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「한국심리학회지 : 건강」은 한국심리학회의 기관지로서 연 4회 간행되며, 건강심리학 분야의 연구논문, 자료 및 논설을 게재하며, 건강심리학회의 공식적 학술 모임의 발표 내용과 건강심리학 분야의 국내 석·박사학위 논문 목록을 게재할 수 있다. 「한국심리학회지 : 건강」은 일정한 구독료를 받고 배부하며, 구독에 관해서는 한국건강심리학회로 문의하기 바란다.

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Parental Knowledge of Peer Networks and Peer Influences on Adolescent Substance Use: Ethnic Group Comparisons within a National Study of Adolescents†

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This study investigates the effects of parental knowledge for peer network and peer influence on adolescent substance use. Analyses were conducted by using the National Longitudinal Study of Adolescent Health dataset, being collected between 1994 and 1996. For the purpose of the present study, a supplemental sample of datasets (N = 2,841), including European American, African American, and Asian American adolescents, were used. Regarding the supplemental sample that was being used in the present study, the average age of participants was 15 years old (SD = 1.56) and the sample was evenly distributed between males (50%) and females (50%). In this study, two hypotheses were being tested: 1) parental knowledge of peer networks predicts adolescent substance use, and 2) peer adolescent substance use predicts adolescent substance use. The results of this study showed that there was a direct influence of peer substance use on adolescent substance use, which suggests that adolescents who reported that their friends used more substances were at increased risks of using more substances themselves. This result is consistent with previous findings. On the contrary, there were no significant findings in the relationship between parental knowledge for peer

† This paper was based on the first author's master's thesis.

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networks and adolescent substance uses. Additional analyses were conducted to investigate ethnic differences. Some interesting differences between European American and African American adolescents were also identified. The findings suggest that peer adolescent use is less related to adolescent substance use for African American adolescents when compared with European American adolescents. Based on these findings, this paper discusses suggestions related to adolescent substance use preventions and intervention programs, together with ethnic differences in parent and peer influence on adolescent uses, and later, suggests future directions.

Keywords: Parental Knowledge of Peer Networks, Peer Substance Use, Adolescent Substance Use and Ethnic comparison.

A large number of youth report that they have used alcohol and some illicit drugs by the time they graduate high school. According to the 2007 survey by the National Institute on Drug Abuse, 13.2% of 8th graders, 28.1% of 10th graders, and 35.9% of 12th graders used alcohol in the past 12 months and 19% of 8th graders, 35.6% of 10th graders, and 46.8% of 12th graders used any illicit drugs in their life time. Although the majority of adolescents who initiate or experiment with alcohol or drugs do not develop substance abuse or substance dependence disorders in adulthood (Weinberg, Rahdert, Colliver & Glantz, 1997), adolescent substance use continues to be a societal problem as it is commonly associated with other risk behaviors (e.g., drunken driving, school violence, and vandalism).

A growing body of research supports five domains of factors influencing adolescent substance use. These domains are individual, family, community, peer, and school (Gardner, Green & Marcus, 1994). Among these, particular attention has been given to parental and peer group influences (Allen, Donohue, Griffin & Turner, 2003; Simons-Morton, Haynie, Crump, Eitel & Saylor, 2001; Rodgers-Farmer, 2000).

Parent monitoring has been identified as a specific parenting strategy that helps to delay or even deter the initiation of adolescent alcohol and drug use throughout middle childhood (Chilcoat & Anthony, 1996). Parent monitoring is generally defined as parent's communication about and knowledge of where and with whom their child is spending time (Jacobson & Crockett, 2000). Previous research has shown that low levels of parent monitoring are associated with high levels of health risk behaviors and initiation of drug use among adolescents (Chilcoat & Anthony, 1996; Jacobson & Crockett, 2000; Westling, Andrews, Hampson & Peterson, 2008).

In spite of the important impact of parent monitoring on adolescent substance use, some studies indicate that parent monitoring may not always be as effective as parents think. Adolescents may intentionally try to hide their substance use from their parents, which may interfere with parenting strategies (Beck & Treiman, 1996; Bogenschneider, Wu, Rafaelli & Tsay, 1998). Haynie, Beck, Crump, Shattuck, & Simons-Morton (1999) suggest that parents often use more 'passive monitoring strategies' that depend on adolescents' self-reports of their whereabouts, their friends, or their activities. By using more active monitoring strategies, which involve meeting their teen's friends and meeting the parents of their teen's friends, parents may be able to obtain more accurate information about their children and their friends and in turn prevent their children from affiliating with deviant peers.

