Religiosity and the Earliest Stages of Adolescent Drug Involvement in Seven Countries of Latin America

Chuan-Yu Chen1, Catherine M. Dormitzer1, J. Bejarano2, and James C. Anthony3

1 Department of Mental Health, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD.
2 Instituto sobre Alcoholismo y Farmacodependencia (IAFA), San Jose, Costa Rica.
3 Department of Epidemiology, College of Human Medicine, Michigan State University, East Lansing, MI.

Received for publication October 6, 2003; accepted for publication January 7, 2004.

To investigate the role of religiosity in the earliest stages of drug involvement, the authors studied recent-onset occurrence of first chances to try a drug and first actual drug use, expressed as a function of religious practice behaviors, levels of religious devotion, and religious affiliation. Based upon standardized questionnaire assessments of nationally representative samples of school-attending youths drawn in Panama, the five Spanish heritage countries of Central America, and the Dominican Republic (n = 12,797), the 1999–2000 study estimates indicate that higher levels of religious practice are inversely associated with the earliest stages of tobacco and cannabis experiences (i.e., the first chance to try and the first actual use) but not so for alcohol. To illustrate, for each unit increase in levels of religious practice behaviors, there was an associated reduced occurrence of the first chance to try tobacco (odds ratio = 0.76, 95% confidence interval: 0.62, 0.94). Occurrence of first actual use of tobacco and cannabis was not associated with levels of religious practice behaviors among youths exposed to the opportunity to try these drugs. As such, these behaviors apparently have not strengthened resistance. Rather, autarcesis may be at work, functioning to shield youths from drug exposure opportunities.

adolescent; alcohol drinking; cannabis; leisure activities; religion; tobacco

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; KR α, Kuder-Richardson 20 estimate of Cronbach's α; OR, odds ratio; PACARDO, acronym for the countries comprising the study (Panama, Central America, Dominican Republic).

The main aim of this study is to estimate the degree to which engagement in religious activities might shield or otherwise protect youths from the earliest stages of drug involvement versus an alternative resistance-strengthening mechanism of protection. Background for this research includes more than a century of epidemiologic studies on the topic of health and religion (e.g., denominational affiliation: Catholic vs. Protestant and so on). During the 20th century, the concept of religiosity was broadened to encompass a behavioral facet (e.g., frequency of church attendance) and a psychological facet (e.g., level of personal commitment to the deity), as well as religion-associated diet or health practices such as circumcision (1).

Religiosity in these facets has links to an array of mental health-related conditions and behaviors, including drug involvement (1–8). For example, Miller et al. (3) studied a large epidemiologic sample of adolescents in the United States and found lower occurrence of drug-related clinical problems among youths with high values on religious devotion. We appreciate religiosity as a multidimensional construct that encompasses, at minimum, both behavioral facets and psychological facets (1, 3, 8). Nonetheless, epidemiologic studies of health and religiosity often have neglected this multidimensional character; religiosity is often assessed by a single interview or questionnaire item (9). Even when religiosity is conceptualized and measured as a multidimensional concept, investigators tend to examine one dimension at a time, neglecting the other dimensions of religiosity (3, 10). Beyond issues of conceptualization and measurement of religiosity, another important issue in this line of research involves possible reciprocities such as might arise when effects of drug use include disengagement from previously valued facets of religiosity. These reciprocities become especially challenging when investigators study reli-
Religiosity and Adolescent Drug Involvement

Mindful of issues such as these, we laid a plan to study religiosity as a multidimensional construct, with an effort to constrain possible reciprocities via a focus on the earliest stages of drug involvement, termed “drug exposure opportunities” (11, 12). Drug exposure opportunities typically occur at or near the time of a young person’s first chance to try a drug. Borrowing the useful concept of “autarcesis” from the early days of infectious disease epidemiology (13), our thesis is that adolescent religious practice behaviors may have autarceologic properties, functioning to shield youths from risk of harm, especially when there is a tangible “agent” in the pathogenesis, etiology, and natural history of a health condition. If religious behaviors are associated inversely with the occurrence of youthful drug use, one possibility is that these behaviors strengthen resistance once a chance to try the drug occurred (e.g., resistance against peer pressure to try drugs). A second possibility is that these behaviors have shielded the youths from chances to try drugs. It is in this second sense that these religious behaviors would serve an autarceologic function that can be distinguished from the separate resistance-strengthening functions often stressed in drug prevention programs.

