

The Relationship between Peers and Substance Use among Urban Adolescents

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ABSTRACT

Peers are a considerable force within the lives of most adolescents, and particularly so among urban youth, where researchers have consistently noted the linkages between substance use of peers and adolescents' own behaviors. It is important to note, however, that peers not only have the potential to encourage substance use, but also to discourage the same. Peer disapproval has been shown to lower overall substance usage, and particularly among females. There remains a need, however, to better understand the nature of peer influence among urban youth, as it pertains to potentially positive and negative effects upon substance use. This study examines the relationship between adolescent substance use and peer influence, with a specific focus upon urban youth. Using a nationally representative sample of high school students, usage patterns of various substances are examined. Although contextual factors, including family characteristics and the availability of substances, are shown to yield significant associations with substance use, peer influence has both positive and negative associations. Among adolescent boys, peer disapproval of substance use is shown to be much more salient than among girls. The analyses and results are framed with ecodevelopmental theory, and the unique nature of peer relationships among urban youth are discussed.

KEYWORDS: Adolescence; substance use; peer influence; urban; ecodevelopmental theory; gender

The adolescent years are typically cast as a time of physical and emotional maturation, during which youth begin to spend greater portions of their lives outside of the family environment, and are exposed to a larger variety of potential influences, most notably of which are their peers (Blair and Dong 2021). Understandably, as youth spend increasingly more time with peers and the larger community contexts, there are a wide variety of risk-taking activities which may present themselves, including delinquency, sexual activities, and substance use. Researchers have often pointed to the need for further investigation of how these multiple contexts may impact adolescents' susceptibility to becoming involved in risk-taking behaviors, and particularly substance use (Chuang et al. 2005). Despite legal barriers, adolescents are increasingly likely to engage in substance use as they age, with alcohol being the most commonly used substance, with cigarette and marijuana usage becoming increasingly likely,

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thereafter (Johnston et al. 2019). American high school students seem to regularly partake of substances, as approximately 35% report drinking alcohol (Kann et al. 2014), achieving a feeling of being “drunk” roughly 2.5 times per month (Yurasek et al. 2019). It is estimated that approximately 3,200 adolescents will have their first cigarette, each day (Centers for Disease Control 2014), while an additional 23% of high school students report using marijuana (Kann et al. 2014).

Among adolescents, the use of substances have been associated with a wide variety of deleterious outcomes. The consequences of substance use have been shown to include poor school performance (Grigsby et al. 2017), the deterioration of both physical and mental health (Myers et al. 2001), higher rates of substance use during adulthood (Boden et al. 2006), engagement in risky sexual behaviors (Chen and Jacobson 2012), and higher rates of juvenile delinquency (Bright et al. 2017) and subsequent criminal activities in early adulthood (Green et al. 2016). The harmful impact of adolescent substance use is not limited to the teen years, as numerous studies have linked such usage to lasting consequences in the adult years (Griffin et al. 2015). With such an array of potentially harmful consequences, researchers have emphasized the need for obtaining a better understanding of the contexts in which adolescent substance use takes place, with particular emphases upon the influence of peers (Medrut 2015).

Although a multitude of contextual factors, including parents, paid employment, and school environments can all potentially affect adolescents’ desire to partake of various substances, researchers have consistently demonstrated the associations between peers and adolescent substance use (Blair and Dong 2021). Peers serve as role models, and can demonstrate the viability of risk-taking behaviors (Van Ryzin et al. 2012; Wallace 2015), such as substance use, yet they can also encourage such usage, directly offer various substances, openly promote permissive attitudes concerning substance use, and even equate substance use with social acceptability within their respective peer groups and cliques (Crawford and Novak 2002; King et al. 2014). The desire to “fit in” with one’s peers can be quite substantial during the adolescent years, and membership in a given peer group has been shown to lead adolescents to adopt the substance use patterns of others (Su and Supple 2016).

The proposition of many previous studies is that adolescents will readily conform to the expectations of their peers (Grigsby et al. 2017), thus elevating peers to a role wherein they can substantively increase the risk of substance use. Researchers have revealed that having peers who engage in risky behaviors is associated with adolescents having higher rates of drinking alcohol (Akers 2009), smoking cigarettes (Kobus 2003), and using marijuana (Fagan et al. 2013). Beyond substance use behaviors, peers also affect perceptions of risk-taking behaviors, and particularly the perceptions of harm associated with such usage, thus influencing adolescents’ preferences for substance use (Leban and Griffin 2020). While heightened risks of substance use have been shown to be associated with a variety of peer characteristics, there have been calls for research which examines the manners in which peers can also dissuade others, thus reducing adolescent substance use (Farrell et al. 2017). It is logical to assume that promotive factors, which can potentially reduce the likelihood of adolescent substance use, can exist simultaneously with risk factors (Mmari et al. 2010).

While adolescents’ peers have the potential to increase rates of substance use, peers may also reduce the same rates of usage (Blair and Dong 2021; Brenner et al. 2011; Farrell et al.