Starting in early adolescence, less time is spent with parents and more time is spent with peers. Although parental influences, particularly parent monitoring, have been presented as one of the most important factors that influence adolescent substance use, numerous studies suggest that peer influence is equally important to adolescent substance use. For instance, perceived peer substance use has been shown to be a significant predictor for both the onset and escalation of alcohol and marijuana use among adolescents (D'Amico., & McCarthy, 2006; Kobus & Henry, 2010). Furthermore, previous studies (Ashby Wills & Cleary, 1999; Simons-Morton, 2007) indicate that peer influence is a primary factor in the prediction of adolescent substance use.

Hypotheses

Based on a review of the literature, this study examined two questions: (1) Does parental knowledge of peer networks (e.g., meeting children's friends, meeting parents of children's friends) influence adolescent substance use? and (2) Does peer substance use influence adolescent substance use? Numerous studies have investigated parent and peer influences on adolescent substance use, however, most of these studies are cross-sectional and have not controlled for adolescents' previous substance use, which has been presented as important in relation to current substance use. The present study addresses this issue by using data from the National Longitudinal Study of Adolescent Health (Add Health) and investigating both parent and peer influences on adolescent substance use in Wave II when controlling for adolescent substance use in Wave I. Furthermore, since most of the research on parental and peer influences on adolescent substance use has been conducted with European American adolescents, this study extends prior research by comparing African

American adolescents and Asian American adolescents with European American adolescents and examining predictors of substance use across ethnic groups.

According to national surveys (Monitoring the Future, 2007; SAMHSA, 2002), both African American and Asian American adolescents are less likely to have used alcohol and illicit drugs as compared to other ethnic groups such as European American and Hispanic adolescents. A number of studies (Barnes, Farrell & Banerjee, 1994; Vaccaro & Wills, 1998; Watt & Rogers, 2007) have investigated the factors associated with low levels of adolescent substance use among African American adolescents, and the results indicate that African American adolescents appear to be less influenced by their peers and more influenced by their parents as compared to European American adolescents. Furthermore, some research has shown that more 'active' or 'strict' forms of parenting is more strongly associated with delaying the initiation of substance use for African American adolescents as compared to European American adolescents (Catalano, Morrison, Wells, Gillmore, Iritani & Hawkins, 1992). This tendency may explain lower levels of substance use among African American adolescents.

Relatively little is known about the factors that influence substance use for Asian American adolescents compared to other ethnic groups. The few studies (Catalano et al., 1992; Kim, Zane & Hong, 2002; Kim, Kwak & Yun, 2010; Pilgrim, Luo, Urberg & Fang, 1999) that are available report that both family (i.e., the quality of youth and parent relations, parents' disapproval of children's drug use) and peer (i.e., vulnerability to negative peer pressure) influences are significantly associated with substance use amongst Asian American adolescents. Kim, Kwak & Yun (2010) found parental influence were slightly greater in predicting adolescent substance use than peer influence among Korean adolescents.

Based on previous empirical studies investigating ethnic differences in the pattern of adolescent substance use, this study postulated that (1) peer substance use would be less strongly related to adolescent substance use for African American adolescents compared to European American adolescents, and (2) parental knowledge of peer networks would be more strongly related to adolescent substance use for African American and Asian American adolescents compared to European American adolescents.

Methods

Participants

The National Longitudinal Study of Adolescent Health (Add Health) is a

longitudinal study of adolescents in grades 7 through 12 in the United States. The initial sampling database for the Add Health study included all high schools in the United States that had an 11th grade and also had more than 30 students enrolled in the school (N=26,666). The initial sampling database was stratified by region of the country, degree of urbanity, the school size, school type, and ethnicity and 132 schools were selected as representative of U.S. schools. The Add Health data included both in-school and in-home surveys.

Four waves of the Add Health study have been completed so far. Wave I in 1994 - 1995, Wave II in 1996, Wave III in 2001 - 2002, and Wave IV in 2007 - 2008. Wave III and Wave IV samples consist of Wave I respondents; those respondents were 18 and 26 years old during Wave III interview and the same participants were 24 to 32 years old during Wave IV interview. For Wave III and Wave IV, the social contexts influencing the respondent's health behaviors were different from those in earlier waves. Thus, the present study used the data collected during Wave I and Wave II interviews only, given the current study's focus on parental knowledge of peer networks and peer substance use in relation to adolescent substance use.

