

Effects of Family Functioning and Identity Confusion on Substance Use and Sexual Behavior in Hispanic Immigrant Early Adolescents

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The present study examined the relationships of (a) changes in adolescent-reported family functioning and (b) changes in identity confusion to onset of substance use and sexual behavior in a sample of 250 Hispanic adolescents from immigrant families. Adolescents were followed for 3 years. Results indicated that adolescents whose identity confusion scores increased over time were most likely to initiate cigarette use, alcohol use, and sexual behavior during the course of the study. Adolescents whose identity confusion scores remained stable over time were less likely to initiate, and adolescents whose identity confusion scores decreased over time were least likely to initiate. The data were consistent with the proposition that initial levels of and changes in family functioning appeared to be responsible for these associations. Implications for identity research and intervention are discussed.

The development of a positive sense of identity in adolescence can help to inhibit or offset the genesis or maintenance of problem behavior (e.g., Marsiglia, Kulis, &

Hecht, 2001). Ferrer-Wreder, Palchuk, Poyrazli, Small, and Domitrovich (this issue) have provided further evidence for this contention. Research has also suggested that family functioning, among other social-ecological processes, may serve as "common causes" of both positive and negative developmental outcomes in adolescence (Vandewater & Lansford, 2005). The purpose of this study was to elucidate the links between family functioning, identity confusion, and the onset of problem behaviors longitudinally in a sample of Hispanic youth during early and middle adolescence.

FAMILY FUNCTIONING AND IDENTITY DEVELOPMENT

The relationship between family functioning and identity has been fairly extensively studied. Most of these studies have been cross-sectional, and nearly all have involved primarily White samples. In reviewing this line of research, Bosma and Kunnen (2001) concluded that family relationships are crucial for healthy identity development. Specifically, researchers have found that family support (Meeus, Iedema, Maassen, & Engels, 2005) and parent-adolescent communication (Meeus, Oosterwegel, & Vollebergh, 2002) are closely related to identity exploration and commitment.

Examples of longitudinal work on the link between family functioning and identity include Reis and Youniss's (2004) finding that mother-adolescent communication and support predicted decreases in identity confusion and increases in identity coherence over a two-year period. In a sample of Hispanic adolescents from immigrant families, Schwartz, Pantin, Prado, Sullivan and Szapocznik (2005) found that family functioning was positively related to identity coherence and inversely related to identity confusion. These authors also found that identity confusion partially mediated the relationship between family functioning and adolescent behavior problems. In general, this body of evidence suggests that dimensions such as family support, family cohesion, parent-adolescent communication, and parental involvement/positive parenting are important to identity development in adolescence.

Recently, a line of research has emerged examining the combined relationships of self and context to adolescent behavioral outcomes (e.g., Schwartz et al., 2006; Schwartz, Pantin, et al., 2005). Two primary themes have emerged from these studies, all of which have been cross-sectional and have used ethnic minority samples: (a) aspects of self (self-concept or identity) partially mediate the relationships of contextual variables to internalizing and externalizing problems, and (b) family functioning may influence both identity and externalizing problems and may explain the relationship between these two constructs.

The present study, along with other analyses presented elsewhere (Schwartz, Mason, Pantin, & Szapocznik, in press) extends the literature on self and context as

predictors of behavior problems in three ways. First, these analyses use longitudinal data. Second, they use advanced statistical procedures to derive trajectory classes for identity development and to model the relationships among these classes, family functioning, and initiation of problematic adolescent outcomes. Third, they use substance use and sexual behavior, rather than general measures of behavior problems, as outcome variables.

More broadly, this study was designed to expand the identity development literature and add to the evidence base for identity-related intervention efforts (see Archer, p. 89, this issue; Kurtines & Montgomery, 2008).

Our goal was also to lend support to the compatibility of elements from the prevention science and positive youth development approaches (cf., Schwartz, Pantin, Coatsworth, & Szapocznik, 2007). Specially, a finding that family functioning and identity work together to inhibit adolescent substance use and sexual behavior initiation has the potential to bring together constructs from these two approaches.

Finally, the present study is important in that it documents the course of positive and negative development in Hispanic adolescents. This is an essential task, considering the size and growth rate of this population (Ramirez & de la Cruz, 2003) as well as the elevated risk for problematic outcomes among Hispanic adolescents (e.g., Johnston, O'Malley, Bachman, & Schulenberg, 2007). A number of studies (e.g., Schwartz, Côté, & Arnett, 2005) have suggested that the structure of identity in young adulthood is consistent across ethnic groups. However, such studies have not been conducted in early adolescence or across time during adolescence. The present study, along with Schwartz et al. (in press), explores these issues.

