

PROTECTIVE FACTORS AGAINST SUBSTANCE USE AMONG ASIAN AMERICAN YOUTH: A TEST OF THE PEER CLUSTER THEORY

Irene J. Kim and Nolan W. S. Zane
University of California, Davis

Sehee Hong
University of California, Santa Barbara

Few viable theoretical models of risk and protective factors for adolescent substance use have been empirically tested on diverse populations. The purpose of this study was twofold. First, the cross-cultural validity of Oetting and Beauvais' (1987) peer cluster theory was tested on a sample of Asian American youth. Second, the effect of youths' immigration experience on the relationship among the protective factors was examined. Results showed partial support for the validity of the peer cluster model for this sample. As hypothesized, the peer domain variable was significantly related to substance use, while the family domain variable served as a protective factor against substance use. However, the school domain variable did not have any direct or indirect effects on substance use. There were no significant differences in the path model when the sample was split according to youth immigrant status. Implications for substance use prevention are discussed. © 2002 Wiley Periodicals, Inc.

Widespread concern over adolescent substance use and abuse has stimulated extensive research during the past two decades on the etiology and prevention of drug use among youth. Much of the earlier research focused on identifying risk factors involved

This study was supported in part by the National Research Center on Asian American Mental Health (National Institute of Mental Health grant MH-44331), the Center for Substance Abuse Prevention Grant 3-H86-SP04968, as well as the NIMH Consortium on Diversity & Family Process & Mental Health, and Multisite Research Training in Diversity & Family Process grants.

Correspondence to: Irene J. Kim, Department of Human and Community Development, University of California, One Shields Avenue, Davis, CA 95616. E-mail: ijkim@ucdavis.edu

in the initiation, maintenance, or proliferation of adolescent substance use behaviors. More recently, some investigators have also emphasized the importance of "protective factors" in determining the likelihood of substance use behaviors among adolescents (e.g., DeWit, Silverman, Goodstadt, & Stoduto, 1995; Newcomb & Felix-Ortiz, 1992). Although there are some conflicting views on whether risk and protective factors represent two ends of the same continuum (Brook, Whiteman, Gordon, Nomura, & Brook, 1986; Labouvie & McGee, 1986), or conceptually distinct dimensions (Hawkins, Catalano, & Miller, 1992), there is accumulating evidence which supports the latter hypothesis (DeWit et al., 1995; Newcomb & Felix-Ortiz, 1992). However, few empirical studies have been conducted on the protective mechanisms that buffer youth from substance use behaviors in those populations that have purportedly low levels of substance use. Asian American youth represent one such poorly understood group that has often been depicted as the "model minority" (Sue, 1990). Although Asian American adolescents are commonly perceived as being not at-risk for substance abuse (Au & Donaldson, 2000; Kandel, Single, & Kessler, 1976; Maddahian, Newcomb, & Bentler, 1986; O'Hare, 1995), some researchers have pointed to trends towards increasing drug use in this population (Austin, Prendergast, & Lee, 1989; James, Kim, & Moore, 1997; Sasao, 1992). Estimates of national prevalence rates of Asian American adolescent substance use are difficult to make at this time, because the most extensive surveys (e.g., the National Household Survey on Drug Abuse sponsored by the Substance Abuse and Mental Health Services Administration and the Monitoring the Future Study sponsored by the National Institute on Drug Abuse) do not include Asian Pacific Islanders as an ethnic category (Harachi, Catalano, Kim, & Choi, 2001). However, some state and local epidemiological studies have examined Asian American youth and report prevalence rates across different categories of substance use. For example, according to the California Student Substance Use Survey (Austin, 1999), 14% of Asian American students reported heavy drinking in the last 2 weeks, and 20% reported smoking cigarettes daily or during the past month. Yet, the mechanisms that may protect Asian American youth from, or increase their risk for, substance use remain largely unexplored. In the current study, we sought to better understand these mechanisms by examining a model of specific risk and protective factors for substance use among Asian American youth.

RISK FACTORS FOR ADOLESCENT SUBSTANCE USE

Risk factors for substance use may be defined as any influence that increases the probability of such behavior. Spanning multiple domains, over 60 risk factors for adolescent substance use were cited in one recent literature review (DeWit et al., 1995). The most often studied risk factors can be categorized into three domains: (a) interpersonal (i.e., family, peer, school), (b) personality, and (c) contextual. In sum, these risk factors for adolescent substance use include: favorable parental attitudes towards substance use, low family bonding, family conflict (Hawkins et al., 1992; Newcomb & Bentler, 1988); association with substance-using peers, peer rejection, and peer deviance (Brook, Nomura, & Cohen, 1989; Hawkins et al., 1992); academic failure, poor school adjustment, school size (Johnston, 1973), and low educational aspirations (Johnston, O'Malley, & Bachman, 1985); biochemical (e.g., Zuckerman, 1987) and genetic differences (e.g., Pollock, Volavka, & Goodwin, 1983) linked with alcoholism; sensation-seeking, low self-esteem, alienation, rebelliousness/impulsivity

(Brook, Whiteman, Gordon, Nomura, et al., 1986), aggressiveness, antisocial behavior, emotional distress (Newcomb & Bentler, 1988), and early and persistent problem behaviors; low religiosity, deviancy/nonconformity (Newcomb & Bentler, 1988), meaninglessness in life (Newcomb & Harlow, 1986); and laws and norms that reflect favorable attitudes towards substance use and availability (Hawkins et al., 1992).

From these findings, some general conclusions can be drawn. First, the research supports a multiple-risk factor model of substance use among youth in that there appears to be no single causal pathway leading to drug use, and exposure to a greater number of risk factors has been associated with a higher degree of substance use and abuse (Bry, McKeon, & Pandina, 1982; Newcomb, Maddahian, & Bentler, 1986). Second, several studies have shown that certain factors outweigh others in relative importance. Peer variables (e.g., association with substance-using peers) are, by far, the most consistent and most powerful influences on adolescent substance use (Brook, Nomura, & Cohen, 1989; Hawkins et al., 1992; Newcomb & Bentler, 1986, 1989; Newcomb et al., 1986). Third, there is a paucity of research that examines within-group differences for risk factors specific to ethnic minority groups. A few investigators have found racial/ethnic differences in the impact of peer models (Newcomb & Bentler, 1986) or family risk factors (Amey & Albrecht, 1998; Gil, Vega, & Biafora, 1998) and have acknowledged the importance of considering acculturation level (Newcomb & Felix-Ortiz, 1992) or immigrant background (Gil et al., 1998) to improve the predictive power of risk/protective factor indices. Despite this call for closer attention to within-group differences, few concerted efforts have been made to address this issue.

PROTECTIVE FACTORS AGAINST ADOLESCENT SUBSTANCE USE

Protective factors against substance use may be defined as “influences that prevent, limit, or reduce drug use and that may counter, buffer, neutralize, and interact with risk factors within or across time” (Newcomb & Felix-Ortiz, 1992, p. 281). Although many researchers have conceptualized risk and protective factors as opposite ends of the spectrum (a linear relationship), others (e.g., Newcomb & Felix-Ortiz, 1992) propose that protection is not merely the absence of risk. Instead, they conjecture that protective and risk factors may have an orthogonal relationship—that is, protective and risk factors may fall on two different continuums and remain independent of each other. As conceptually separate variables, protective and risk factors would have independent main effects as well as interactive or moderating effects on one another. This distinction is important for evaluating different responses to the same level of risk. As Hawkins et al. (1992, p. 86) state, “. . . the construct [of protective factors] stimulates attention to nonlinear and interactive relationships among risk and protective factors.” To illustrate this interactive relationship, DeWit et al. (1995, p. 838) point out that “in a high risk environment, the presence of protective factors serves to lessen the likelihood of problem behavior more forcefully than under conditions of low risk.” Similarly, Newcomb and Felix-Ortiz (1992) note that “high protection reduces the impact of risk on drug use, and low protection strengthens the link between risk and drug involvement” (p. 282).