Analogous to standard epidemiologic case-control study procedures with a focus on the most recent incident cases of disease and nondiseased controls, our study focus is upon “recent-onset” cases of drug involvement (i.e., youths who first had a chance to try drugs within the 0–23 months prior to recruitment) and corresponding controls (i.e., youths who never have had a chance to try these drugs). This approach provides odds ratio estimates of the suspected protective associations and places some constraints upon the possible reciprocal processes through which actual drug use might influence religious practice behaviors or other dimensions of religiosity. The resulting odds ratio estimates are an approximation of estimates that might be achieved in a prospective study on this topic (14).

MATERIALS AND METHODS

Subjects

Our epidemiologic data are from a study conducted during 1999–2000 within Panama, the five Spanish heritage countries of Central America (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica), and la Republica Dominicana. The study takes its name as an acronym for these countries (PA + CA + RDO) and is referred to as the “PACARDO” project; it has been described in prior detailed reports (15). In brief, this project involved an application of multistage probability sampling methods, which yielded a self-weighting sample of this project involved an application of multistage probability sampling methods, which yielded a self-weighting sample of 12,797 school-attending youth respondents participated in the PACARDO survey project as the lead assessor read aloud each preworded standardized item; more than 98 percent of eligible youths participated (15). The protocol was approved by institutional review boards for human subjects’ protection in each country and at Johns Hopkins University.

The standardized items of the PACARDO questionnaire were subject to a translation, back-translation, and harmonization process that involved all the leaders on the research teams, as well as pilot testing within these seven Latin American countries. The assessment plan involved a visit to each classroom by a pair of trained assessors, who worked to develop trust and rapport, secure youth assent, and administer the anonymous questionnaire during an hour-long session while the teacher was absent from the classroom. The questionnaire included separate modules to assess the adolescent behavioral repertoire and drug experiences.

For this study, we excluded 1) 43 respondents (0.5 percent) whose questionnaires indicated an age less than 12 years or more than 20 years for focus on school-attending youths’ experiences within these countries; 2) 97 respondents who reported use of “cadrina” (a nonexistent drug); and 3) 68 participants whose responses about the behavior repertoire exhibited illogical patterns (e.g., having the same participation frequency on all the items in the behavioral repertoire assessment). The mean age of the resulting 12,589 respondents was 16 years, one half of the respondents were female (n = 6,491, 51.6 percent), and about one third of the respondents attended private school (31.7 percent).

Assessment of drug involvement

The primary response variables of interest have been assessed by standardized anonymous questionnaire items on adolescent drug involvement in relation to alcohol, tobacco, and illegal drugs (e.g., cannabis). For each drug, “age of the first chance to try” and “age of first use” were assessed separately by questions in the following form (English translation): “Regarding the drug [cannabis], how old were you when you first had the chance to try cannabis?” and “How old were you when you first used cannabis?” The time elapsed since onset of drug exposure opportunity (in years) was estimated by taking differences: age at assessment minus age at first chance to try a drug. Using these standardized items and difference scores, we identified recent-onset youths (difference = 0 or 1), youths with no such drug experiences, and those whose experiences were in the more distant past (difference > 1). Youths with onset in the more distant past have been excluded from the analyses to constrain the potential reciprocities and other influences discussed in our introduction. In the present study, the focus is upon the three most commonly consumed drugs in this study population (alcohol, tobacco, and cannabis). For these drugs, most youths with past exposure opportunity (difference > 1) already started use of one or more drugs (e.g., 83 percent of respondents with past alcohol opportunity had started using alcohol), and in this circumstance, the level of religiosity might depend on the drug taking rather than vice versa. Hence, in order to approximate estimates that might be found...
in a future prospective study, we focused our study solely on the recent-onset youths, which constrains this possibility.

**Measures of religiosity**

Individual-level religiosity has been assessed by three domains of standardized survey items: religious practice behaviors, denomination, and devotion. To assess religious behavioral repertoire as part of the more general adolescent behavioral repertoire, we used the 25-item Behavioral Repertoire Self-rating Scale of Johanson et al. (16). This standardized measurement evaluates how the youths allocated their time across a variety of activities. On this scale, the four items on religious behavioral repertoire ask about the time allocated to “praying/reading the Bible,” “going to church,” “going to a religious revival,” and “going to a religious retreat.” Each item had eight response categories, ranging from “not even once this year” to “more than once each day.” Prior latent variable analyses for discrete categorical response variables disclosed that a religious activities dimension is one of five main dimensions of the adolescent behavioral repertoire as measured in this study (17). This latent structure analysis also yielded a standardized factor score for the religious practice behavior dimension, with an observed range from −0.86 (lowest) to 1.43 (highest) and a mean of 0.02.