HYPOTHESES

Schwartz, Pantin, et al. (2005) found that, in a sample of Hispanic adolescents, identity coherence and identity confusion—the syntonic and dystonic poles of Erikson's (1950) identity stage—may best be represented as separate dimensions rather than as opposing ends of a single continuum. Schwartz et al. (in press) found that, in the present sample, changes in identity between early and middle adolescence were characterized mostly by changes in identity confusion, and not by changes in identity coherence. Using latent growth mixture modeling (LGMM; B. O. Muthén & Muthén, 2000), Schwartz et al. (in press) extracted three identity confusion trajectory classes from the present sample. The classes extracted by Schwartz et al. (in press) were Decreaser, Stable, and Increaser. These class labels refer to the direction of change in identity confusion scores over time. Although the three groups had similar intercepts, the change trajectories were qualitatively different across groups. Decreasers ($n = 109$) tended to report lower levels of identity confusion at successive timepoints and finished near the bottom of the range of possible scores, Stable participants ($n = 119$) reported moderate and consistent lev-

els of identity confusion across the five study timepoints, and Increasers ($n = 17$) reported higher levels of identity confusion across timepoints and finished near the top of the range of possible scores. S. J. Schwartz et al. (in press) posed the question of whether adaptive identity development would be reflected in decreases, increases, or lack of change in identity confusion. The present set of analyses may provide some answers to this question.

Based on these previous analyses and on extant research literature, we tested three primary hypotheses. Because there was no variability in identity coherence over time or across individuals, these hypotheses all refer to identity confusion. First, we hypothesized that the Increaser class would be characterized by the greatest amount of substance use and sexual initiation, that the Decreaser class would be characterized by the lowest amount of substance use and sexual initiation, and that the Stable class would be intermediate between the other two classes. Second, we hypothesized that, when the effects of changes in family functioning on substance use and sexual initiation were constrained as operating through an identity confusion trajectory class, identity confusion trajectory class would emerge as a partial mediator. Third, we hypothesized that, when family functioning was allowed to predict substance use and sexual initiation, the effects of identity confusion trajectory class would be reduced to nonsignificance. Such a finding would suggest that identity development and family functioning explain much of the same variability in substance use and sexual behavior initiation.

METHOD

Participants

The sample for the present study consisted of 250 adolescents (121 boys, 129 girls). At baseline, the age range for the adolescent participants was between 12 and 16 ($M = 13.5$, $SD = 0.73$). Ninety percent of the adolescents were 13 (61%) or 14 (29%) at baseline. Adolescents were attending three public schools in heavily Hispanic areas of Miami. A large number of the participants were from low-income families. Only 29% of the families reported household incomes greater than \$20,000 per year, and an even smaller percentage (10.6%) reported household incomes greater than \$30,000 per year. Forty percent of adolescents were born in the United States. Countries of origin for adolescents, their parents, or both included Cuba, Nicaragua, Honduras, Argentina, and Colombia.

Adolescents participated in the study with their primary caregivers, who were mainly mothers. Data for the present study were taken from a family-centered adolescent HIV prevention trial (see Prado et al., 2007). Adolescents and parents were consented/assented and completed assessment batteries at baseline and at 6, 12, 24, and 36 months post baseline. The sample for the present study consisted of all

families who provided data at least at two of the five study timepoints. Because of the longitudinal analyses to be conducted, families providing data only at baseline ($n = 16$ out of the original sample of 266) were dropped from analysis.

Procedure

Cohorts. Families participated in the study in two cohorts. The first cohort was assessed at baseline in summer 2001 and completed the 36-month assessment in summer 2004. The second cohort was assessed at baseline in summer 2002 and completed the 36-month assessment in summer 2005.

Experimental conditions. The study from which the present data were taken utilized a randomized controlled design with five timepoints and experimental conditions. However, the focus in this article is on change over time, rather than on the effects of the conditions themselves. Accordingly, although we describe the conditions here, effects of condition were tested and found to be nonsignificant in all models reported.

Following the baseline assessment for the HIV prevention trial from which the present data were taken, families were randomly assigned to one of the three conditions. Each condition consisted of a combination of two parent-centered intervention modules: (a) Familias Unidas (see Pantin, Schwartz, Sullivan, Prado, & Szapocznik, 2004) followed by the Parent-Preadolescent Training for HIV Prevention [PATH] (Krauss et al., 2000); (b) English for Speakers of Other Languages (ESOL) classes, followed by participation in PATH; and (c) ESOL classes, followed by participation in HeartPower! for Hispanics (HEART-H). For all three conditions, the intervention phase of the study occurred between the baseline and 12-month assessment points. More detail on the intervention conditions can be found in Pantin et al. (2004) and Prado et al. (2007).

