (2.74) ^{s,p,t}	0.432 (2.82) ^m	0.612 (2.74) ^m	0.280 (2.71) ^m
Life-time traumas	7.203 (5.09) ^{s,p,t}	10.282 (5.42) ^m	10.511 (5.23) ^m	9.899 (5.20) ^m

One-way ANOVAs with Tukey-Kramer adjustments; Standard deviations in parentheses; ^msignificantly different from mother-father families; ^ssignificantly different from single-parent families; ^psignificantly different from single-parent families with other(s); ^tsignificantly different from stepfamilies; ^wsignificantly different from whites; ^csignificantly different from Cubans; ^hsignificantly different from non-Cuban Hispanics; ^bsignificantly different from African Americans ($P < 0.05$).

family and lower parental approval of substance use. An exception to this advantage is found for peer associations: young adults from extended single-parent rather than mother–father families report the lowest levels of peer acceptance and use of substances.

The results of multivariate analyses are presented in Table 2. Model 1 reveals that more symptoms are reported by males than females and by non-Hispanic whites compared with all other race–ethnic groups. Model 2, which adds the family structure variables, indicates that with gender and race–ethnicity controlled, those from single-parent families report significantly more symptoms than those from mother–father families. However, level of symptoms does not differ significantly for stepfamilies and extended single-parent families, compared with mother–father families. Additional analyses (not shown) indicate that the lower level of symptoms reported by those in extended single-parent families, compared with lone parents, falls short of significance ($b = -0.110$; $P < 0.10$).

The relationship between family type and substance use revealed in the multivariate analyses differs from the bivariate association. In particular, a significant difference between single-parent and mother–father families is observed in multivariate but not bivariate analyses. From analyses that examined further the relationships between family structure, race–ethnicity and substance use, we found that this inconsistency is explained by race differences in substance use and family structure. Bivariate analyses revealed that non-whites, and particularly African Americans, are less likely to have substance use problems than whites. However, they also are more likely to live in single-parent families. In the multivariate analyses these patterns yield a suppressor effect of race–ethnicity: taking into account African Americans' higher likelihood of living in single-parent families and this race group's relatively low risk of problematic substance use, we find a significantly higher risk of substance use in single-parent compared with mother–father families.

After finding in model 2 an elevated risk of substance use among those from single-parent families (controlling for race–ethnicity), we turned to potential explanations for this pattern. We examined the bivariate relationships between this family form and the various hypothesized mediators (see Table 1). On the following variables, single-parent families are disadvantaged relative to mother–father families: SES, family support, number of substances used by parents, social stress and life-time traumas. On other variables, differences were not significant. However, further analyses that add controls for race–ethnicity (not shown) reveal that, compared with respondents from mother–father families, those from single-parent families report significantly lower levels of authoritative parent-

ing, greater parental approval of substances and higher levels of friend use and approval of substances.

In model 3, we add SES. The results of model 3 reveal that higher SES predicts more symptoms of abuse/dependence, perhaps reflecting that greater resources facilitate access to substances. Given the nature of this relationship and the more socio-economically disadvantaged position of single-parent relative to mother–father families, it is not surprising that SES fails to account for the elevated symptoms reported by those from single-parent families. Indeed, a slight suppressor effect is observed suggesting that, if single-parent families had levels of SES comparable to those of mother–father families, they would experience even more symptoms.

In contrast, there is considerable support for the hypothesis that differences in family processes contribute to the elevated symptoms reported by those from single-parent families. Model 4 reveals perceived support from family to be associated with fewer symptoms of substance use problems. In addition, we observe a 25% decline in the coefficient for single-parent families, suggesting that they are at greater risk, in part, because of less supportive family environments. Although authoritative parenting is associated with decreased risk (model 5), it contributes little toward explaining the increased risk among respondents from this family type. Of the family process variables examined, use and approval of substances by family members exert the largest mediating effect. Model 6 reveals that higher levels of substance use among family members, a larger number of substances used by parents, and greater perceived approval of drug use among parents and siblings predict more symptoms.

In model 7 we find that, although social support from friends is associated with decreased risk of substance use problems, it is of no apparent relevance for understanding family type variations in risk. However, friends' use and approval of substances is a highly significant mediator of the single-parent family–substance use problem link, accounting for fully 78% of the elevation in risk (model 8). A mediating effect of the same magnitude is observed for stress and life-time traumas (model 9). Results indicate that the greater exposure of those from single-parent families to various forms of stress and to friends who use or approve of substances plays a central role in accounting for their elevated risk of substance use problems.