With respect to the denominational facet of religiosity, three main subgroups were formed: “Catholic (reference group),” “Protestant or other religions,” and “none,” on the basis of each youth’s response to a single question: “What is your religion?” For assessment of the psychological facet of religiosity, the youths have been sorted into two groups according to their responses to two standardized binary items, one on the importance of going to church on Sundays and one on the importance of participating in church activities. One subgroup has a higher level of religious devotion (two positive responses reported), and the other subgroup has a lower level of religious devotion (only zero or one positive response to these items).

**Potentially confounding covariates under study**

The school type (public/private) is from administrative records, and all other potentially confounding variables were assessed by self-report. We sorted these variables into three main groups: Group I, the religious denomination and religious devotion variables already described in the section on religiosity; Group II, exogenous sociodemographic covariates, not likely to be influenced by drug use (age, sex, parental education); and Group III, covariates that might be endogenous with respect to drug use, including levels of conduct problems, deviant peer affiliation, family attention, family drug use, school adaptation, and four main dimensions of adolescent behavioral repertoire (other than the religious practice dimension). The possibly endogenous constructs include the following: 1) conduct problems, assessed by 19 binary items (e.g., damaging other people’s belongings), with the Kuder-Richardson 20 estimate of Cronbach’s α (KR α) = 0.83; 2) deviant peer affiliation by a 13-item scale (KR α = 0.84); 3) family attention and monitoring using nine binary items such as, “Are your parents or guardians often aware of where you are and what you are doing?” (KR α = 0.70); 4) family drug use by four binary items on illegal and legal drugs such as, “During the last 6 months, has any family member (mother, father, or sibling) used tobacco (yes or no)?”; 5) school maladjustment by an 11-item scale with items such as, “Do you cut school more than two days a month (true or false)?” (KR α = 0.73); and 6) social withdrawal by eight items such as, “Have you been rejected by friends and other young people (yes or no)?” (KR α = 0.62). The four other main dimensions of the adolescent behavioral repertoire are a socializing activities dimension (e.g., going out on a date), a sports-related activities dimension, a home-based activities dimension (e.g., spending time with family), and a gender-associated socialization activities dimension (e.g., taking care of children).

**Statistical analyses**

Descriptive analyses first were used to characterize youths with and without recent-onset drug experiences in relation to the sociodemographic variables under study. In data analyses after the first data exploration steps and latent variable analyses, we regressed the occurrence of recent-onset drug experiences on three measures of religiosity (i.e., religious practice behavior, religious devotion, and religious affiliation), with the above-listed covariates held constant. The ordinary multiple logistic regression model fails to address the interdependent character of the PACARDO samples; for example, the respondents’ drug experiences within the same school were more similar than those of students randomly sampled from different schools. For this reason, we turned to a series of generalized linear models with the logistic link and a generalized estimating equations approach, building a marginal model to account for the interdependence of responses within the same school (18, 19). Here, an exchangeable correlation structure has been assumed as a starting specification for the model, but a robust estimation approach guards against misspecification errors in this respect. The strength of association between religiosity and recent-onset drug experience is estimated by an odds ratio; 95 percent confidence intervals and p values convey the precision of these estimates and strength of the evidence. The generalized linear model (logit link) was implemented via STATA version 7.0 software (20).

**RESULTS**

Within the sample of 12,589 youths, a total of 1,656 school-attending youths had just had the first chance to try alcohol and 1,956 had recent onset of alcohol use. The corresponding numbers are 973 and 1,051 for tobacco and 495 and 307 for cannabis. The ratios of these drug-specific numbers reflect the lag time between the first chance to try a drug and the first actual use of the drug. A sizeable number of youths had a past history of the chance to try the drug but did not start actual use of the drug until recently. As depicted in table 1, the mean age of these drug-experienced youths (and the drug-naïve youths) is about 15–16 years. Recent-onset drug use was more common among males, youths with
higher levels of paternal education, and those attending private school.