Assessments. At each assessment point, adolescents completed measures in computerized form using the audio computer-assisted interviewing system (A-CASI). Parents completed their measures in interview form because many parents expressed considerable discomfort when approached about the possibility of conducting their assessments in computerized form.

Measures

Family functioning. We used three indices to assess adolescent reports of family functioning: overall family cohesion, parent-adolescent communication, and parental involvement. Overall family cohesion was assessed using the corresponding subscale from the Family Relations Scale ($\alpha = .76$; Tolan, Gorman-Smith, Zelli, & Huesmann, 1997). Parent-adolescent communication was

assessed using the Parent-Adolescent Communication Scale ($\alpha = .96$; Barnes & Olson, 1985). Data were gathered on adolescents' relationships with their primary caregivers, most of whom were mothers. Parental involvement ($\alpha = .71$) was measured using the Parenting Practices Scale (Gorman-Smith, Tolan, Zelli, & Huesmann, 1996). A sample item is "Family members feel very close to one another" (family cohesion). The same items are used for parents and for adolescents, with "I" replacing "my parent" and "my child" replacing "I" in the parent-reported version.

Identity. Adolescent identity was measured using the 12-item identity subscale from the Erikson Psychosocial Stage Inventory (Rosenthal, Gurney, & Moore, 1981), which measures the extent to which participants have a clear sense of who they are and what they believe in. Six items are worded in a positive direction (i.e., toward identity coherence; $\alpha = .83$), and six items are worded in a negative direction (i.e., toward identity confusion; $\alpha = .69$). A sample item from this measure is "I don't really know who I am" (identity confusion). The measure was designed to yield a single scale score for identity (Rosenthal et al., 1981). However, our previous work with this sample at the baseline assessment (Schwartz, Pantin, et al., 2005) indicated that a two-factor solution, with identity coherence and identity confusion cast as separate subscales, provided a better representation of the data.

It should be noted that the Erikson Psychosocial Stage Inventory was added to the assessment battery in early 2002, after the first cohort had already completed the baseline and 6-months postbaseline assessments. As a result, participants in the first cohort are missing identity data for the first two study timepoints. These data are "missing by design," and as a result it is appropriate to use maximum-likelihood analytic procedures that handle and include cases with missing data.

Substance use. Substance use was assessed using items from the survey used in the Monitoring the Future Study (Johnston, O'Malley, Bachman, & Schulenberg, 2006). Adolescents indicated whether they had ever used a number of substances in their lives and in the 90 days prior to assessment. Substances analyzed for this article included cigarettes, alcohol, and marijuana.

Sexual behavior. Unsafe sexual behavior was measured using items from Jemmott, Jemmott, and Fong's (1998) 37-item Sexual Behavior instrument. Adolescents were asked to indicate whether they had ever had sex in their lives. The measure was set up such that adolescents were first asked whether they had ever engaged in oral, vaginal, or anal intercourse. Adolescents indicating no were not asked any further questions about sexual behavior. Those indicating yes were then asked to indicate whether they had had sex in the 90 days prior to assessment,

whether they had had sex during the 30 days prior to assessment, and whether they had used a condom during their first and most recent sexual intercourse.

RESULTS

Bivariate Correlations Among Study Variables

Bivariate correlations among study variables at baseline are presented in Table 1.

Substance Use and Sexual Behavior by Identity Confusion Trajectory Class

The next step of the present analyses was to cross-tabulate the identity confusion trajectory classes obtained in Schwartz et al. (in press) with cigarette use, alcohol use, marijuana use, and sexual behavior. For each of these outcomes, we first conducted a chi-square analysis relating identity confusion trajectory class to lifetime (yes or no) engagement in the behavior in question. Any participant who reported engagement in the behavior in question at any assessment point was classified as yes, whereas participants who never reported any engagement in the behavior were classified as no. If the results of this analysis were statistically significant, we plotted the course of onset by identity confusion trajectory class.

TABLE 1
Bivariate Correlations Among Study Variables

Variable	2	3	4	5	6	7	8	9
1. Parental Involvement	.51***	.44***	.35***	-.28***	-.09	-.05	-.08	-.05
2. Parent-Adolescent Communication	—	.50***	.36***	-.45***	-.24***	-.27***	-.18**	-.11
3. Family Cohesion		—	.35***	-.42***	-.23***	-.21**	-.09	-.04
4. Identity Coherence ^{a,b}			—	-.22*	-.14	-.18*	-.09	-.03
5. Identity Confusion ^b				—	.15	.26**	.05	.00
6. Cigarette Use ^c					—	.45***	.22**	.13
7. Alcohol Use ^c						—	.15*	.15*
8. Marijuana Use ^c							—	.12
9. Sexual Activity ^c								—

^aThis variable was not used in subsequent analyses because it did not evidence significant variability over time, or across persons in over-time trajectories.