Although there has been less research on protective factors (Newcomb & Felix-Ortiz, 1992), the same domains used to classify risk factors (interpersonal, personality, and contextual) can be used to examine protective influences on drug use. In the *interpersonal* domain, prosocial bonding and prosocial socialization have been identi-

fied as protective factors against substance use (Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996). Several studies have emphasized the buffering role of strong family relationships against adolescent substance use (e.g., DeWit et al., 1992). Less substance use has been associated with nonconflictual and affectionate parent-child relationships (Brook et al., 1989; Brook, Whiteman, & Gordon, 1982; Brook, Whiteman, Gordon, & Cohen, 1986) and non-using parental models (Brook, Whiteman, Gordon, Nomura et al., 1986). Family involvement and attachment also appear to inhibit substance use initiation (e.g., Gorsuch & Butler, 1976; Norem-Hebeisen, Johnson, Anderson, & Johnson, 1984; Selnow, 1987). In sum, the family environment appears to be a strong protective factor against adolescent substance use, and in some cases, reduces the susceptibility to peer risk factors (Brook, Whiteman, Gordon, Nomura et al., 1986). School-related variables, such as high commitment to schooling (Hawkins et al., 1992) and high grade point averages (GPAs) (Newcomb & Felix-Ortiz, 1992), also serve as protective factors against substance use. Brook et al. (1989) found that low conflict in school and a positive learning environment buffered the risk factors related to substance-using peers. Peer-related protective factors against adolescent substance use include little time spent with friends after school and low peer pressure to use drugs (DeWit et al., 1995).

Next, various *personality*-related protective factors have been found to reduce the likelihood of substance use including: high religiosity/church attendance, low depression, perceived sanctions against substance use, high self-acceptance/esteem, belief in societal norms, and high law abidance (Adlaf & Smart, 1985; DeWit et al., 1995). Finally, in their comprehensive literature review of substance use, Hawkins et al. (1992) noted several *contextual* factors that may limit or decrease substance use behavior, such as age restrictions and greater taxation on alcohol. They emphasized that the most powerful protective factor in these laws was the communication of "general social norms of disapproval for the distribution and use of illegal drugs" (Hawkins et al., 1992, p. 88).

Based on such empirical findings, a number of theoretical models have been proposed to provide a better understanding of the relationship between these factors and adolescent substance use. One of the more promising models involves Oetting and Beauvais' "peer cluster theory" (Oetting & Beauvais, 1987) that explains how different factors relate to drug use among youth. According to Oetting & Beauvais' psychosocial model, peer clusters: (a) shape a youth's attitudes, values, beliefs about drugs, (b) predict actual substance use behavior, and (c) mediate the effects of other socialization agents, such as the family and school. These authors state that adolescent drug use is a deviant behavior that is the product of socialization. They hypothesize that a youth's primary socialization sources for learning social norms are (a) the family, (b) the school, and (c) peer clusters ("best friends, couples, groups of close friends," Oetting, 1992, p. 316). Out of these three links, peer clusters are identified as a dominant socialization source, directly affecting substance use and other risk behaviors. Peer clusters help define values and attitudes towards drugs and also determine when, where, and how drugs are used. Consequently, adolescent drug use may be best predicted by peer clusters, and peer clusters mediate the influence of the other primary socialization agents (family and school). In their original test of the peer cluster theory, Oetting and Beauvais (1987) operationalized these variables through measures that assessed peer drug associations, school adjustment, family sanctions and family strength as well as religious identification. Using peer cluster theory, the authors predicted that peer drug associations would mediate all other paths to drug use, and

that there would be a positive relationship between peer drug associations and drug use. Oetting and Beauvais found support for their peer cluster theory, in that their path analysis showed that peer drug associations dominate in predicting substance use among youth. All other paths (e.g., from family strength and school adjustment) were mediated by the peer variable.

Although originally based on a relatively homogenous community sample, the peer cluster theory has garnered some empirical support for certain ethnic groups through studies conducted among African American, Hispanic/Mexican American, and Native American youth (Beauvais, 1992; Farrell & White, 1998; Oetting & Beauvais, 1990). No studies have been conducted to test the applicability of this theory among Asian American youth. Furthermore, adolescent substance use research, in general, has rarely addressed Asian American youth (Zane & Huh-Kim, 1998; Zane & Sasao, 1992). Zane and Sasao (1992) noted that most substance use studies on Asian Americans have tended to be “descriptive and atheoretical” (p. 191). For example, only a small number of epidemiological studies have documented the prevalence rates and patterns of alcohol, tobacco, and other drug use among Asian Americans (e.g., Kitano & Chi, 1985). Newcomb and his colleagues (1987) found important ethnic differences in that Asian adolescents appeared to have “some type of invulnerability to psychosocial influences on drug use” (p. 431) in their study of substance abuse and risk factors using a multi-ethnic sample of youth. However, there is a lack of empirical studies that have examined the relationship between substance use and protective factors among Asian American youth.

Drug use patterns as well as the degree of protection among Asian Americans often vary with acculturation level. Acculturation may be defined as “the changes in cultural attitudes, values, and behaviors due to contact between two cultures” (Berry, Trimble, & Olmedo, 1986). Moreover, acculturation level has been examined as an important moderating variable in risk factor research for various problem behaviors (e.g., substance use, sexual risk-taking) in different ethnic groups (Gil et al., 1998; Oetting & Beauvais, 1991; Newcomb, et al., 1998). Acculturation level may be an important moderator of the relationship between protective factors and substance use and must be considered to make better cross-cultural predictions of substance use (Newcomb & Felix-Ortiz, 1992), especially when studying Asian American youth (Zane & Huh-Kim, 1998; Zane & Sasao, 1992).

Thus, the purpose of this study was twofold. First, the research tested the cross-cultural validity of the peer cluster theory on a sample of Asian American youth. Specifically, the study examined whether or not the relationship between risk and protective factors and drug use among Asian American youth conformed to the pattern as predicted by the peer cluster model. Second, the study explored how the relationship among these factors possibly varied depending on acculturation level as measured by immigrant status.

METHOD

Participants

The current study is based on data from an evaluation of a network of culturally responsive substance use prevention programs (Zane, Aoki, Ho, Huang, & Jang, 1998). Five ethnic-specific youth organizations implemented a substance use prevention program and admitted youths who met one or more of the following inclusion criteria:

below C average; declining grades over two or more reporting periods; unexcused absence or unsatisfactory citizen grade; misconduct in class by teacher observation; parent–counselor conference for misconduct in class; suspension; pattern of regular tobacco use; signs of being under the influence of alcohol; initiation of other drugs; parental alcohol use (signs of being under the influence at least twice a month); parental use of other drugs. In sum, the inclusion criteria screened for Asian American youth who would be more likely to be at risk for substance use.