Table 2 depicts the cross-tabulation for each dimension of religiosity in relation to the occurrence of drug-specific experiences, as well as crude association estimates obtained from the regression analyses. In general, the occurrence of recent-onset alcohol experiences was found to vary inversely with the levels of religious behavioral repertoire. For example, the odds of recent-onset chance to try alcohol were about 70 percent lower for each standard deviation increase in levels of religious practice activities (estimated odds ratio \(\text{OR} = 0.71\), 95 percent confidence interval (CI): 0.64, 0.79; 95 percent confidence interval (CI): 0.64, 0.79).
The odds ratio estimate for the religious practice dimension and the occurrence of actual alcohol use has almost the same strength (OR = 0.71, 95 percent CI: 0.64, 0.78; p < 0.001). In addition, the odds of recent-onset alcohol use were lower for youths with a higher level of religious devotion as compared with youths with a lower level of devotion (OR = 0.64, 95 percent CI: 0.58, 0.71; p < 0.001). Being a Protestant or member of some other (non-Catholic) religion showed an inverse association as well, as gauged against the odds of alcohol involvement for the Catholic majority reference group.

With respect to recent-onset tobacco involvement, there were inverse associations in relation to the levels of religious practice behaviors (opportunity: OR = 0.61, 95 percent CI: 0.54, 0.69; p < 0.001; initiation: OR = 0.55, 95 percent CI: 0.48, 0.62; p < 0.001), levels of religious devotion (opportunity: OR = 0.63, 95 percent CI: 0.55, 0.71; p < 0.001; initiation: OR = 0.59, 95 percent CI: 0.51, 0.67; p < 0.001), and religious affiliation with Protestant or other religions versus Catholic affiliates (opportunity: OR = 0.62, 95 percent CI: 0.54, 0.72; p < 0.001; initiation: OR = 0.56, 95 percent CI: 0.49, 0.64; p < 0.001). However, youths with no religious affiliation had a modestly higher odds of recent-onset first chance to try tobacco (OR = 1.46, 95 percent CI: 1.18, 1.81; p = 0.001), as well as recent-onset first use of tobacco (OR = 1.67, 95 percent CI: 1.38, 2.01; p < 0.001).

Higher levels of religiosity had inverse associations with the odds of recent-onset cannabis involvement in the domains of behavior and denomination. For example, youths with higher levels of religious practice behavior tend to have a lower odds of recent-onset cannabis experiences (opportunity: OR = 0.48, 95 percent CI: 0.29, 0.58; p < 0.001; initiation: OR = 0.31, 95 percent CI: 0.23, 0.43; p < 0.001).

As compared with the Catholic youths, those affiliated with other religions had a lower odds to experience the two earliest stages of alcohol and tobacco involvement. Never-
TABLE 3. Estimated association between multidimensional religiosity and the occurrence of alcohol, tobacco, and cannabis opportunity, initiation, and initiation given opportunity, with statistical adjustment for covariates, among 12,589 participants in the PACARDO project, 1999–2000

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Opportunity</th>
<th>Initiation of drug use</th>
<th>Initiation given opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>aOR†, p value</td>
<td>aOR†, p value</td>
<td>aOR†, p value</td>
</tr>
<tr>
<td>Alcohol estimates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious practice behaviors</td>
<td>0.90 0.20</td>
<td>0.97 0.69</td>
<td>1.09 0.70</td>
</tr>
<tr>
<td>Religious devotion</td>
<td>0.77 0.003</td>
<td>0.79 0.006</td>
<td>0.78 0.33</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protestant/others vs. Catholic</td>
<td>0.67 &lt;0.001</td>
<td>0.62 &lt;0.001</td>
<td>0.53 0.01</td>
</tr>
<tr>
<td>None vs. Catholic</td>
<td>0.86 0.36</td>
<td>0.82 0.16</td>
<td>0.61 0.27</td>
</tr>
<tr>
<td>Tobacco estimates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious practice behaviors</td>
<td>0.78 0.02</td>
<td>0.77 0.02</td>
<td>0.98 0.94</td>
</tr>
<tr>
<td>Religious devotion</td>
<td>1.02 0.88</td>
<td>0.91 0.42</td>
<td>0.80 0.42</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protestant/others vs. Catholic</td>
<td>0.74 0.01</td>
<td>0.72 0.005</td>
<td>0.80 0.42</td>
</tr>
<tr>
<td>None vs. Catholic</td>
<td>1.05 0.76</td>
<td>1.10 0.52</td>
<td>1.01 0.43</td>
</tr>
<tr>
<td>Cannabis estimates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious practice behaviors</td>
<td>0.73 0.02</td>
<td>0.58 0.005</td>
<td>0.62 0.18</td>
</tr>
<tr>
<td>Religious devotion</td>
<td>0.86 0.34</td>
<td>0.97 0.86</td>
<td>1.00 0.99</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protestant/others vs. Catholic</td>
<td>1.10 0.58</td>
<td>1.29 0.22</td>
<td>1.29 0.46</td>
</tr>
<tr>
<td>None vs. Catholic</td>
<td>1.33 0.18</td>
<td>1.71 0.02</td>
<td>1.78 0.14</td>
</tr>
</tbody>
</table>