2017). The need to disentangle the extents to which peers may both decrease and increase the likelihood of adolescent substance use remains (Santor et al. 2000). The unique nature of urban environments upon peer relationships (e.g., Lardier et al. 2018), as well as existing gender differences in peer influence (e.g., Galambos 2004), make such examinations even more necessary. This study will examine the influence of peer effects upon urban adolescent substance use, as well as the possible gender differences which may exist. Given the different nature of female and male peer relationships in adolescence (Galambos 2004), as well as the differences in their respective levels of substance use (Bright et al. 2017), this study will focus upon how urban females and males are affected by their peers, in regard to the use of various substances.

ADOLESCENT SUBSTANCE USE, PEERS, AND GENDER

Research on adolescent substance has repeatedly confirmed the fears of many parents – young females and males frequently partake of a variety of substances (Blair 2017). In the United States, adolescents are legally prohibited from purchasing and/or using alcohol, tobacco, and marijuana (and all other illegal and illicit substances), yet the majority of teens report having relatively easy access to substances (Bouchard et al. 2018; Dermody et al. 2020). On average, approximately 88% of high school seniors report having no difficulties in obtaining alcohol, while approximately 81% report having no difficulties in obtaining marijuana (Johnston et al. 2019). Although a wide variety of harsher and more dangerous substances exist, adolescents commonly use those which are most readily available. Approximately 66% of high school seniors report using alcohol, 34% report having smoked cigarettes, and 44% report having used marijuana (Johnston et al. 2019). Such usage patterns are not without consequences, as researchers have consistently noted the array of deleterious outcomes resulting from adolescent substance use (Boden et al. 2006; Grigsby et al. 2017), including involvement in juvenile delinquency, poor school performance, substance addiction, and engagement in a wide variety of risk-taking behaviors.

Alcohol and tobacco are typically the first substances used by adolescents, commonly during the early adolescent years, with the use of other substances, such as marijuana, occurring later (Bright et al. 2017). The presence of alcohol within family homes makes it readily available for most teens, and early experimentation typically leads to higher rates of usage in the mid-teen years (Hausheer et al. 2016). Gender differences do exist as females tend to consume higher rates of alcohol during the early adolescent years (Chen and Jacobson 2012), yet adolescent males' alcohol consumption surpasses that of females by mid-adolescence (Miech et al. 2015; Tomek et al. 2019). Researchers have suggested that the differences in adolescent females and males may be associated with differences in cognitive and emotional maturation, but also differences in their respective experiences with peers (Chan et al. 2013; Tomek et al. 2019). Drinking alcohol with ones' peers may be regarded as a means of demonstrating masculinity by adolescent males (Lemle and Mishkind 1989), yet among adolescent females, the same drinking behaviors may be regarded as unfeminine, and potentially lead to negative stigmatization by female peers (Shippee and Owens 2011). Indeed, adolescent females will often express open discouragement of drinking, thus providing a promotive influence from the peer environment (McCarthy et al. 2004). As might be anticipated, adolescent males tend to report higher levels of drinking (and consumption of most other substances), as compared to females (Blair and Dong 2021; Johnston et al. 2019).

Traditional cigarette smoking rates have declined, over recent years, as adolescents have chosen alternatives, such as vaping (electronic cigarettes)(Dutra and Glantz 2017). Females tend to be more likely to smoke, as compared to their adolescent male counterparts (Johnston et al. 2019). Among adolescent females, smoking has been associated with levels of stress and anxiety, wherein smoking is then regarded as a coping mechanism, yet this also may lead females to a more rapid dependency upon nicotine (Richardson et al. 2011). Emotional factors also play a role in smoking during adolescence, as low self-esteem, poor school performance, and lower levels of self-efficacy have all been associated with higher rates of smoking (Blair and Dong 2021; Kandel et al. 2004). In a manner akin to alcohol consumption, peer associations are a strong determinant of both initial smoking and subsequent smoking rates among adolescents (de la Haye et al. 2019; Fujimoto and Valente 2012). Among females, smoking is often linked to the desire to lose weight (thus conforming to gendered stereotypes concerning body image), and also to gain the approval of peers (Tomec et al. 1999).

Marijuana usage has been shown to be relatively common among adolescents, with almost half of all high school seniors reporting having tried it (Johnston et al. 2019). Although marijuana laws have become more relaxed over recent years, it remains a strictly illegal substance for adolescents. Marijuana is the third most used substance among teens (Blair and Dong 2021; Chen et al. 2017; Johnston et al. 2019), next to alcohol consumption and smoking, and most adolescents regard its use as acceptable and relatively harmless (Stoddard and Pierce 2018). Peer associations are a substantial factor in marijuana usage by adolescents (Defoe et al. 2018), and the pressure to conform (giving in to using marijuana) has been shown to be more salient among young males (Farrell et al. 2017). Oddly, while cigarette use has often been viewed favorably by adolescent females, marijuana use is considered to be less consistent with notions of femininity (Warner et al. 1999). The potential interweave of peer influence and gender stereotypes could be quite influential in the lives of adolescents, particularly as they are pursuing a sense of identity (Blair 2017).