^bFor these variables, $n = 124$ at baseline.

^cThese variables were measured as dichotomous (yes or no) indicators.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Smoking. The cross-tabulation of identity confusion trajectory class and lifetime cigarette smoking produced a significant chi-square, $\chi^2 (2, N = 250) = 6.05, p < .05, \phi = .16$. Ever-smokers comprised 22.9% of the Decreaser, 33.6% of the Stable, and 52.9% of the Increaser identity confusion classes. To illustrate this pattern over time, the first graph in Figure 1 shows the cumulative proportion of youth in each identify confusion trajectory class who reported smoking at each assessment.

Alcohol use. The cross-tabulation of identity confusion trajectory class and lifetime alcohol use produced a significant chi-square, $\chi^2 (2, N = 250) = 14.41, p < .002, \phi = .24$. Ever-drinkers comprised 38.5% of the Decreaser class, 61.3% of the Stable class, and 82.4% of the Increaser class. Trajectories of alcohol use initiation by identity confusion trajectory class are shown in the second graph in Figure 1.

Marijuana use. The cross-tabulation of identity confusion trajectory class and lifetime marijuana use did not produce a significant chi-square, $\chi^2 (2, N = 250) = 0.50, p = .78, \phi = .05$.

Sexual behavior initiation. The cross-tabulation of identity confusion trajectory class and lifetime sexual activity produced a significant chi-square, $\chi^2 (2, N = 250) = 11.12, p < .005, \phi = .21$. Adolescents who reported having had sex at some point before the end of the study comprised 24.8% of the Decreaser class, 34.5% of the Stable class, and 58.8% of the Increaser class. Trajectories of sexual behavior

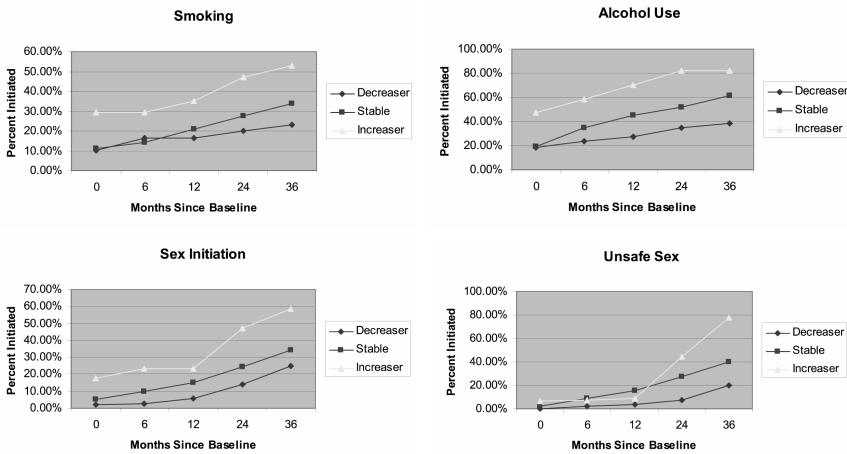


FIGURE 1 Smoking, alcohol use, and sexual behavior initiation by identity confusion trajectory class.

initiation by identity confusion trajectory class are shown in the third graph in Figure 1.

We also examined whether, among adolescents reporting sexual behavior initiation before and during the study, identity confusion trajectory class was related to having used a condom during the adolescent's most recent intercourse. A chi-square analysis, including only adolescents reporting sexual behavior initiation, produced a significant result, $\chi^2(2, N = 109) = 15.11, p < .002, \phi = .37$. Adolescents reporting sex without a condom before or during the study comprised 20.8% of sexually active adolescents in the Decreaser class, as well as 43.4% and 87.5% of sexually active adolescents in the Stable and Increaser classes, respectively. Trajectories of initiation of unsafe sex among sexually active adolescents, by identity confusion trajectory class, are shown in the fourth graph in Figure 1.

Family Functioning and Identity Confusion as Predictors of Substance Use and Sexual Behavior Initiation

Our next set of analyses focused on examining the roles of family functioning and identity confusion in initiation of cigarette use, alcohol use, and sexual behavior during the course of the study. The autocorrelations involving each of the outcomes between successive timepoints were quite high (ranging from .79 to .86). As a result, engagement in these behaviors was highly stable following initiation, and we turned our focus to predicting initiation of cigarette and alcohol use and of sexual behavior. We did not estimate models for unsafe sex (sex without a condom) because only one sexually active participant in the Increaser class reported no unsafe sex before or during the study.