Participants were 164 Asian American youths who were recruited from the San Francisco metropolitan area. The youths' ages ranged from 11–14 years, with a mean age of 12.3 years ($SD = .95$). A majority of the youth was preadolescent (11–12 years old, 52.4%) and male (63.4%). The youths were from various Asian ethnic backgrounds and self-identified as: Filipino (25.6%), Chinese (30.5%), Southeast Asian (mostly Vietnamese/Vietnamese Chinese; 22.0%), or Korean (22.0%). The sample was almost evenly divided between those youths who had resided in the United States for 2 or more years and had adequate English proficiency ("acculturated" = 48.8%) and those who had resided in the United States for less than 2 years and had limited English proficiency ("recent immigrant" = 51.2%). This distinction between acculturated and recent immigrant youth was important to make for empirical reasons. First, length of residency in the United States and English proficiency were used as rough indicators of immigration experience since both have been cited as stressors specific to the cultural transition of recent immigrants (e.g., Moritsugu & Sue, 1983; Nicassio, 1985; Uba, 1994; Ying, 1996) as well as differentiating risk factors for psychological distress [e.g., greater alienation from American culture, Nicassio (1983), Nicassio & Pate (1984); higher symptom scores on the SCL-90, Westermeyer, Neider, & Vang (1984); lower immigrant satisfaction levels, Ying (1996)]. Second, the two-year period following immigration to the United States may be an especially critical time when recent immigrant youths face challenges in their families, schools, and peer groups. Research has also shown that adolescents' choice of peers tends to be mediated by length of residence in the United States (Phinney, 1990). Youths who have lived in the United States longer are more likely to have non-Asian friends. In addition to these empirical reasons, the decision to use a 2-year cut-off point for United States residency was made for programmatic reasons. Specifically, program staff had observed that a 2-year cutoff made a useful distinction in identifying youth's responsiveness to these substance use prevention programs. Total time since immigration could not be used as a continuous variable because this data was not available.

The current sample was taken from two cohorts of youth who participated in the substance use prevention programs from 1994–1996. Informed consent was obtained from each participant and one of their parents. There were 107 youths (65.2%) in the first cohort and 57 youths (34.8%) in the second cohort. Each cohort received the same measures and interventions.

Measures

Demographic Information. Age and immigration experience were demographic variables used in the data analyses. Immigrant status was a dichotomous variable indicating whether or not youth had resided in the United States for less than 2 years and/or had limited English proficiency. This categorical variable was later used to split the sample in the path analyses to examine whether or not immigrant status moderated the relationship between the independent variables and substance use. Age range was

restricted to 11–14-year-old youths, a period of critical developmental transitions that may increase vulnerability to risk behaviors such as substance use (e.g., Baumrind & Moselle, 1985). In the following section, each respondent's score was calculated using the mean of the pre- and posttest items for each measure, unless stated otherwise.

Youth-Parent Relations Scale. The relations between youth and their parents were assessed with 19 items using a 4-point Likert-type scale that ranged from “never” (1) to “a lot” (4). Youths responded to statements such as: “Do you talk with your parents about your homework?”; “Do you argue with your parents?” (reverse-scored); and “Do your parents say nice things to you when you do something good?” Higher scores indicated better relations between the youth and his/her parents. The internal consistency of this scale was strong in the present study (Cronbach's alpha = .88). Adequate reliability (Mean alpha = .85) and concurrent validity have previously been reported using this measure among Asian American youth (Zane et al., 1998). Zane, Park, and Aoki (1999) have also reported convergent relationships with other measures (e.g., interpersonal distress, substance use), providing further support for adequate validity.

Vulnerability to Negative Peer Pressure. In this 10-item measure, youths were asked to read 10 brief vignettes and, in each case, rate the likelihood that they would be influenced by their peers to engage in drug use or other risk behaviors. Participants responded using a 4-point Likert scale ranging from “definitely yes” (1) to “definitely no” (4). All items were reverse-scored such that higher scores signified greater vulnerability to negative peer pressure. Vignettes included statements such as: “Someone who is smart in class says you can copy his/her homework. No one would know if you copied his/her answers. Would you copy the homework?” Another example of a vignette is: “After school your friends want to go off some place to smoke marijuana. You don't want to be left out. Would you go and smoke with them?” Previously reported alphas using this measure ranged from .83 to .86 with a mean alpha of .84 (Zane et al., 1998). Cronbach's alpha in the current study for this measure was .86. Convergent validity has also been previously established for this peer relations measure (Zane et al., 1998; Zane et al., 1999).

School-Based Social Comfort. Youths' comfort level in social situations at school was assessed with 19 items using a 4-point Likert-type scale that ranged from “never” (1) to “a lot” (4); all items were reverse-scored. Youths responded to statements such as: “I worry about being teased,” “I feel afraid about raising my hand in class,” and “I get nervous looking into my teachers' eyes when they talk to me.” Zane et al. (1998) reported adequate concurrent validity and alphas ranging from .82 to .92 ($M = .88$). Cronbach's alpha in the present study for this measure was .89.

Substance Use. The nine-item Substance Use Inventory (SUI) is a modified version of a widely used self-report substance use measure specifically designed for adolescents (Skager, Fisher, & Maddahian, 1986). Because meaningful variance was found for only the alcohol and nicotine items in the present study and in a previous evaluation study of substance use prevention programs for Asian American youth (Sasao, 1991), these items were selected to form the dependent variable. The first item asked youths to rate the frequency of alcohol use defined as “beer, wine, wine coolers, liquor,” while the second item assessed the youths' use of “cigarettes or any kind of tobacco.” The frequency of youths' current (within past 30 days) substance use was rated on a

Table 1. Means, Standard Deviations, and Intercorrelations Between Domain Variables (N = 164)

Variable Domain	M	SD	1	2	3	4
1. School	2.75	.50	1.0			
2. Family	2.95	.47	.03	1.0		
3. Peer	1.62	.46	.02	-.52***	1.0	
4. Substance use	2.28	.68	-.01	-.35***	.47***	1.0

*** $p < .001$.

five-point scale that ranged from “none” (1) to “more than once a day” (5). The Cronbach’s alpha using these two items was .54. The Cronbach’s alpha for the entire scale using all nine items was .69 (the standardized item alpha was .78). Adequate convergent validity with other measures, including those assessing family and peer relations, has been previously reported (Zane et al., 1999).

RESULTS

A preliminary descriptive analysis was conducted, and these results appear in Table 1. All path analyses were conducted using the EQS structural equations program (Bentler, 1995). The maximum likelihood (ML) estimation approach was used since the purpose of this study was to test a specific theory. Given the general guideline for a 10:1 ratio between sample size and number of model parameters (Bentler & Chou, 1988; Kline, 1998), the sample size for the current study was more than adequate ($N = 164$, number of parameters in hypothesized model = 7) to achieve accurate parameter estimation.

Testing the Cross-Cultural Validity of the Peer Cluster Theory

In accordance with Oetting and Beauvais’ peer cluster theory, we hypothesized that the peer domain variable mediates the effects of the school and family domain variables to influence youths’ substance use. We predicted a direct path from Vulnerability to Negative Peer Pressure to Substance Use, and direct paths from Youth-Parent Relations and School-based Social Comfort to Vulnerability to Negative Peer Pressure. The family and school domain variables were not hypothesized to have direct paths to substance use behaviors.