Model 10 includes all variables entered in prior models. Given the substantial mediating effects observed in models 8 and 9, it is not surprising that the model accounts for more than 95% of the single-parent family–substance use problem relationship. The results of model 10 also illustrate the complex interrelationships among certain variables considered in our analyses. Several factors that emerged as significant predictors when entered separately do not reach significance in the full model, in

Table 2 OLS regression of substance abuse/dependence symptoms^a on family structure and hypothesized mediators.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Single parent family ^b	-	0.127** (0.05)	0.145** (0.05)	0.093* (0.05)	0.117** (0.05)	0.078† (0.04)	0.124** (0.05)	0.028 (0.04)	0.028 (0.04)	0.006 (0.04)
Single parent + other relative(s) ^b	-	0.017 (0.06)	0.037 (0.06)	-0.022 (0.06)	0.000 (0.06)	-0.059 (0.06)	0.016 (0.06)	0.044 (0.05)	-0.083 (0.06)	-0.005 (0.05)
Stepfamily ^b	-	0.032 (0.05)	0.035 (0.05)	0.008 (0.05)	0.021 (0.05)	-0.039 (0.05)	0.030 (0.05)	-0.028 (0.05)	-0.072 (0.05)	-0.087† (0.05)
Female	-0.197*** (0.03)	-0.198*** (0.03)	-0.199*** (0.03)	-0.206*** (0.03)	-0.202*** (0.03)	-0.181*** (0.03)	-0.197*** (0.03)	-0.031 (0.03)	-0.149*** (0.03)	-0.032 (0.03)
Cuban ^c	-0.191*** (0.05)	-0.191*** (0.05)	-0.146** (0.05)	-0.192*** (0.05)	-0.193*** (0.05)	-0.046 (0.05)	-0.199*** (0.05)	-0.036 (0.05)	-0.188*** (0.05)	0.027 (0.05)
Other Hispanic ^c	-0.281*** (0.05)	-0.288*** (0.05)	-0.240*** (0.05)	-0.292*** (0.05)	-0.286*** (0.05)	-0.157** (0.05)	-0.299*** (0.05)	-0.104* (0.04)	-0.312*** (0.05)	-0.067 (0.05)
African American ^c	-0.497*** (0.05)	-0.521*** (0.05)	-0.473*** (0.06)	-0.511*** (0.05)	-0.508*** (0.05)	-0.385*** (0.05)	-0.531*** (0.05)	-0.208*** (0.05)	-0.623*** (0.05)	-0.228*** (0.05)
SES			0.056** (0.02)	-	-	-	-	-	-	0.045** (0.02)
Family support				-0.047*** (0.01)	-	-	-	-	-	0.011 (0.01)
Authoritative parenting					-0.060** (0.02)	-	-	-	-	0.014 (0.02)
Family's substance use						0.078*** (0.02)	-	-	-	0.002 (0.02)
Number of substances used by parent(s)						0.113*** (0.02)	-	-	-	0.048** (0.02)
Parents' substance use approval						0.054** (0.02)	-	-	-	0.026 (0.02)
Siblings' substance use approval						0.113*** (0.02)	-	-	-	0.029 (0.02)
Has any sibling(s)						0.010 (0.05)	-	-	-	0.018 (0.04)
Friend support							0.043* (0.02)	-	-	0.021 (0.02)
Friends' substance use								0.355*** (0.02)	-	0.313*** (0.02)
Friends' substance use approval								0.090*** (0.02)	-	0.054** (0.02)
Social stress									0.045*** (0.01)	0.035*** (0.01)
Life-time traumas									0.028*** (0.00)	0.011** (0.00)
Adjusted R-squared	0.07	0.07	0.07	0.08	0.08	0.16	0.07	0.33	0.17	0.36

^aLog (symptoms +1); ^bmother-father families = reference group; numbers in parentheses are standard errors; *n* = 1760. †*P* < 0.10; **P* < 0.05; ***P* < 0.01; ****P* < 0.001.

particular measures of family and friend support, family use and approval of substances, and authoritative parenting. A series of analyses (not shown) entering various combinations of hypothesized mediators was conducted in order to examine factors that accounted for the absence of significant relationships in the final model. We found the most important mediators among those that remained significant independent predictors of substance use problems in the final equation—the use and approval of substances by friends and differences in exposure to social stress.