In these models, initiation of the target behavior was used as the outcome measure. We used B. O. Muthén and Masyn's (2005) latent class approach to discrete-time survival analysis, in which latent variables (including intercepts and slopes from growth curves) can be used to predict the hazard function. B. O. Muthén and Masyn argued that the hazard function can be modeled as a latent class analysis, which is cast as a confirmatory factor analysis with a categorical latent variable and dichotomous indicators. At each timepoint, each adolescent received a score of 1 if he or she first reported having engaged in the behavior in question at that timepoint and score of 0 if initiation had not yet occurred at that timepoint. Once initiation had been reported, scores for the behavior at all subsequent timepoints were set to the system-missing value (L. K. Muthén & Muthén, 2006).

Family functioning was computed as a weighted composite including adolescent reports of overall family cohesion, of parent-adolescent communication, and of the primary parent's parental involvement and positive parenting. The weights for this composite were derived from a confirmatory factor analysis of these family functioning indicators, the structure of which was found to be equivalent across timepoints (Schwartz, Mason, Pantin, & Szapocznik, in press). Parent reports of

family functioning were not analyzed because they were unrelated to identity confusion either cross-sectionally or over time (Schwartz et al., in press).

For each outcome, we estimated two models: (a) one with a growth curve (intercept and slope) for family functioning predicting both identity confusion trajectory class and the hazard function, but with no paths from the family functioning growth parameters to the hazard function; and (b) a second model with paths added from the family functioning growth parameters to the hazard function (see Figure 2, in which additional paths added in step b are represented by dashed lines). These models were estimated using Mplus release 4.1 (L. K. Muthén & Muthén, 2006). These sets of models allowed us to examine, for each outcome considered, the extent to which (a) identity confusion mediates the effect of baseline level and growth in family functioning on the likelihood of initiation, and (b) when family functioning is allowed to predict the likelihood of initiation, identity confusion trajectory class remains a significant predictor. Tests of mediation (not included in Table 2) were conducted in which identity confusion trajectory class, but not family functioning, was allowed to predict the hazard function.

In these models, identity confusion trajectory class was entered as dummy-coded variables for the Increaser and Stable classes, with the Decreaser class serving as the reference group. Because these models are estimated with categorical endogenous latent variables, Mplus does not produce standard model fit criteria. Instead, the log likelihood function, the Akaike Information Criterion (AIC; Keith, 2006), and the Bayesian Information Criterion (BIC; G. Schwartz,

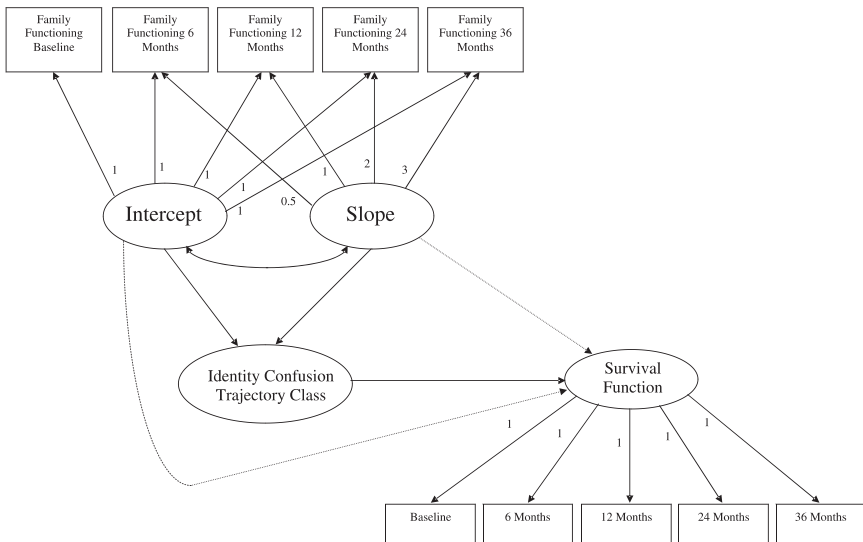


FIGURE 2 Discrete-time survival models estimated in the present study.

1978) are provided. These fit statistics do not have standard cutoff values and do not have absolute meaning; rather, they are used to compare models and to identify the best-fitting model from among a set of competing models (Burnham & Anderson, 2004). As a result, we rely on the path coefficients and the consistency of the results with theoretical expectations as ways of evaluating the model.