The hypothesized path model (see Fig.1) was assessed to test how accurately the relationship between protective and risk factors and substance use (specifically, alcohol and cigarette use) was depicted for these Asian American youth. Table 2 shows the main results for the hypothesized model in terms of the goodness-of-fit between the path model and the sample data. In general, RMSEA values less than .08 are viewed as acceptable, while CFI and GFI values greater than .90 have been used as representing acceptable model fit (e.g., Newcomb, 1994). All three fit indices (CFI, GFI, RMSEA) indicate that the model fits the data very well.

Alternative Models

There has been some evidence in the literature that a youth’s relations with his/her family, school, and peers may directly influence substance use behaviors (e.g., Dewit

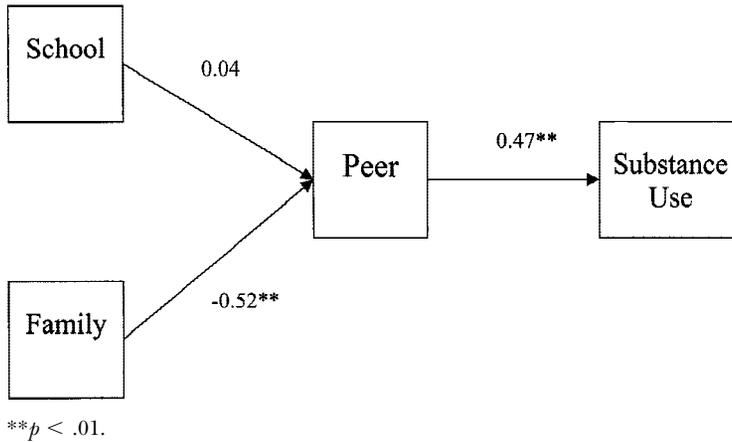


Figure 1. Hypothesized path model for substance use with standardized parameter estimates for the full sample ($N = 164$). Comparative Fit Index (CFI) = .994; Lisrel Goodness-of-Fit Index (GFI) = .989; Root Mean Square Error of Approximation (RMSEA) = .033.

et al., 1995; Hawkins et al., 1992;). Certain researchers have speculated that family or school may be an especially important factor in determining the likelihood that a youth will use drugs (e.g., Amey & Albrecht, 1998). These alternative hypotheses formed the basis of our three alternative models (see Fig. 2):

A1. All three variables (family, school, and peer) have a direct influence on substance use.

A2. The family variable mediates the effects of the peer and school variables to influence youth's substance use.

A3. The school variable mediates the effects of family and peer variables to influence youth's substance use.

To rule out the possibility of better-fitting alternative models, we tested the three alternative path models based on findings from the empirical literature (e.g., Amey & Albrecht, 1998; Dewit et al., 1995; Hawkins et al., 1992) which portrayed three different patterns of relationships between the protective and risk factors and substance use. The results of these path analyses are displayed in Table 2. Again, the same fit indices used to assess our hypothesized model were used to evaluate the goodness-of-fit of the alternative path models. All three alternative models showed a poorer fit with the sample data, compared to the hypothesized model.

Table 2. Fit Indices for Hypothesized and Alternative Models ($N = 164$)

Model ^a	χ^2	CFI	GFI	RMSEA
Hypothesized model	3.52	.99	.99	.03
Alternative #1	52.37	.45	.88	.32
Alternative #2	22.05	.79	.94	.20
Alternative #3	95.23	.00	.77	.43

Note. CFI = comparative fit index; GFI = general fit index; RMSEA = root mean square error of approximation.

^a $df = 3$.

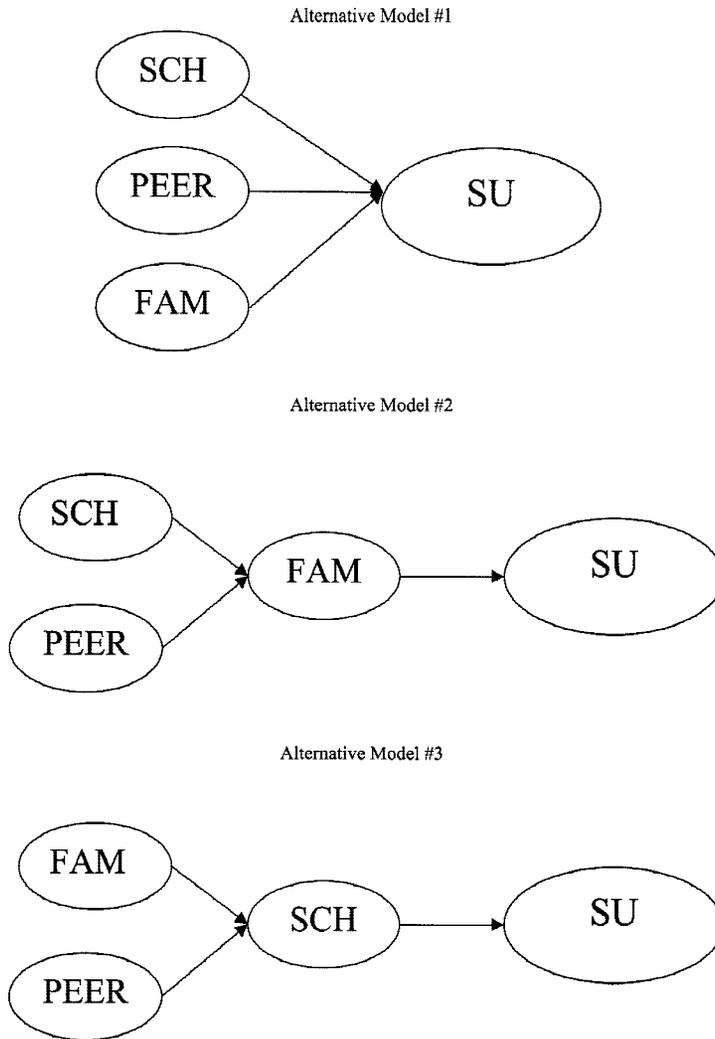


Figure 2. Three alternative models relating peer, family, and school variables with substance use among youth. Alternative model #1: School, family, and peer variables directly influence substance use/risk behaviors. Alternative model #2: Family as the mediating variable. Alternative model #3: School as the mediating variable.

Examining the Influence of Immigration Experience

To examine Asian within-group differences involving immigration experience (the second purpose of this study), we split the sample into two groups: acculturated and recent immigrant youth. The hypothesized model was tested on each of these two subsamples to determine whether or not immigration experience would affect the applicability of our model. Specifically, the subsamples were comprised of youth who had lived in the United States for less than 2 years and those who had lived in the United States for more than 2 years, as an indicator of the recency of their immigration experience. A multigroup analysis was conducted which tested the hypothesized

path model separately on these two subsamples of youth. No significant differences were found between these two groups. There was no evidence for rejecting the equivalence of the constraints in the two subsamples of Asian youth based on the recency of their immigration experience.

Interpretation

According to the results of the path analyses, the hypothesized model showed excellent fit on all three indices (see Table 2). On the other hand, the results showed that the alternative models did not fare as well, and in fact, displayed poor fit on all three indices (with the exception of Alternative Model #2 which displayed poor fit on two out of the three fit indices). Based on these results, it appeared that the hypothesized model fit the current sample relatively well, at least compared to the three alternative models. The standardized path coefficients in the hypothesized model are shown in Figure 1 for the full sample.