Although not a central focus of our analyses, these results also illuminate differences in risk by race–ethnicity and gender. Providing further evidence of the critical role of friend networks in shaping risk of deviant behavior, we find that these measures almost entirely accounted for (84%) women’s less frequent experience of substance use problems. Similarly, friend networks provide an important explanation for the low risk of substance use problems observed for all race–ethnic groups relative to non-Hispanic whites (between 58% and 81% reduction in coefficients). This race difference in use also is partially explained by the lower use and approval of substances in non-white families.

CONCLUSIONS

Our study extends the literature on variation by family composition in the risk of substance use problems by examining a comprehensive set of explanations for these differences. In contrast with previous work that has focused typically on a single explanation, we examine simultaneously socio-economic status, a range of indicators of family process, peer networks and stress exposure. Of particular note we use a measure of stress which captures chronic strains in family relationships, economic and other sources of strain, everyday discrimination, recent life events and major and potentially traumatic experiences over one’s life. Our study design permits the determination of the independent and joint contributions of these factors to the explanation of the family structure–substance use association. Another strength is our measurement of problematic substance use; we examine a set of 22 symptoms of substance abuse and dependence experienced in the past year. While most studies have examined substance use, employing measures such as life-time use of substances (Flewelling & Bauman 1990; Turner *et al.* 1991) or initiation of drug use (Suh *et al.* 1996; Gil *et al.* 1998), we examine problematic substance use.

Consistent with previous work reporting that mother–father families afford protection against substance use (e.g. Adlaf & Ivis 1996; Suh *et al.* 1996) we find that, controlling for race–ethnicity, respondents from

such families report lower levels of problematic substance use than their peers from single-parent families. Also paralleling earlier work (e.g. Suh *et al.* 1996; Gil *et al.* 1998), we find that single-parent families including at least one additional relative do not face elevated risks. Although this finding suggests that there are benefits of having one or more additional relatives in the household—perhaps providing more oversight and control over adolescent behavior—our results do not reveal a similar advantage for adolescents living in stepfamilies. Understanding this pattern requires further research; however, some clues may be found in our results. In particular, we find that extended single-parent families are particularly advantaged, relative to stepfamilies, by their lower level of substance use by parents and friends. We also point out that the majority of respondents growing up in extended single-parent families are African American, and the significantly lower level of substance use by this group is not accounted for fully by the factors examined in this study. Other factors, such as religiosity, may contribute not only to an explanation of the advantage enjoyed by African Americans but also the benefit conferred by extended single-parent families.

Our consideration of a relatively comprehensive set of explanations for the relationship between family structure and problematic substance use revealed that the association is explained by their collective influence. In other words, it appears that family structure *per se* does not represent a unique and independent predictor of substance use problems. Rather, family type simply represents a marker of the unequal distribution of a set of factors that influence the risk of substance use problems. Although nearly all the competing explanations examined received some support, the strongest evidence is found for stress exposure and association with deviant peers, which derive from stress theory (Pearlin *et al.* 1981) and differential association theory (Sutherland 1947), respectively. The relatively high levels of substance use among adolescents from single-parent families that lack the protective presence of an additional relative are explained largely by their greater stress exposure and association with deviant peers. This conclusion stands in contrast with the extensive literature focusing on family processes, such as parenting styles, perceived support from family and family substance use (e.g. Adlaf & Ivis 1996; Stephenson *et al.* 1996; Amey & Albrecht 1998; Friedman *et al.* 2000). From this study, it appears that the family processes that matter the most are those that protect offspring from high levels of stress exposure and limit their association with deviant peers.

Although contributing to the literature, our study is limited in several ways. Of particular note is its cross-sectional design, which does not permit an examination of the causal processes assumed to underlie the

relationships among family structure, substance use problems and all the mediators. The study also is limited by the use of regional data, as well as the lack of examination of several sources of potential variation, such as drug type, gender, race–ethnicity and immigrant status. In addition to addressing these limitations, future research should consider potential differences in the processes linking family structure to problematic substance use versus use more generally. Although we anticipate that many of the relationships will hold for substance use, differences may be found. As an illustration, explanations resting on the role of substance use as a coping strategy for dealing with stress—a strategy likely to be learned in the family—may be of greater significance in explaining family structure variation in substance use problems than experimentation. Our general finding is applicable to studies of either substance use or problematic use: family structure influences risk not only through microlevel dynamics operating within families but also by shaping peer associations and exposure to stress.

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