Although the intervention conditions were not of substantive interest, the present sample was taken from a randomized clinical trial. As a result, we controlled for the effects of intervention condition in the models we estimated (cf. Choi, Harachi, Gilmore, & Catalano, 2005). We accomplished this by including dummy-coded variables for Familias Unidas + PATH and ESOL + PATH and specifying paths from these variables to each of the constructs in the model. The ESOL + HEART-H condition was used as the reference group in these comparisons. Models were nearly identical when estimated with versus without controls for condition, suggesting that intervention condition did not affect the associations of family functioning and of identity confusion with onset of smoking, alcohol use, and sexual behavior. Differences in trajectories of outcomes as a function of condition are reported elsewhere (Prado et al., 2007).

In survival analyses, effects of predictor variables are reported as hazard ratios, which are similar to the odds ratios obtained from logistic regression (Allison, 1995). The hazard ratio for a given predictor can be interpreted as the multiplicative increase in the odds of event occurrence for each unit increase in the predictor variable. For example, a hazard ratio of 2 indicates that the risk doubles with each unit increase in the predictor variable. Hazard ratios greater than 1 indicate a positive relationship between the predictor and the likelihood of event occurrence, whereas hazard ratios smaller than 1 indicate a negative relationship. For dichotomous predictors, the hazard ratio reflects the difference in odds of event occurrence between the two levels of the predictor (e.g., member vs. nonmember of a specific group). We computed both the significance level and the 95% confidence interval for each hazard ratio. Confidence intervals that do not include 1 reflect a statistically significant hazard ratio. Significance levels, hazard ratios, and confidence intervals for each effect are provided Table 2.

Smoking. The model with identity confusion trajectory class predicting the smoking onset hazard function was associated with a log likelihood of -1728.07 , an AIC of 3518.13 , and a BIC of 3627.17 . Relative to membership in the Decreaser identity confusion trajectory class, membership in the Increaser identity confusion trajectory class was negatively related to the family functioning intercept ($\beta = -.25$, $p < .05$) and slope ($\beta = -.47$, $p < .05$). Membership in the Stable identity confusion class was also negatively related to both the family functioning intercept and slope. Initiation hazard was significantly and positively related to membership in the Increaser class, but not in the Stable class, relative to membership in the Decreaser class.

TABLE 2
Hazard Ratios and Confidence Intervals for Survival Analyses^a

Outcome	Predictor	Model 1			Model 2		
		HR	95% CI (Lower)	95% CI (Upper)	HR	95% CI (Lower)	95% CI (Upper)
Smoking	Identity Confusion (Increase)	3.38	1.46	7.81	1.66	0.64	4.28
	Identity Confusion (Stable)	1.67	0.99	2.82	0.93	0.51	1.71
	Family Functioning Intercept				0.46	0.31	0.67
	Family Functioning Slope				0.30	0.05	1.82
Alcohol Use	Identity Confusion (Increase)	4.43	1.98	9.90	2.40	0.94	6.17
	Identity Confusion (Stable)	2.05	1.36	3.11	1.26	0.75	2.14
	Family Functioning Intercept				0.56	0.41	0.76
	Family Functioning Slope				0.41	0.10	1.62
Sex Initiation	Identity Confusion (Increase)	4.46	1.97	10.11	2.50	0.82	7.65
	Identity Confusion (Stable)	1.83	1.08	3.11	1.17	0.60	2.28
	Family Functioning Intercept				0.45	0.29	0.70
	Family Functioning Slope				0.93	0.34	6.60

^aModel 1 represents the model where only identity confusion trajectory class was allowed to predict the hazard function, whereas Model 2 represents the model where both identity confusion and family functioning were allowed to predict the hazard function.

Because membership in the Increaser class was significantly associated with smoking initiation hazard, we explored the extent to which membership in the Increaser class might have mediated the effect of family functioning on smoking initiation. We used the asymmetric distribution of products test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), which is among the most powerful tests of mediation. This test computes the point estimate of the product of the two unstandardized paths that comprise the mediational pathway, along with the 95% confidence interval for this product. If the confidence interval (CI) does not include 0, then partial mediation is assumed. Tests of mediation showed that membership in the Increaser class mediated the effects of both family functioning intercept (point estimate = -0.787 , 95% CI = -1.486 to -0.089) and family functioning slope (point estimate = -4.924 , 95% CI = -9.067 to -0.781).

When the family functioning growth parameters were allowed to correlate with the smoking initiation hazard ratio, the fit statistics were as follows: log likelihood = -1718.98 , AIC = 3503.95 , BIC = 3620.03 . The family functioning intercept, but not the slope, was significantly and inversely related to smoking initiation hazard. Once family functioning was allowed to correlate with smoking initiation hazard, identity confusion trajectory class was not significantly related to the hazard.