An examination of the paths for the hypothesized model revealed a positive relationship between the peer and substance use variables. Greater vulnerability to negative peer pressure was associated with more alcohol and cigarette use by Asian American youth. The peer domain variable also mediated the effects of the family domain variable on youth's substance use. Family support was negatively associated with vulnerability to substance use through the mediating effect of the peer variable. The *higher* the quality of youth-parent relations, the *lower* the vulnerability to negative peer pressure, which in turn, was associated with *lower* levels of substance use among youth. On the other hand, the path between the school and peer variables was not significant. School adjustment appeared to have little effect on youths' vulnerability to substance use behaviors.

When the sample was subdivided according to whether or not youth had lived in the United States for less than 2 years, we found no significant differences in the relationships between the protective factors and substance use. The main pattern of findings that appeared consistently across the two subsamples of youth were (a) a significant positive relationship between the peer and substance use variables; (b) a significant negative relationship between the family support and peer variables; and (c) a non-significant relationship between the school and peer variables. First, greater vulnerability to negative peer pressure was associated with more cigarette and alcohol use by Asian American youth. Second, the peer variable mediated the effects of the family variable on youth's substance use behaviors. Family support was negatively associated with vulnerability to substance use through the mediating effect of the peer variable. Higher levels of youth-parent communication were related to less vulnerability to negative peer pressure, which in turn, was associated with lower levels of substance use among youth. Third, the path between the school and peer variables was not significant. School adjustment appeared to have little effect on youths' vulnerability to substance use behaviors.

DISCUSSION

In this study, path analyses were applied to test the cross-cultural validity of the peer cluster theory on a sample of Asian American youth and to examine how the relationship among factors leading to substance use may vary depending upon immigration experience. The current study not only examined the theory of interest, but also

tested the peer cluster theory against three alternative models. The findings partially supported the cross-cultural validity of the peer cluster theory with this sample of Asian American youth. The model developed by Oetting and Beauvais emphasizes the importance of three socialization domains (peers, school, and family), and we found that for Asian American youth, the influence of peers and family remained strong, while the influence of the school was not significant. Consistent with the robust effects found in past studies (Hawkins et al., 1992), the direct influence of the peer domain variable on adolescent substance use was replicated in the present study. The finding that family bonding, in the form of high levels of youth–parent communication, serves as a protective factor against substance use and delinquency is also consistent with previous research (e.g., Brooks, Stuewig, & LeCroy, 1998; Elliott, Huizinga, & Ageton, 1985; Hirschi, 1969; Kafka & London, 1991; Resnick, et al., 1997; Whitbeck, Simons, Conger, & Lorenz, 1989). Contrary to the hypothesized model, however, school adjustment did not have an indirect influence on Asian American youths' substance use through the peer domain. In addition, we did not find significant differences in the path models when we separated youths based on recency of immigration. Rather than assuming that immigration experience and acculturation level do not influence the applicability of the peer cluster theory, however, an alternative explanation may be that the measure of acculturation was not sensitive enough to detect important variations along this dimension. Future studies would benefit from using more sensitive measures of acculturation that assess cultural behaviors, attitudes, or values in lieu of (or in addition to) length of United States residency.

The current study sheds new light on the mechanisms that underlie substance use for Asian American youth. Together with evidence from previous research, the findings show that peer clusters exert a significant influence on substance use as a mediating variable across ethnic groups, including Asian American youth. However, important variations exist in the source of the indirect effects mediated by the peer domain variable. A unique pattern of findings involved the family and school domain variables. The results showed that the path from the family to the peer variable represented the strongest association in the path model. Moreover, an effect size comparison suggested an ethnic-specific pattern. Compared to a sample of nonminority adolescents (Oetting & Beauvais, 1987), the magnitude of the relationship between family and peer domain variables appeared to be stronger for Asian American youth. Specifically, for the latter, the significant relationship between the family and peer domain variables ($r = -.52$) was in the "large effect" range (Cohen, 1977). However, for a nonminority sample, a significant but weaker relationship was found in the "medium effect" range ($r = -.36$).

There are several reasons why the family may represent such an integral socialization source for Asian American youth. An essential quality of collectivist cultures is that "individuals may be induced to subordinate their personal goals to the goals of some collective, which is usually a stable ingroup (e.g., family, band, tribe)" (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988, p. 324). In a study conducted by Triandis and his colleagues (1986), a factor analysis revealed that "Family Integrity" emerged as the strongest factor clearly differentiating the cultures under investigation. Asian and Latin American individuals placed a greater emphasis on Family Integrity (defined as "good and lasting relationships between parents and children," Triandis et al., 1988, p. 335) than North Americans and Europeans. As a central ingroup for Asian American youth, the family system may exert more control over their peer associations than their teachers or interactions in the school context, particularly at this relatively young

age. Thus, the norms and sanctions advocated by the family may override whatever influence the school may have on the youths' associations with their peers.

Other cultural values, in addition to a more collectivistic orientation, may contribute to the strong influence of families on peer clusters for Asian American youth. For example, some research has shown that Asian American families tend to display relatively more cohesion and solidarity compared to their White American counterparts (Connor, 1974; Morris, 1990; Tsui & Schultz, 1988). One study examining Asian American middle school students revealed that their parents offered more praise and support than those of their European American peers under various conditions (Pang, 1991). These Asian American students also expressed more desire to please their parents compared to the European American students. These demonstrated differences in family cohesion have been attributed to cultural values rooted in Confucian ethics, the traditional hierarchical structure of the family, interdependence among family members, and the belief that an individual's behavior reflects on the entire family's honor (Uba, 1994).

The present study also found that school adjustment does not appear to influence Asian American adolescent substance use through the peer domain. In contrast, previous studies with White and Hispanic samples (e.g., Flannery, Vazsonyi, & Rowe, 1996) have found a strong relationship between adolescent school adjustment, peer-related variables, and substance use. The lack of a significant influence of school for Asian American youth may be explained by the centrality of the family system for East Asian communities (Lee, 1982; Shon & Ja, 1992), which may have overshadowed the importance of the school context for these youth.

External stressors related to immigration, such as social isolation, may also have mitigated the school-related effects. Children from immigrant families may have difficulty gaining access to major social networks in the school. Previous studies (e.g., Sue & Zane, 1985) have found that recent Asian immigrant students report more social adjustment problems than their more acculturated counterparts. The social isolation often associated with immigration may prevent youth from establishing a deep attachment with their school environments; this lack of integration in the school setting may explain why school variables do not influence youths' peer relations. The current study is consistent with at least one other study (Brooks, Stuewig, & LeCroy, 1998), which also focused on an ethnic minority, immigrant population (Mexican American adolescents). Brooks et al. (1998) reported a similar nonsignificant effect for the influence of school among Mexican American males. These authors attributed the nonsignificant effect to the possibility that previous studies had often omitted family variables and this, in turn, tended to artificially amplify the relationship between school/peer variables and substance use. An equally plausible rationale may involve cultural values that inculcate the centrality of the family combined with the social isolation faced by many immigrant families. Thus, immigration-related experiences and a relatively strong emphasis on family, shared by both Mexican and Asian Americans, may play an important role in explaining the similar pattern of findings for these two ethnic groups.