Data on adolescent's substance use, parental knowledge of the peer networks and peer substance use were collected during the in-home survey. Since these data are pertinent to the factors of the present study, the following description focuses only on the in-home sample (Resnick, Bearman, Blum, Bauman, Harris, Jones, Tabor, Beuhrig, Sieving, Shew, Ireland, Bearinger & Udry, 1997; Sieving, Beuhring, Resnick, Bearinger, Shew, Ireland & Blum, 2001). In this study, the analytic sample was restricted to adolescents who participated in both Wave I and Wave II of the in-home surveys, whose parent(s) completed the Wave I in-home survey and whose sample weights were available (Chantala & Tabor, 1999). Furthermore, this study used three ethnic groups: African Americans (n = 2,910), Asian Americans (n = 947), and non-Hispanic European Americans (n = 8,317). In order to create relatively equal sample sizes for these three groups, 947 adolescents from each ethnic group were included in the analysis, including the total sample of Asian American adolescents and a random sample of African American (33% of eligible respondents) and European American adolescents (11% of eligible respondents).

Measures

Demographic Variables. The following were included as demographic covariates in the analyses: age, gender (0 = male, 1 = female), ethnicity (White, Black, Asian), adolescents'

perceptions regarding how close they were with their parents, parent's highest level of education, parents' alcoholism (dichotomous variable; 1 = one of parents has alcoholism), parents' marital status, and parents' perceptions of drug availability in their neighborhood. The first four variables were based on adolescents' self-report and the four latter variables were constructed by using the information from a parent survey in Wave I. Adolescents' perceptions regarding how close they were with their parents were assessed by summing the responses across four items. The four items are as follows: (1) "How close do you feel to your mother?" (2) "How much do you think she cares about you?" (3) "How close do you feel to your father?", and (4) "How much do you think he cares about you?" These items were rated on a five-point Likert scale, where 1 = (not at all); 2= (very little); 3= (somewhat); 4 = (quite a bit); and 5 = (very much). This scale shows adequate reliability (a =.74). Lastly, parents' perceptions of drug availability in their neighborhood was measured by one item, "In this neighborhood, how big a problem are drug dealers and drug users?" where 1 = (not at all); 2 = (some); and 3 = (very much).

Alcohol Use. Wave I adolescent alcohol use was measured using the following two questions: (1) "Have you had a drink of beer, wine, or liquor—not just a sip or a taste of someone else's drink—more than 2 or 3 times in your life?" and (2) "Over the past 12 months, on how many days did you drink alcohol?" The second question was rated on a seven-point Likert scale where 1 = (never); 2 = (1 or 2 days in the past 12 months); 3 = (once a month or less); 4 = (2 or 3 days a month); 5 = (1 or 2 days a week); 6 = (3 to 5 days a week); 7= (every day or almost every day). Based on Resnick et al. (1997), responses to these two alcohol use items were used to create an eight-level composite, ranging from 0 = (drink less than 2 or 3 times in your life) to 7 = (drink every day or almost every day in past 12 months). Wave II adolescent alcohol use was calculated in the same manner, except that the ever drank question referred to the time period since the last interview (i.e., during the past 12 months).

Marijuana and Other Illicit Drugs Use. Wave I adolescent drug use was measured using four questions asking about the number of times adolescents used each of the four specified drugs (e.g., marijuana, cocaine, inhalants, and other illicit drugs) during their lifetime. Wave II adolescent drug use was obtained using four questions asking about the number of times adolescents used each of the four specified drugs since the last interview. In order to test substance use initiation, these items were recoded into dichotomous variables

(0 = no, 1 = yes). Then, scale scores were created for Wave I drug use and Wave II drug use by summing across the four dichotomous variables, ranging from 0-4.

Parental Knowledge of Peer Networks. Parental knowledge of peer networks was assessed by summing the responses across the following four questions: (1) "Do you know what school your child's best friend goes to"; (2) "Have you met this friend in person?"; and (3) "Have you meet this friend's parents?" and (4) "How many parents of your child's friends have you talked to in the last four weeks?" The last question was rated on a seven-point Likert scale, ranging from 0 (none) to 6= (6 or more parents). In order to make the last item comparable to the three dichotomous questions, the responses to the last question were transformed into percentages. A higher value of the last question indicated that the parent talked with a greater percentage of the parents of their children's friends in the last four weeks. This scale shows adequate reliability (a =.66).

Peer Substance Use. Peer substance use was assessed by taking an average of the responses to two questions: (1) "Of your 3 best friends, how many drink alcohol at least once a month?" and (2) "Of your 3 best friends, how many use marijuana at least once a month?" These two items were rated on a four-point Likert scale, where 0 = (no friends); 1 = (one friend); 2 = (two friends); and 3 = (three friends). These two items were moderately correlated (r = .54).