* PACARDO, project acronym for the countries comprising the study (Panama, Central America, Dominican Republic); aOR, adjusted odds ratio; CI, confidence interval.
† Estimated variance of association takes into account clustering of respondents within the sample.
‡ Adjusted for age, sex, parental education, private school attendance, family drug use, family attention, social withdrawal, conduct problems, deviant peer affiliation, the other dimensions of religiosity, and the other four factor scores of adolescent behavioral repertoire.

Whereas our regression models held constant nonconformity and rule-breaking behaviors by a 19-item scale devised to measure conduct problems, we also examined whether the observed associations might be different for youths who experienced their first drug exposure opportunities in childhood and early adolescence, by repeating the analysis for the other four factor scores of adolescent behavioral repertoire.

Am J Epidemiol 2004;159:1180–1188
subsample of adolescent respondents aged 15 years or less at the time of assessment. Estimates based on this subsample were consistent with estimates for the sample as a whole: Higher levels of religious practice behaviors are associated with a lower odds of recent-onset drug experiences, but not with reduced conditional probability of drug use, once drug exposure opportunity has occurred. Additional subsidiary analyses were conducted with a focus on the youths who had experienced the most recently incident drug experiences (i.e., age at assessment equal to the age at first drug exposure opportunity). Whereas the resulting estimates are not shown in a table, these analyses disclosed a pattern of associations linking religiosity and drug involvement not appreciably different from the patterns summarized above.

**DISCUSSION**

The main findings from this study of religiosity and youthful drug involvement may be summarized as follows: 1) higher levels of religious practice behaviors are inversely associated with the earliest stages of tobacco and cannabis experiences (i.e., the first chance to try and the first actual use); 2) youths with higher levels of religious devotion are less likely to have exposure opportunity to alcohol, as well as the first actual use of alcohol; this is not the case for tobacco or for cannabis; 3) as compared with Catholic affiliates, being a Protestant or a member of some other religion is inversely associated with recent-onset experiences of alcohol and tobacco; 4) for youths without religious affiliation, there was an excess occurrence of cannabis use; and 5) religious practice behaviors and levels of religious devotion are not associated with a rapid transition from the chance to try alcohol or tobacco to the first use of these drugs. Rather, it appears that these facets of religiosity are inversely associated with youthful tobacco and cannabis involvement by virtue of reduced occurrence of the first chance to try these drugs. This finding is consistent with the idea that religious practice behaviors may have protective effects that shield youths from contact with the chance to try tobacco or cannabis (i.e., consistent with “autarcesis” mechanisms), but these behaviors do not necessarily influence the youth’s decision to consume the drugs once the opportunity to do so has occurred (i.e., inconsistent with the separate “resistance-strengthening” mechanisms).

Some potential limitations of this study should be considered before detailed discussion. First, a major issue involves specification of the survey population in relation to school-attending youths. School attendance is determined by several factors, including teenager attributes, household characteristics, and environmental contexts, some of which also have been found as correlates for religious engagement as well as occurrence of drug-related experiences (1, 5, 21–24). As a result, there are limits when generalizing these findings to nonschool samples, such as dropouts, or nonattending youths. In addition, because of cultural, geographic, societal, and racial/ethnic compositional differences, we cannot assertively generalize these findings outside the region of the seven PACARDO countries. Replication elsewhere is needed. We also note that the within-country sample sizes were too small for replication of all these analyses at the individual country level; results on the epidemiology of youthful drug involvement for the individual countries have been presented elsewhere, although not with a focus on religiosity issues (15).