Several limitations in the present study should be noted. First, as indicated previously, our measure of immigration experience may not have been sensitive enough to detect important within-group differences. Past studies have shown, however, that United States residency is significantly related to acculturation level (e.g., Duan & Vu, 2000). The inclusion of an acculturation-related variable is important when studying substance abuse issues in immigrant populations, and future research can capitalize

on the more sensitive acculturation measures now available [e.g., the Asian Values Scale (AVS) by Kim, Atkinson, & Yang (1999); the Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA) by Suinn, Ahuna, & Khoo (1992)] to test for culturally based variations in the applicability of peer cluster theory within immigrant groups. Second, Asian ethnic groups were aggregated because the sample size was not large enough to examine each subgroup separately. At times, this type of aggregation can obscure important variations among different Asian American groups. However, we were still able to achieve a good fit between the hypothesized model and these data, indicating that there was enough similarity across the youth participants to yield interpretable patterns. Moreover, we did not find significant differences among the immigrant groups.

Third, the selection of these youth participants was not random and may not be representative of all Asian American youth. The study carefully screened for at-risk individuals to ensure greater sensitivity to detect risk behaviors among Asian American youth. This sampling method was used because the purpose was not to establish population parameters, but rather, to test theory. Whether or not this peer cluster model is applicable to other samples is an empirical question that may be examined in future studies. Fourth, the study did not test the full peer cluster model as proposed by Oetting and Beauvais. We chose to focus on the more proximal variables associated with adolescent substance use and included variables in the peer, family, and school domains. Oetting and Beauvais also included the influences of "family strength" and "religious identification." Finally, the manner in which we operationalized the school domain variable may have influenced the results. Previous researchers, including Oetting and Beauvais (1987), have defined the school domain variable by assessing school adjustment (liking or success in school; academic performance). In the present study, we assessed school-based social comfort because social comfort is more sensitive to change in a prevention intervention context. Zane, Park, and Aoki (1999) have shown that interpersonal distress is significantly correlated with peer pressure to use drugs as well as actual nicotine and alcohol use among Asian American youth. This difference in the assessment of the school-related variable may help to explain the present findings.

The results of this study have important implications for counseling and prevention interventions with substance-using Asian youth. To facilitate the conceptualization of specific strategies relevant for this population, we present our recommendations in the framework of *culture-specific* and *culturally shared* types of interventions. "Culture-specific" refers to the components of the intervention model that are unique to the population at hand (in this case, Asian American youth). This study shows that socialization sources may vary according to ethnicity. With Asian American youth, the results indicate that efforts focused on the family as a socialization source may prove to be more effective and efficient. In addition, the school context may not prove to be a very powerful influence on the relations between Asian American youth and their intimate peers. Thus, a culturally competent prevention intervention program for Asian American youth should target its efforts on the family as a more important determinant of the youth's peer clusters.

On the other hand, "culturally shared" refers to the components of the intervention model that have previously been validated on other populations and that should be retained or enhanced for the population currently being studied. As originally conceived by Oetting and Beauvais (1987), the peer cluster model hypothesizes that peer clusters and other primary socialization sources greatly influence youths' risk

behaviors. Like other youth in the United States, Asian American youth are significantly influenced by their peer clusters—that is, their small, intimate group of friends—especially in their decisions to use alcohol and nicotine. Thus, effective prevention programs may be quite similar in their efforts to pay close attention to this important culturally shared dimension of youth's relationships with their intimate peers. For instance, practitioners may focus on teaching strategies for resisting negative peer pressure from the youth's close friends. Attention to the culturally shared features also allows programs that differ in their cultural and ethnic emphases to be evaluated using similar criteria. By combining both the culture-specific and culturally shared components of the intervention model examined in the current study, prevention efforts can be more effective for Asian American youth.

The present study points to some new directions for future research. First, the findings demonstrated the utility of model-testing across culturally diverse groups. The results revealed that the model was partially supported, and the commonalities as well as unique features associated with the applicability of the peer cluster model for Asian American youth are now better defined. To achieve greater theoretical clarity and to make more accurate recommendations for practice, future research should continue these efforts in testing etiological and risk/protective factor models of substance use with culturally diverse samples. Second, to more carefully examine intragroup differences, we tested the peer cluster model as differentiated by immigrant status. Although differences were not detected according to the youth's acculturation level in the present study, the measure of immigration experience may not have assessed intragroup variations in a sensitive manner. Future studies should more directly assess acculturation levels and other psychosocial characteristics associated with this adaptive process. As immigrants adapt to a new culture, individuals may differ in the extent to which they retain aspects of their culture-of-origin. While a number of studies have examined acculturation, few studies have investigated how cultural retention may moderate the effects of protective factors. Third, the identification of the family as an important socialization source for Asian American youth represents an initial step in understanding an important protective factor for this population. However, the *process* by which the family exerts its influence on the development of peer clusters and the quality of youth-peer relations still remains unclear. For example, researchers have examined family structure (one- or two-parent households), the role of substance-using parents and siblings, family's attitudes and norms towards substance use (e.g., Gil et al., 1998; Jessor & Jessor, 1977; Newcomb & Bentler, 1988). However, few studies have examined the mechanisms by which these family relationships affect youths' substance use behaviors (e.g., communication patterns between family members and the youth, the ways in which attitudes and norms are established, etc.). Our research suggests that there may be important sociocultural variations in these mechanisms. By attending to both the culture-specific and culturally shared aspects of the processes involved in adolescent substance use, researchers and practitioners may be able achieve greater success in their prevention efforts.

REFERENCES

- Adlaf, E.M. & Smart, R.G. (1985). Drug use and religious affiliation, feelings, and behavior. *British Journal of Addiction*, 80, 163–171.
- Amey, C.H., & Albrecht, S.L. (1998). Race and ethnic differences in adolescent drug use: The

- impact of family structure and the quantity and quality of parental interaction. *Journal of Drug Issues*, 28, 283–298.
- Au, J.G., & Donaldson, S.I. (2000). Social influences as explanations for substance use differences among Asian-American and European-American adolescents. *Journal of Psychoactive Drugs*, 32, 15–23.
- Austin, G.A. (1999). Current evidence on substance abuse among Asian American youth. In *Current evidence on substance abuse among Asian American youth* (DHHS Publication No. SMA 98–3193, pp. 169–219).
- Austin, G., Prendergast, M., & Lee, H. (1989). Substance abuse among Asian American youth. *Prevention Research Update*, 5, 1–25.
- Baumrind, D., & Moselle, K. (1985). A developmental perspective on adolescent drug abuse. *Advances in Alcohol and Substance Abuse*, 4, 41–67.
- Beauvais, F. (1992). Trends in Indian adolescent drug and alcohol use. *American Indian and Alaska Native Mental Health Research Journal*, 5, 1–12.
- Bentler, P.M. (1995). EQS structural equations program manual. Encino, CA: Multivariate Software.
- Bentler, P.M., & Chou, C.P. (1988). Practical issues in structural equation modeling. In J.S. Long (Ed.), *Common problems/proper solutions: Avoiding error in quantitative research*. Newbury Park, CA: Sage.
- Berry, J.W., Trimble, J.E., & Olmedo, E.L. (1986). Assessment of acculturation. In W.J. Lonner & J.W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 291–324). Beverly Hills, CA: Sage.
- Brook, J.S., Nomura, C., & Cohen, P. (1989). A network of influences on adolescent drug involvement: Neighborhood, school, peer, and family. *Genetic, Social, & General Psychology Monographs*, 115, 125–145.
- Brook, J.S., Whiteman, M., & Gordon, A.S. (1982). Qualitative and quantitative aspects of adolescent drug use: Interplay of personality, family, and peer correlates. *Psychological Reports*, 51, 1151–1163.
- Brook, J.S., Whiteman, M., Gordon, A.S., & Cohen, P. (1986). Some models and mechanisms for explaining the impact of maternal and adolescent characteristics on adolescent stage of drug use. *Developmental Psychology*, 22, 460–467.
- Brook, J.S., Whiteman, M., Gordon, A.S., Nomura, C., & Brook, D.W. (1986). Onset of adolescent drinking: A longitudinal study of intrapersonal and interpersonal antecedents. *Advances in Alcohol & Substance Abuse*, 5, 91–110.
- Brooks, A.J., Stuewig, J., & LeCroy, C.W. (1998). A family based model of Hispanic adolescent substance use. *Journal of Drug Education*, 28, 65–86.
- Bry, B.H., McKeon, P., & Pandina, R. (1982). Extent of drug use as a function of number of risk factors. *Journal of Abnormal Psychology*, 91, 273–279.
- Catalano, R.F., Kosterman, R., Hawkins, J.D., Newcomb, M.D., & Abbott, R.D. (1996). Modeling the etiology of adolescent substance use: A test of the social development model. *Journal of Drug Issues*, 26, 429–455.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences* (Rev. ed.). New York: Academic Press.
- Connor, J. (1974). Acculturation and family continuities in three generations of Japanese Americans. *Journal of Marriage and the Family*, 36, 159–165.
- DeWit, D.J., Silverman, G., Goodstadt, M., & Stoduto, G. (1995). The construction of risk and protective factor indices for adolescent alcohol and other drug use. *The Journal of Drug Issues*, 25, 837–863.
- Duan, C., & Vu, P. (2000). Acculturation of Vietnamese students living in or away from Vietnamese communities. *Journal of Multicultural Counseling & Development*, 28, 225–242.