Data analyses

STATA was used to analyze the data for this study, taking into account the characteristics of the clustered sample design (Chantala & Tabor, 1999). A series of multiple regressions were estimated to test the relationship between parental knowledge of peer networks and adolescent substance use and between peer substance use and adolescent substance use. In order to analyze ethnic differences in the relationship between the predictor variables (e.g., parental knowledge of the peer networks, peer substance use) and the criterion variable, multiple regression estimates were performed with the ethnicity variables (e.g., ethnicity-African Americans, ethnicity-Asian Americans) that were created using dummy codes (e.g., European Americans = 0 and African Americans = 1; European Americans = 0 and Asian Americans = 1). Preliminary analyses with the demographic covariate variables revealed that parents' perceptions of drug availability in their neighborhood, parental education, parents' marital status and parental alcoholism were not

significantly correlated with the dependent variables (e.g., adolescent alcohol use and drug use in Wave II). Thus, those demographic variables were excluded in the main analyses.

Results

Sample Descriptives

Table 1 displays the means, standard deviations, and the results of the ANOVA and Chi-Square tests for the demographic, dependent and independent variables across the three ethnic groups. As table 1 indicates, notable discrepancies were found between the groups on age $F(2, 2841) = 29.95$, $p < .001$, parental alcoholism, $F(2, 2090) = 12.25$, $p < .001$, parental knowledge of peer networks, $F(2, 2264) = 43.76$, $p < .001$, peer substance use, $F(2, 2745) = 14.69$, $p < .001$, adolescent Wave II alcohol use, $F(2, 2835) = 52.85$, $p < .001$, Wave II drug use, $F(2, 2838) = 24.39$, $p < .001$, parents' marital status, $F(2, 2297) = 22.95$, $p < .001$ and parents' education, $F(2, 2294) = 9.40$, $p < .001$. Parents of Asian American adolescents have higher educational backgrounds and are less likely to have alcohol problems compared to European American and African American parents. African American parents are more likely to be single or not married compared to their European American and Asian American counterparts. Parents of European American adolescents showed higher scores on parental knowledge of peer networks compared to African American and Asian American parents. However, the results showed that European American adolescents are more likely to use alcohol and drugs and to report higher levels of peer substance use compared to African American and Asian American adolescents.

Table 2 displays the correlations among the independent variables including the covariates and dependent variables. The correlation matrix revealed that parental knowledge of peer networks was not significantly correlated with peer substance use in Wave I or adolescent substance use in Wave II, whereas peer substance use was significantly correlated with Wave II adolescent alcohol use ($r = .41$, $p < .001$) and Wave II drug use ($r = .40$, $p < .001$). In terms of the covariates, relations to parents was significantly correlated with parental knowledge of peer networks ($r = .10$, $p < .01$). Moreover, relations to parents was significantly correlated with Wave II adolescent alcohol use ($r = -.11$, $p < .001$), Wave II drug use ($r = -.12$, $p < .001$), and peer substance use ($r = -.10$, $p < .001$).

Table 1.Descriptives (*Means*, *SD*) across Ethnic Groups

Variables	*Mean (SD)*				F/x^2
	European Americans (n = 947)	African Americans (n = 947)	Asian Americans (n = 947)	Total (N = 2,841)	
Child's age	15.72 (1.55)	15.82 (1.55)	16.24 (1.51)	15.93 (1.60)	29.95[a]**
Parent alcoholism	0.15 (0.36)	0.13 (0.34)	0.06 (0.25)	0.12 (0.32)	12.25[a]**
Relations to parent	18.51 (2.08)	18.22 (2.56)	18.20 (2.26)	18.32 (2.27)	2.97[a]
Parental knowledge	3.20 (0.71)	2.82 (1.00)	2.82 (0.89)	2.96 (0.89)	43.76[a]**
Peer substance use	0.86 (0.93)	0.74 (0.92)	0.63 (0.89)	0.75 (0.92)	14.69[a]**
Adol alcohol use (Wave I)	1.72 (1.85)	1.22 (1.71)	1.17 (1.63)	1.37 (1.74)	29.08[a]**
Adol drug use (Wave I)	0.49(0.84)	0.29 (0.57)	0.29(0.64)	0.36 (0.70)	24.39[a]**
Adol alcohol use (Wave II)	1.87 (2.00)	1.11 (1.74)	1.14 (1.69)	1.37 (1.85)	52.85[a]**
Adol drug use (Wave II)	0.42 (0.72)	0.24 (0.46)	0.25 (0.53)	0.31 (0.58)	24.39[a]**
Child's gender					
Male	48%	48%	54%	48%	1.61[b]
Female	52%	52%	46%	52%	
Marital status					
Single	2%	20%	2%	6%	22.95[b]**
Married	75%	45%	83%	56%	
Widowed	2%	6%	6%	3%	
Divorced	17%	18%	11%	11%	
Separated	4%	12%	2%	5%	
Parents' education	5.84 (2.12)	5.82 (2.31)	6.45 (2.27)	6.01 (2.25)	9.40[b]**