Alcohol use. The model with identity confusion trajectory class predicting the alcohol use onset hazard function was associated with a log likelihood of

-1779.94 (AIC = 3621.89, BIC = 3730.93). Initiation hazard was significantly and positively related to membership in both the Increaser and Stable classes relative to membership in the Decreaser class. Tests showed that membership in the Increaser class mediated the effects of both family functioning intercept (point estimate = -1.33, 95% CI = -2.267 to -0.40) and family functioning slope (point estimate = -7.28, 95% CI = -12.46 to -2.09). Membership in the Stable class also mediated the effects of both family functioning intercept (point estimate = -0.77, 95% CI = -1.19 to -0.35) and family functioning slope (point estimate = -1.93, 95% CI = -3.34 to -0.53) on alcohol use initiation hazard.

When the family functioning growth parameters were allowed to correlate with the alcohol use initiation hazard ratio, the fit statistics were as follows: log likelihood = -1773.00; AIC = 3611.99; BIC = 3728.07. The family functioning intercept, but not the slope, was inversely related to alcohol use initiation hazard. Once family functioning was allowed to correlate with alcohol use initiation hazard, the Increaser and Stable classes were not statistically significantly related to the hazard.

Sexual behavior initiation. The model with identity confusion trajectory class predicting the sexual behavior initiation hazard function was associated with a log likelihood of -1677.35, an AIC of 3416.71, and a BIC of 3525.75. Sexual behavior initiation hazard was significantly and positively related to membership in both the Increaser and Stable classes, relative to membership in the Decreaser class. Analyses showed that membership in the Increaser class mediated the effects of both family functioning intercept (point estimate = -1.336, 95% CI = -2.26 to -0.41) and family functioning slope (point estimate = -7.30, 95% CI = -12.418 to -2.19). Membership in the Stable class also mediated the effects of both family functioning intercept (point estimate = -0.65, 95% CI = -1.14 to -0.158) and family functioning slope (point estimate = -1.62, 95% CI = -3.04 to -0.20) on sexual behavior initiation hazard.

When the family functioning growth parameters were allowed to predict the sexual behavior initiation hazard, the fit statistics were as follows: log likelihood = -1668.89, AIC = 3403.79, BIC = 3519.86. The family functioning intercept, but not the slope, was inversely related to sexual behavior initiation hazard. Once family functioning was allowed to correlate with sexual behavior initiation hazard, neither of the identity confusion trajectory classes were statistically significantly related to the hazard.

DISCUSSION

The present study was conducted to ascertain the contributions of identity confusion and family functioning to substance use and sexual behavior initiation in a

sample of Hispanic immigrant adolescents. Although the data were taken from a randomized clinical trial of a family-based HIV prevention program, models estimated with and without controls for intervention condition produced nearly identical fit statistics and path coefficients.

In the present sample of Hispanic adolescents, increases in identity confusion over time were associated with increased likelihood of initiating smoking, alcohol use, and sexual activity during early and middle adolescence. Among sexually active adolescents, increases in identity confusion were associated with increased likelihood of sex without a condom. No significant effects emerged for marijuana use, perhaps because only 12% of the sample as a whole reported using marijuana at any point before or during the study. When family functioning was allowed to relate to the hazard function only through identity confusion, these increases may have appeared to mediate the effect of earlier levels of and changes in family functioning on the likelihood of initiation. This pattern of findings suggests that, although some degree of identity confusion may be normative in early adolescence (Archer, 1982), *increases* in identity confusion during early and middle adolescence may place adolescents at risk for substance use and sexual risk taking. Because early onset of problem behavior debut is associated with continued problems later on, identifying ways to prevent increases in identity confusion in Hispanic adolescents is an important public health priority.

Family functioning appears to serve as one mechanism that may be responsible for both changes in identity confusion and for the likelihood of initiation of substance use and sexual behavior. That is, positive family functioning in early adolescence, and improvements in family functioning during adolescence, are associated with lowered identity confusion over time and with abstinence from substance use and precocious sexual behavior. Changes in family functioning were closely associated with changes in identity confusion, and these two variables explained much of the same variability in cigarette use, alcohol use, and sexual behavior onset. Clearly, both family functioning and identity confusion appear to represent potentially important mechanisms for substance use and HIV prevention in Hispanic adolescents. It may be that interventions designed to promote positive family functioning may alleviate identity confusion and prevent initiation of substance use and precocious sexual behavior in Hispanic adolescents. It is also possible that interventions to alleviate identity confusion may prevent initiation of substance use and precocious sexual behavior in this population. Although there is a great deal of evidence that family functioning can be experimentally manipulated (e.g., Dishion, Kavanagh, Schneiger, Nelson, & Kaufman, 2002), more evidence is needed to show that identity can also be changed through intervention (see Berman, Kennerley, & Kennerley, this issue; Kurtines et al., this issue).