- Elliott, D.S., Huizinga, D., & Ageton, S.S. (1985). *Explaining delinquency and drug use*. Beverly Hills, CA: Sage.
- Farrell, A.D., & White, K.S. (1998). Peer influences and drug use among urban adolescents: Family structure and parent-adolescent relationships as protective factors. *Journal of Consulting and Clinical Psychology*, 66, 248-258.
- Flannery, D.J., Vazsonyi, A.T., & Rowe, D.C. (1996). Caucasian and Hispanic early adolescent substance use: Parenting, personality, and school adjustment. *Journal of Early Adolescence*, 16, 71-89.
- Gil, A.G., Vega, W.A., & Biafora, F. (1998). Temporal influences of family structure and family risk factors on drug use initiation in a multiethnic sample of adolescent boys. *Journal of Youth & Adolescence*, 27, 373-393.
- Gorsuch, R.L., & Butler, M.C. (1976). Initial drug abuse: A review of predisposing social psychological factors. *Psychological Bulletin*, 83, 120-137.
- Harachi, T.W., Catalano, R.F., Kim, S., & Choi, Y. (2001). Etiology and prevention of substance use among Asian American youth. *Prevention Science*, 2, 57-65.
- Hawkins, J.D., Catalano, R.F., & Miller, J.Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112, 64-105.
- Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.
- James, W.H., Kim, G.K., & Moore, D.D. (1997). Examining racial and ethnic differences in Asian adolescent drug use: The contributions of culture, background and lifestyle. *Drugs: Education, Prevention, and Policy*, 4, 39-51.
- Jessor, R., & Jessor, S.L. (1977). *Problem behavior and psychosocial development*. New York: Academic Press.
- Johnston, L. (1973). *Drugs and American youth*. Ann Arbor, MI: Institute for Social Research.
- Johnston, L.D., O'Malley, P.M., & Bachman, J.G. (1985). *Use of licit and illicit drugs by America's high school students. 1975-1984*. Rockville, MD: National Institute of Drug Abuse.
- Kafka, R.R., & London, P. (1991). Communication in relationships and adolescent substance use: The influence of parents and friends. *Adolescence*, 26, 587-598.
- Kandel, D., Single, E., & Kessler, R.C. (1976). The epidemiology of drug use among New York high school students: Distribution, trends, and change in rate of use. *American Journal of Public Health*, 66, 43-53.
- Kim, B.S.K., Atkinson, D.R., & Yang, P.H. (1999). The Asian Values Scale: Development, factor analysis, validation, and reliability. *Journal of Counseling Psychology*, 46, 342-352.
- Kitano, H.L., & Chi, I. (1985). Asian Americans and alcohol: The Chinese, Japanese, Koreans, and Filipinos in Los Angeles. In D. Speigler, D. Tate, S. Aitken, & C. Christian (Eds.), *Alcohol use among U.S. ethnic minorities* (pp. 373-382). Rockville, MD: National Institute on Alcohol Abuse and Alcoholism.
- Kline, R.B. (1998). *Principles and practice of structural equation modeling*. New York: The Guilford Press.
- Labouvie, E.W., & McGee, C.R. (1986). Relation of personality to alcohol and drug use in adolescence. *Journal of Consulting & Clinical Psychology*, 54, 289-293.
- Lee, E. (1982). A social systems approach to assessment and treatment for Chinese American families. In M. McGoldrick, J.K. Pearce, & J. Giordano (Eds.), *Ethnicity and family therapy* (pp. 527-551). New York: Guilford Press.
- Maddahian, E., Newcomb, M.D., & Bentler, P.M. (1986). Adolescents' substance use: Impact of ethnicity, income, and availability. *Advances in Alcohol and Substance Abuse*, 5, 63-78.
- Moritsugu, J., & Sue, S. (1983). Minority status as a stressor. In R. Felner, L. Jason, J. Moritsugu, & S. Farber (Eds.), *Preventive psychology: Theory, research, and practice* (pp. 162-174). Elmsford, NY: Pergamon Press.