Note. [a]One-way ANOVA results, [b]Chi-Square Test results. Nominal variables as percent, interval or continuous variables as means and SD. Parental alcoholism is recorded as a composite score (father's alcoholism+mother's alcoholism); Parents' education:1 = ≤ 8th grade, 2 = ≥8th grade, 3 = vocational school, 4 = GED, 5 = high school graduate, 6 = vocational school after HS, 7 = college, but did not graduate, 8 = graduate from a college, 9 =≥ college

Parent and Peer Influence

No significant main effect was found for the relationship between parental knowledge of peer networks and adolescent alcohol and drug use (See Table 3). However, as shown in Table 4, a significant effect was found for Wave I peer substance use on Wave II adolescent alcohol use (β = .37, $p < .001$), such that higher levels of peer substance use at Wave I were associated with higher levels of adolescent alcohol use in Wave II. Similarly, a significant effect was found for peer substance use on adolescent drug use (β = .15, $p < .001$), indicating that higher levels of peer substance use at Wave I were associated with higher levels of adolescent drug use in Wave II (see Table 4).

Table 2. Correlations between Independent and Dependent Variables (N = 2,841)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Parent kw	-												
2. Peer sub	-.01	-											
3. Adol al-use:W1	.04	.58**	-										
4. Adol d-use: W1	.01	.52**	.47**	-									
5. Adol al-use:W2	.05	.41**	.53**	.32**	-								
6. Adol d-use:W2	.02	.40**	.38**	.47**	.47**	-							
7. Age	-.10**	.22**	.22**	.12**	.16**	.08**	-						
8. Gender	.06*	-.05	-.05	-.04	-.04	-.05	-.50*	-					
9. Parental edu	.26**	-.03	.01	-.03	.01	.01	-.03	-.03	-				
10. Parent mstatus	-.03	.06*	.06*	.04	.01	.00	.03	.01	-.01	-			
11. Parent alcohol	.00	.08**	.08**	.12**	.04	.04	-.00	.00	-.08**	.13**	-		
12. Rel-parent	.10**	-.10**	-.16**	-.17**	-.11**	-.12**	-.12**	-.08*	.02	.01	-.05	-	
13. Neighborhood[f]	-.06*	.08**	.02	.02	.01	.03	.02	.01	-.13**	.12**	.11**	-.06	-

Note. Parent kw = parental knowledge about peer networks, peer sub = peer substance use, adol al-use = adolescent alcohol use, adol d-use = adolescent drug use, parental edu = parental education, parent mstatus = parent's marital status, parent alcohol = parent's alcoholism, rel- parent = adolescents' perception regarding how close they are with their parents, neighborhood = parents' perceptions of drug availability in their neighborhood. *$p < .01$ ** $p < .001$.

Table 3. Summary of Regression Analysis for Variables (Parental Knowledge as IV) Predicting Adolescent Substance Use in Wave II

	Total (N = 2,841)	European Americans (n = 947)	African Americans (n= 947)	Asian Americans (n = 947)
Variables	*B(SE)*	*B(SE)*	*B(SE)*	*B(SE)*
Adolescent Alcohol Use (W2)				
Age	.02(.03)	.30(.05).05)	.13(.07)	.03(.05)
Gender	-.07(.11)	-.04(.16)	.06(.20)	-.04(.16)
Adolescent alcohol use (W1)	.59(.04)**	.68(.06)**	.29(.08)*	.68(.06)**
Relations to parents	-.16(.07)	-.06(.11)	-.10(.09)	-.06(.11)
Parental knowledge	.10(.05)	.05(.91)	-.06(.10)	.05(.06)
Adolescent Drug Use (W2)				
Age	-.01(.01)	-.01(.02)	-.01(.02)	-.01(.02)
Gender	.01(.04)	-.07(.07)	-.06(.05)	-.07(.07)
Adolescent drug use (W1)	.38(.05)**	.48(.07)**	.07(.05)	.48(.07)**
Relations to parents	-.08(.03)	-.01(.03)	-.02(.02)	-.01(.03)
Parental knowledge	.02(.02)	.01(.02)	-.05(.34)	.01(.02)

*p < .01, **p < .001.