That family functioning serves as a predictor both of identity confusion and of substance use and sexual behavior initiation in Hispanic adolescents is not surprising. Research has shown that, in both general population and Hispanic adoles-

cents, family functioning is associated with identity development (Mullis, Brailsford, & Mullis, 2003; S. J. Schwartz, Pantin, et al., 2005), substance use (van den Bree & Pickworth, 2005) and sexual behavior (Henrich, Brookmeyer, Shrier, & Shahar, 2006). Although early and middle adolescence tend to be characterized by strivings for autonomy and by mild increases parent-child conflict in non-Hispanic White families (e.g., Conger & Ge, 1999), in Hispanic families this may be less culturally normative (Baer, Prince, & Velez, 2004). For the majority of the sample, identity confusion either remained stable or decreased, and adolescent reports of family functioning either remained stable or improved over time. Sharp increases in identity confusion, and the deterioration in family functioning that accompanied these increases, characterized only a small proportion of Hispanic adolescents. This finding is consistent with the argument that “storm and stress” characterizes only a small segment of the adolescent population (e.g., Arnett, 1999), and it suggests that increased identity confusion and storm and stress may characterize only a minority of Hispanics, and perhaps adolescents from other ethnic groups.

To the extent to which our findings are applicable to the broader population of Hispanic adolescents, the course of identity development in Hispanic early adolescents appears to be represented as changes in identity confusion. This is consistent with the contention that the majority of identity consolidation occurs during the transition to adulthood (Schwartz, Côté, et al., 2005). Perhaps identity confusion must be decreased before a sense of identity can be consolidated later on. Although much of the available evidence suggests that the structure and functions of identity are consistent across ethnic groups (Schwartz, Côté, & Arnett, 2005), more research is needed to ascertain the extent to which the patterns observed here would or would not generalize to other groups of early adolescents.

Limitations

Our results should be considered in the context of several important limitations. First, the study sample was taken from a randomized clinical trial. Although we were able to statistically control for the effects of intervention condition and to use the dataset for longitudinal analyses, there are clearly aspects of sample selection that limit our ability to draw developmental conclusions from an intervention dataset (see Perrino, Coatsworth, Briones, Pantin, & Szapocznik, 2001).

A second limitation is the inability to establish directionality in many of the relationships examined in the present study. All three constructs—family functioning growth parameters, identity confusion trajectory classes, and initiation hazards for substance use and sexual behavior—were assessed across the same set of timepoints. Although the directionality implied by the models we estimated is consistent with theory, we were not able to empirically evaluate this sequencing in the present analyses. It remains for future research to examine this issue.

A third limitation concerns the age range examined in the present study. Early adolescence is the time when individuals are first beginning to consider their sense of identity (Archer, 1982). Some identity confusion may be normative as young adolescents begin to sort through identity issues (Schwartz, Pantin, et al., 2005). The associations of identity confusion with substance use and sexual behavior initiation, then, may be qualitatively different in young adolescents than in adults who are still struggling to find their way. More research is necessary to explore the different functions of identity confusion at various points during the life span.

A fourth limitation concerns the reliance on only adolescent reports. Because parent reports of family functioning were not analyzed, this was essentially a single-reporter study. Examining reports of various constructs from the same person may inflate the relationships among variables. The present results should be interpreted with this issue in mind.

An additional limitation concerns the national origin composition of the present sample. Although the national origins in the sample are representative of the schools from which it was drawn, they are not representative of the U.S. Hispanic population as a whole. Mexican Americans, who comprise 65% of the U.S. Hispanic population, and Puerto Ricans, who comprise 10% (Ramirez & de la Cruz, 2003), were not well represented in our sample. It therefore is important to replicate the present analyses with other ethnic groups as well as with Hispanic adolescents from other national backgrounds and from other parts of the country.

Despite these limitations, this study provides important guidance regarding the importance of family functioning and identity confusion in initiation of substance use and precocious sexual behavior in Hispanic adolescents. As stated earlier, interventions to strengthen family functioning and to alleviate identity confusion may be needed in this population. It may be most efficient to design an integrated intervention program to focus both on family strengthening and on adolescent identity development (cf., Schwartz, Pantin, et al., 2005). Given that family functioning served as a "common cause" of identity confusion and of substance use and sexual behavior initiation in the present study, interventions to strengthen family functioning may also have the effect of decreasing identity confusion. It is hoped that the present results will inspire work in this direction.

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