Second, an important methodological issue in the present study is that all the information is assessed by self-report. Some studies have shown that self-report of alcohol and other drug use from adolescent samples is basically reliable and stable (25, 26), but validity is a concern (27, 28). A number of bioassays have been developed to measure drug taking within days or months of actual use (29), but these tests do not entrap the time interval of interest here (0–23 months prior to survey), nor do they reflect exposure to first chances to try each drug, which was our primary topic of inquiry (i.e., drug opportunity). In addition, these biologic methods may not yet be feasible in large-sample cross-national survey research.

Third, we held constant most of the prominent peer and parental influences on adolescent drug involvement by regression modeling. In future research, it should be possible to improve the measurements and to hold constant even more suspected confounding variables (e.g., youth conformity with family rules about behaviors). Finally, perhaps the most serious methodological issues in this study can be traced to its cross-sectional and nonexperimental design, which creates opportunities for errors in the specification of temporal sequences and which opens up opportunities for reciprocal influences. Because of potential reciprocities in these associations, it will be useful to examine these relations in the context of longitudinal research with multiple points of measurement for drug experiences and multidimensional religiosity. Nonetheless, estimates from cross-sectional and retrospective research are invaluable as a step toward prospective and longitudinal studies.

Notwithstanding limitations such as these, our study in seven Latin American countries suggests that links between religiosity and drug-related experiences depend upon the facet of religiosity, the drugs under study, and stage of drug involvement, a pattern of findings consistent with prior work in the United States (3, 30). For example, we found that “psychological religiosity” was inversely associated with the occurrence of alcohol initiation and the odds of alcohol opportunity, the earliest stage of drug experiences. However, for the behavioral facet of religiosity (religious practice), the observed links are mainly with tobacco and cannabis experiences. The association between religious practice and alcohol experiences is quite modest in these study data, perhaps because alcoholic beverage consumption is often integrated within family and community life in Latin America (31).

On this basis, one may surmise that more frequent practice of religious behaviors can 1) help shield youths from drug using youths and 2) bring youths into spheres of adult (e.g., pastoral) influences that may serve their own protective functions (32). Here, also, it is pertinent that the observed association between religiosity and drug experiences might be due to selective processes associated with personal characteristics (e.g., personality traits) (23, 33). Twin studies have suggested that religiosity in the form of religious upbringing and religious practice might shape the
display of personality traits (e.g., sensation seeking) and also might modify liabilities to initiate drug use (34, 35).

In sum, there are numerous theories and mechanisms posited to explain the presumed beneficial effects of religious practice or beliefs on mental health and behavior (36, 37), but this study’s evidence is more consistent with our thesis about the “shielding” mechanisms of behavioral autarcesis and less consistent with “resistance-strengthening” mechanisms. If the effects of religiosity are operating via “resistance” mechanisms at the point of the chance to try drugs, then we should be seeing an inverse association that links higher levels of religiosity with lower conditional probability of drug use, once the chance to try drugs has occurred. Instead, the pattern of evidence is one of null associations with this conditional probability. Inverse associations, when observed, pertain to the occurrence of the first chance to try the drug (i.e., consistent with “autarceologic” shielding).

It is possible that the autarceologic functions of religious practice behaviors with respect to the first chance to try drugs may be due to time displacement. For example, adolescents who attend church-related services on a regular basis may have fewer opportunities to get in touch with peers outside this particular social network, because of preoccupation with religion-related activities. In this situation, the salutary effects of religious behaviors may actually be partially due to the mediational effects of attenuated affiliation with peers who have started to use drugs and greater participation in pro-social behavior. Multiwave longitudinal data are needed to assess these conceptualizations about processes and sequences that link the multiple dimensions of religiosity with these earliest stages of drug involvement in adolescence.

ACKNOWLEDGMENTS

This work was supported by the PACARDO research team, the Organization of American States, the Inter-American Drug Abuse Control Commission, a National Institute of Drug Abuse research grant award (RO1DA10502) and training grant awards T32 DA07292 and F31 DA14757, and a National Institute of Drug Abuse K05 senior scientist award to the senior author (J. C. A.).

The authors thank Dr. Carla L. Storr for valuable comments on a revision of this paper.

REFERENCES

103–9.