Table 4. Summary of Regression Analysis for Variables (Peer Substance Use as IV) Predicting Adolescent Substance Use in Wave II

	Total (N = 2,841)	European Americans (n = 947)	African Americans (n= 947)	Asian Americans (n = 947)
Variables	*B(SE)*	*B(SE)*	*B(SE)*	*B(SE)*
Adolescent Alcohol Use (W2)				
Age	.00(.03)	.00(.05)	.13(.07)	.02(.04)
Gender	-.01(.09)	-.10(.14)	.06(.17)	-.02(.14)
Adolescent alcohol use (W1)	.47(.05)**	.45(.08)**	.26(.08)*	.53(.08)**
Relations to parents	-.10(.06)	-.14(.10)	-.09(.09)	-.07(.09)
Peer substance use (W1)	.37(.09)**	.45(.14)*	.18(.16)	.24(.12)
Adolescent Drug Use (W2)				
Age	-.03(.01)	.06(.06)	-.03(.02)	-.02(.01)
Gender	.02(.04)	-.02(.02)	-.09(.04)	-.05(.05)
Adolescent drug use (W1)	.30(.05)**	.39(.07)**	.04(.06)	.39(.08)**
Relations to parents	-.07(.03)	-.12(.05)	-.04(.03)	-.17(.02)
Peer substance use (W1)	.15(.03)**	.16(.05)*	.09(.04)	.08(.03)

*p < .01, **p < .001.

Ethnic Differences

To determine whether peer substance use would be less strongly related to adolescent substance use for African American adolescents, compared to European American adolescents, multiple regression estimates were obtained using an interaction term (i.e., ethnicity x parental knowledge of the peer networks) as the predictor variable, with adolescent alcohol use in Wave II and adolescent drug use in Wave II as the criterion variables. As shown in table 5, when Wave II adolescent alcohol use was the dependent variable, a significant main effect was found for ethnicity (β = -.41, p < .01), suggesting that African American adolescents report less drinking than European American adolescents. In addition, peer substance use (β = .47, p < .001) was found to be significant, indicating that adolescents who reported that their friends drink more also report that they themselves engage in increased drinking compared to those who do not endorse having friends who drink. No interaction terms were found to be significant.

When Wave II adolescent drug use was the dependent variable, a significant interaction effect between ethnicity and peer substance use was found (β = -.15, p < .01), indicating that there is a significant difference in the relationship between peer substance use and adolescent drug use between African American and European American adolescents. In order to probe this interaction effect, multiple regression estimates were obtained to investigate the relationship between peer

Table 5. Regression Table (Ethnic Differences): Summary of Regression Analysis for Variables (Peer Substance Use as IV) Predicting Adolescent Substance Use in Wave II

	Total (N = 2,841)	Total (N = 2,841)
Variables	*B(SE)*	*B(SE)*
	Adolescent alcohol use (W2)	**Adolescent drug use (W2)**
Age	.03(.03)	-.02(.01)
Gender	-.05(.09)	.02(.04)
Adolescent alcohol use (W1)	.43(.05)**	.28(.05)**
Relations to parents	-.11(.06)	-.07(.03)
Peer substance use	.47(.12)**	.19(.04)**
Black	-.41(.14)*	-.06(.04)
Asian	-.37(.12)*	-.06(.05)
Interaction 1[a]	-.37(.16)	-.15(.05)*
Interaction 2[b]	-.14(.13)	-.06(.05)

Note. [a] Interaction between ethnicity (Whites vs. Blacks) and peer substance use. [b] Interaction between ethnicity (Whites vs. Asians) and peer substance use. *p < .01, **p < .001.

substance use and adolescent drug use for African American and European American adolescents separately. The results supported the hypothesis that peer substance use is less strongly related to adolescent drug use for African Americans, compared to European American adolescents.

Lastly, in order to test whether parental knowledge of peer networks would be more strongly related to adolescent substance use for African American and Asian American adolescents compared to European American adolescents, another multiple regression was performed. No significant interaction effects were found for either Wave II adolescent alcohol or drug use. These results indicated that there were no significant difference in the relationship between parental knowledge about peer networks and adolescent alcohol and drug use between African American and European American adolescents or between Asian American and European American adolescents.

Discussion

This study sought to identify the effects of parental knowledge of peer networks and peer substance use on adolescent substance use using a nationally representative sample of adolescents. In addition, these relationships were examined across ethnic groups. Analyses revealed that there was no direct effect of parental knowledge of peer networks on adolescent substance use. The current finding is a departure from previous literature, which has demonstrated the significant influence of parent monitoring on adolescent substance use (Chilcoat & Anthony, 1996; Rodgers-Farmer, 2000). This discrepancy may be explained by noting the difference between the constructs of parent monitoring and parental knowledge of peer networks. The present study attempted to measure parental knowledge of children's friends by focusing on more specific or direct monitoring methods (e.g., meeting the children's friends and/or meeting the parents of the children's friends).