- Morris, T. (1990). Culturally sensitive family assessment. *Family Process, 29*, 105–116.
- Newcomb, M.D. (1994). Drug use and intimate relationships among women and men: Separating specific from general effects in prospective data using structural equation models. *Journal of Consulting and Clinical Psychology, 62*, 463–476.
- Newcomb, M.D., & Bentler, P.M. (1986). Substance use and ethnicity: Differential impact of peer and adult models. *Journal of Psychology, 120*, 83–95.
- Newcomb, M.D., & Bentler, P.M. (1988). The impact of family context, deviant attitudes, and emotional distress on adolescent drug use: Longitudinal latent-variable analyses of mothers and their children. *Journal of Research in Personality, 22*, 154–176.
- Newcomb, M.D., & Bentler, P.M. (1989). Substance use and abuse among children and teenagers. *American Psychologist, 44*, 242–248.
- Newcomb, M.D., & Felix-Ortiz, M. (1992). Multiple protective and risk factors for drug use and abuse: Cross-sectional and prospective findings. *Journal of Personality and Social Psychology, 63*, 280–296.
- Newcomb, M.D., & Harlow, L.L. (1986). Life events and substance use among adolescents: Mediating effects of perceived loss of control and meaninglessness in life. *Journal of Personality and Social Psychology, 51*, 564–577.
- Newcomb, M.D., Maddahian, E., & Bentler, P.M. (1986). Risk factors for drug use among adolescents: Current and longitudinal analyses. *American Journal of Public Health, 76*, 525–531.
- Newcomb, M.D., Maddahian, E., Skager, R., & Bentler, P.M. (1987). Substance abuse and psychosocial risk factors among teenagers: Associations with sex, age, ethnicity, and type of school. *American Journal of Drug and Alcohol Abuse, 13*, 413–433.
- Newcomb, M.D., Wyatt, G.E., Romero, G.J., Tucker, M.B., Wayment, H.A., Carmona, J.V., Solis, B., & Mitchell-Kernan, C. (1998). Acculturation, sexual risk-taking, and HIV health promotion among Latinas. *Journal of Counseling Psychology, 45*, 454–467.
- Nicassio, P.M. (1983). Psychosocial correlates of alienation: Study of a sample of Indochinese refugees. *Journal of Cross-Cultural Psychology, 14*, 337–351.
- Nicassio, P.M. (1985). The psychological adjustment of the Southeast Asian refugee: An overview of empirical findings and theoretical models. *Journal of Cross-Cultural Psychology, 16*, 153–173.
- Nicassio, P.M., & Pate, J.K. (1984). An analysis of problems of resettlement of the Indochinese refugees in the United States. *Social Psychiatry, 19*, 135–141.
- Norem-Hebeisen, A., Johnson, D.W., Anderson, D., & Johnson, R. (1984). Predictors and concomitants of changes in drug use patterns among teenagers. *The Journal of Social Psychology, 124*, 43–50.
- O'Hare, T. (1995). Differences in Asian and White drinking: Consumption level, drinking contexts, and expectancies. *Addictive Behaviors, 20*, 261–266.
- Oetting, E.R. (1992). Planning programs for prevention of deviant behavior: A psychosocial model. *Drugs & Society, 6*, 313–344.
- Oetting, E.R., & Beauvais, F. (1987). Peer cluster theory, socialization characteristics, and adolescent drug use: A path analysis. *Journal of Counseling Psychology, 34*, 205–213.
- Oetting, E.R., & Beauvais, F. (1990). Adolescent drug use: Findings of national and local surveys. *Journal of Consulting and Clinical Psychology, 58*, 385–394.
- Oetting, E.R., & Beauvais, F. (1991). Orthogonal cultural identification theory: The cultural identification of minority adolescents. *The International Journal of the Addictions, 25*, 655–685.
- Pang, V.O. (1991). The relationship of test anxiety and math achievement to parental values in Asian-American and European-American middle school students. *Journal of Research and Development, 24*, 1–10.

- Phinney, J.S. (1990). Ethnic identity in adolescents and adults: Review of literature. *Psychological Bulletin*, 108, 499–514.
- Pollock, V.E., Volavka, J., & Goodwin, D.W. (1983). The EEG after alcohol administration in men at risk for alcoholism. *Archives of General Psychiatry*, 40, 857–861.
- Resnick, M.D., Bearman, P.S., Blum, R.W., Bauman, K.E., Harris, K.M., Jones, J., Tabor, J., Beuhring, T., Sieving, R.E., Shew, M., Ireland, M., Bearinger, L.H., & Udry, J.R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association (JAMA)*, 278, 823–832.
- Sasao, T. (1991). Evaluation of the Asian Prevention Youth Project (Technical Report). Los Angeles: University of California.
- Sasao, T. (1992). Substance abuse among Asian/Pacific Islander Americans. In R. Cervantes (Ed.), *Substance abuse and gang violence* (pp. 3–23). Newbury Park, CA: Sage.
- Selnow, G.W. (1987). Parent-child relationships and single and two parent families: Implications for substance usage. *Journal of Drug Education*, 17, 315–326.
- Shon, S.P., & Ja, D.Y. (1992). Asian families. In A.S. Skolnick & J.H. Skolnick (Eds.), *Family in transition: Rethinking marriage, sexuality, child rearing, and family organization*, (7th ed.; pp. 439–535). New York: HarperCollins Publishers.
- Skager, R., Fisher, D.G., & Maddahian, E. (1986). A statewide survey of drug use and alcohol use among California students in grades 7, 9, and 11. Sacramento, CA: Office of the Attorney General, Crime Prevention Center.
- Sue, D. (1990). Counseling specific populations: Counseling Asian Americans. In D.W. Sue & D. Sue (Eds.), *Counseling the culturally different: Theory and practice* (pp. 189–208). New York: Wiley.
- Sue, S., & Zane, N. (1985). Academic achievement and socioemotional adjustment among Chinese university students. *Journal of Counseling Psychology*, 32, 570–579.
- Suinn, R.M., Ahuna, C., & Khoo, G. (1992). The Suinn-Lew Asian Self-Identity Acculturation Scale: Concurrent and factorial validation. *Educational & Psychological Measurement*, 52, 1041–1046.
- Triandis, H.C., Bontempo, R., Betancourt, H., Bond, M., Leung, K., Brenes, A., Georgas, J., Hui, H.C., Marin, G., Setiadi, B., Sinha, J.B. P., Verma, J., Spangenberg, J., Touzard, H., & de Montmollin, G. (1986). The measurement of etic aspects of individualism and collectivism across cultures. *Australian Journal of Psychology*, 38, 257–267.
- Triandis, H.C., Bontempo, R., Villareal, M.J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspective on self-ingroup relationships. *Journal of Personality and Social Psychology*, 54, 323–338.
- Tsui, P., & Schultz, G. (1988). Ethnic factors in group process: Cultural dynamics in multi-ethnic therapy groups. *American Journal of Orthopsychiatry*, 58, 136–142.
- Uba, L. (1994). *Asian Americans: Personality patterns, identity, and mental health*. New York: Guilford Press.
- Westermeyer, J., Neider, J., & Vang, T.F. (1984). Acculturation and mental health: A study of Hmong refugees at 1.5 and 3.5 years post-migration. *Social Science and Medicine*, 18, 87–93.
- Whitbeck, L.B., Simons, R.L., Conger, R.D., & Lorenz, F.O. (1989). Value socialization and peer group affiliation among early adolescents. *Journal of Early Adolescence*, 9, 436–453.
- Ying, Y. (1996). Immigration satisfaction of Chinese Americans: An empirical examination. *Journal of Community Psychology*, 24, 3–16.
- Zane, N.W.S., Aoki, B., Ho, T., Huang, L., & Jang, M. (1998). Dosage-related changes in a culturally-responsive prevention program for Asian American youth. *Drugs & Society*, 12, 105–125.

- Zane, N.W.S., & Huh-Kim, J. (1998). Addictive behaviors. In L.C. Lee & N.W.S. Zane (Eds.), *Handbook of Asian American Psychology* (pp. 527–554).
- Zane, N., Park, S., & Aoki, B. (1999). The development of culturally valid measures for assessing prevention impact in Asian American communities. In B.W.K. Yee, N. Mokuau, & S. Kim (Eds.), *Developing cultural competence in Asian-American and Pacific Islander communities: Opportunities in primary health care and substance abuse prevention* (Publication No. (SMA) 98–3193, pp. 61–89). Washington, DC: U.S. Department of Health and Human Services.
- Zane, N., & Sasao, T. (1992). Research on drug abuse among Asian Pacific Americans. In J. Trimble, C. Bolek, & S. Niemcryk (Eds.), *Ethnic and multi-cultural drug abuse* (pp. 181–209). Binghamton, NY: Harrington Park.
- Zuckerman, M. (1987). Biological connection between sensation seeking and drug abuse. In J. Engel & L. Orelan (Eds.), *Brain reward systems and abuse* (pp. 165–176). New York: Raven Press.