Consistent with the previous research on substance use (Simons-Morton, 2007; Rodgers-Farmer, 2000), the results of the present study highlights that higher levels of peer substance use are associated with higher levels of adolescent substance use. Apart from the cross-sectional design of previous studies, which limit causal inferences regarding relationships, the longitudinal design of the present study may imply direction and causality for the path between peer substance use in Wave I and adolescent substance use in Wave II.

However, there may be alternative explanations. For example, Bauman & Ennett (1994) argued that peer substance use was observed to be a substantial correlate of adolescent substance use partially due to two

additional mechanisms other than peer influence: peer selection and the adolescent's own projection. Based on these additional explanations, adolescent substance use may actually be affecting the substance use patterns of their peer group. For instance, adolescents who use more substances may have an affinity toward drug using peers (selection) or adolescents who use more substances may have a tendency to overestimate peer substance use by projecting their own behaviors onto their friends (projection). Thus, without taking into account these two additional explanations, the influence of peer substance use on adolescent substance use can be inflated.

In order to address this problem, the current study attempted to include Wave I adolescent substance use as one of the covariates when investigating the relationship between peer substance use at Wave I and adolescent substance use at Wave II. It is important to note that the strong influence of Wave I peer substance use on Wave II adolescent substance use remained the same after controlling Wave I adolescent substance use, lending greater support for a possible causal pathway between peer and adolescent substance use.

Ethnic Differences

Consistent with results from other national surveys, European American adolescents in the current study reported more frequent use of alcohol and drugs than did African American and Asian American adolescents. Furthermore, the present study showed that there was a significant difference between European American adolescents and African American adolescents in the relationship between peer substance use and adolescent drug use. This result is consistent with previous findings (Barnes *et al.*, 1994; Pilgrim *et al.*, 1999; Watt & Rogers, 2007) indicating that African American adolescents are less influenced by their peers compared to European American adolescents. Windle, Miller-Tutzauer, Barnes., & Welte (1991) suggest that African American adolescents tend to rely on their parents and other family members as resources for help, while European American adolescents tend to seek help from their peers. While having friends who use alcohol and/or drugs appears to be the significant predictor of drug use among European American adolescents, this was not the case for African American adolescents. One possibility for this tendency is that African American adolescents may view their environment differently compared to European American adolescents because of their historical and cultural experiences. African American adolescents may distance themselves from parents less than European American adolescents during adolescence because they see their family as 'the first line of defense against

a discriminating culture' (Willie, 1988, p.18).

However, in the present study, the parental factor (parental knowledge of the peer networks) was not significantly associated with adolescent substance use for either African American adolescents or Asian American adolescents. These results are not consistent with previous findings that suggest that parental factors are significantly related to adolescent substance use among African American and Asian American adolescents. These discrepancies may not indicate that parenting does not influence adolescent substance use for these two groups, but rather imply that the measure of parenting used in the present study may not have fully captured the breadth of parenting as to evidence a significant effect. Future studies will benefit from using a measure of parenting that assesses a broad range of parenting practices (e.g., strict forms of parenting, parents' disapproval of children's drug use) that were identified as important factors in relation to adolescent substance use among African American and Asian American adolescents by previous studies.

Limitations

First, there is a lack of information regarding psychometric properties (especially validity) of the measures used in the present study. In addition, the measure of parental knowledge of peer networks was based on parents' report. Using the information reported by others (e.g., adolescents) might yield different findings than those obtained in this study.

Secondly, although the present study used a nationally representative sample with a longitudinal design, allowing us to investigate the relationship between predictors and outcomes across time, these types of studies often have problems with biased attrition (Schulenberg, Maggs, Dielman, Leech, Kloska, Shope & Laetz, 1999). Attrition analyses for this study revealed that adolescents who participated in both waves of interviews reported less alcohol and drug use and their parents reported higher levels of parental knowledge about the peer networks. This tendency may result in underestimating the relationship between parental knowledge about peer networks and adolescent substance use by decreasing the base rates of adolescent alcohol and drug use in Wave I and Wave II.

Thirdly, in the regression analyses, peer alcohol use and marijuana use were combined to create a composite score for peer substance use, which was not consistent with how adolescent substance use was measured in this study. For instance, the present study looked at adolescent alcohol use and drug use separately. This decision to combine two items of peer alcohol and marijuana use was made to avoid the limitation of a single item measuring

peer substance use. However, it may have masked the unique effects of peer alcohol vs. drug use in predicting adolescent substance use. Future studies should explore the unique effects of peer alcohol and drug use by looking at peer alcohol use and marijuana use separately and also investigate how peer alcohol use and marijuana use interact with adolescent alcohol and drug use.

Lastly, it needs to be noted that the data for the present study were collected between 1994 and 1996. However, the trends in adolescent substance use have not changed substantially. According to the report from Wadley & Meyer (2011), there have been slight changes in trend of U.S. adolescent substance use in past 10 years; adolescence marijuana use has been slightly increased but by contrast, adolescent alcohol use has been gradually declined in recent years. Future studies needs to replicate of current study results with the most recent data from national studies.

Future Directions/Study Implications

Despite the limitations, the present study has raised some important issues. Few studies have addressed adolescent substance use longitudinally and within different ethnic groups. Previous studies have used convenience samples of low-income ethnic minority populations, which do not accurately represent minority adolescents more generally (Barnes *etal*., 1994). The data used in the present study were drawn from Wave I and Wave II of the In-Home sample of the Adolescent Health study, with a nationally representative sample of adolescents including Asian people from a variety of countries and ethnic backgrounds (e.g., Japanese, South Koreans, Filipinos, Vietnamese) as well as an oversampling of Chinese adolescents and African American adolescents from highly-educated families. In addition, the sample included suburban and rural as well as urban schools. In this sense, the present study can contribute to the field by providing a more accurate picture of ethnic minority groups (e.g., African Americans, Asian Americans) in the general population.

Consistent with previous studies (Simons-Morton, 2007; Oetting & Beauvais, 1987; Wills & Cleary, 1999), peer influence emerged as the most significant predictor of adolescent substance use. In light of this finding, a more robust test of causal pathway between peer substance use and adolescent substance use should be conducted for the future study. Furthermore, substance use prevention and intervention should include social skills training or assertiveness training, which teach adolescents to resist peer influences to use substances, while also enhancing their general coping skills. Furthermore, prevention efforts must continually reward non-drug related

activities or prosocial behaviors in order to counteract peer pressure, particularly for non-users.

Despite the importance of peer influence on adolescent substance use, teaching adolescents to resist peer pressure to use alcohol and drugs may have limited effects in reducing drug use among African American adolescents, given that the present study found no significant correlation between peer use and self-reported use of drugs among African American adolescents. A more careful examination of the relationship between peer substance use and adolescent substance use is warranted and may provide information on how to tailor interventions for specific ethnic minority groups to be more culturally relevant.

Lastly, age emerged as one of the important predictors for adolescent substance use in the present study. Future studies should investigate the relationship between parental knowledge of peer networks and adolescent substance use separately for different age groups (e.g., adolescents aged 10-14 vs. adolescents aged 15-18) or carefully examine the interaction between age and parenting variables or peer substance use on adolescent substance use.

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또래 관계에 대한 부모의 인식과 또래 영향력이 청소년의 물질사용에 미치는 영향 - 미국내 인종간 비교 종단 연구 -

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본 연구는 자녀의 또래관계에 대한 부모의 인식과 또래 영향력이 청소년의 물질 사용에 미치는 영향에 대해 연구 하였다. 이 연구는 미국 전역의 고등학생을 대상으로 1994년에서 1996에 걸쳐서 실시된 국립 청소년 건강 종단 연구(the National Longitudinal Study of Adolescent Health) 자료 중 유럽계, 아시아계, 아프리카계 미국 청소년 2,841명의 자료를 분석한 결과이다. 본 연구에서 사용된 자료의 참여자 평균 연령은 만 15세 (SD = 1.56) 였으며 남, 녀의 비율은 각각 50%였다. 두 가지 가설을 확인하는 것이 본 연구의 목적이다. 첫째, 자녀의 또래 관계에 대한 부모의 인식이 높을수록 청소년의 물질사용이 감소 할 것이다. 둘째, 또래의 물질 사용이 높을수록 청소년의 물질사용 또한 증가할 것이다. 그 결과 또래의 물질사용과 청소년의 물질 사용간의 관계가 통계적으로 유의미하게 나타났는데, 이러한 결과는 또래친구의 물질사용이 증가할수록 청소년의 물질사용 또한 증가한다는 선행 연구결과와 일치하는 것이다. 인종간 차이에서는 아프리카계 미국 청소년이 유럽계 미국 청소년에 비해서 또래 친구의 물질사용에 유의미하게 영향을 덜 받는 것으로 나타났다. 그러나 자녀의 또래 관계에 대한 부모의 인식은 청소년의 물질사용에 유의미한 영향을 미치지 못하는 결과를 보였다. 이러한 결과를 바탕으로 청소년 물질사용 예방 프로그램을 위한 제안과, 인종간 차이에 관한 논의 그리고 후속연구의 방향을 제시하였다.

주요어: 청소년 물질사용(adolescent substance use), 또래 관계에 대한 부모의 인식 (parental knowledge of peer networks), 또래 영향력(peer influence), 인종(ethnicity), 종단 연구 (longitudinal study)