UNDERSTANDING SUBSTANCE USE IN THE URBAN CONTEXT

Although adolescent substance use rates have declined somewhat over recent years, the ongoing rates of usage continue to raise considerable concerns over the well-being of adolescents (Marotta and Voisin 2017). Young females and males in urban areas, in particular, are often regarded as being at greater risk of substance use and its associated consequences (Lardier et al. 2018). The greater concern for urban adolescents is commonly linked to easier access to substances (e.g., alcohol, marijuana) within urban communities (Almeida et al. 2012), a wide variety of stressors (e.g., crime, poverty, congestion) common to urban areas (Brenner et al. 2013), and limited means to prevent and treat substance use and abuse (Kirshner 2015).

The contextual factors which have been shown to influence adolescent substance use clearly include family, parental, and peer characteristics, yet urban environments may affect, both directly and indirectly, the nature of the aforementioned factors. The stressful nature of urban life, for example, may lead adolescents to use various substances as a means of coping with those stressors (Jackson et al. 2009). Indeed, the standard sequence of substance use – alcohol, tobacco, and then marijuana – may be easier within an urban context, as these substances are more readily available (Almeida et al. 2012). Within urban neighborhoods, parental monitoring and control over their adolescents may be hindered by poor mental health and substance use on the part of the parents (Chuang et al. 2005). Additionally, the potential

influence of peers may be magnified within urban areas, where greater contact with peers, in conjunction with higher stress environment, may make adolescents more susceptible to peer pressure and the need to conform to peer group standards (Barman-Adhikari et al. 2014). This pattern of strong peer influence upon adolescent substance use has been demonstrated by previous studies (e.g., Clark et al. 2011; Wilson and Donnermeyer 2006).

The influence of urban peers, particularly as it pertains to substance use, requires a better understanding of how the multiple contextual factors may affect the propensity of youth to engage in substance use. Building upon ecological theory, which stipulates that adolescent development is influenced by relationships within the various levels of their social environment (Bronfenbrenner 1979), ecodevelopmental theory posits that adolescents are both influenced by their surrounding environment, and they themselves can also affect those same environments (Overton 2010). This perspective emphasizes developmental processes which can occur across multiple systems, including family, community, and particularly important in the consideration of adolescence, peers. Ecodevelopmental theory recognizes that systems such as family and peers can affect behaviors, such as adolescent substance use, in both individual and combined manners. A key benefit of this perspective is that it recognizes the potential for both positive and negative influence by peers (Booth et al. 2021; Brenner et al. 2011), and thus allows for a fuller understanding of how peers can potentially influence risk-taking behaviors such as substance use (Mason et al. 2016). Within this study, peers are precisely regarded as having the potential to both encourage and discourage substance use (Farrell et al. 2017), and these influences can exist simultaneously, depending upon the nature of the peers and larger social contexts. In order to more accurately assess this possibility, analyses of a representative sample of urban high school students will now be performed.

DATA AND METHODS

Data for this study are taken from the 2019 wave of the Monitoring the Future survey (Monitoring the Future: A Continuing Study of American Youth). The Monitoring the Future study began in 1975, with the intention of examining patterns of substance use among American adolescents. This annual survey assesses a broad range of behaviors and attitudes, in addition to its particular focus upon substance use. Respondents were assured of the confidentiality of their answers, making their answers more likely truthful. The sample is a nationally representative sample of high school seniors, taken from approximately 130 public and private high schools throughout the United States. After removing cases due to missing data, the resulting sample is comprised of 528 females and 471 males, all of whom are 17 to 19 years of age.

Three measures of substance use are utilized in this study. These are: alcohol use, vaping (electronic cigarettes), and marijuana. In terms of alcohol use, adolescents were asked how often they had drunk alcohol over the past 30 days. Responses ranged from: 1) "0 occasions," 2) "1-2 occasions," 3) "3-5 occasions," 4) "6-9 occasions," 5) "10-19 occasions," 6) "20-39 occasions," to 7) "40 or more occasions." In terms of vaping (electronic cigarettes), respondents were asked how often they have vaped over the past 30 days, with responses ranging from: "0 days," "1-2 days," "3-5 days," "6-9 days," "10-19 days," to "20 days or more." Respondents were also queried concerning their use of marijuana (i.e., how often they had used it over the past 30 days). Responses to the marijuana query utilized the same scale as the measure of alcohol use. These three substances are the most commonly used by adolescents in

the United States.

Central to this study is the consideration of potential peer effects, both positive and negative, upon adolescent substance use. Respondents were asked: "How do your CLOSE FRIENDS would feel about you doing each of the following things?" The items included "having five or more drinks (of alcohol)," "smoking one or more packs of cigarettes per day," and "smoking marijuana regularly." Responses to these items ranged from "not disapprove," "disapprove," to "strongly disapprove." Beyond disapproving of substance use, peers can also function as role models for such usage. Respondents were asked, in separate questions, how many of their friends use cigarettes and marijuana. Responses to these items ranged from "none" to "all," across a five-point scale. Given that potential peer influence is directly associated with peer contact, respondents were also asked how often they get together with friends, with responses ranging from "never" to "daily," across a six-point scale.

Parental and individual characteristics of the high school students were included in the analyses. Respondents were asked how many parents lived with them (coded as 1=two parents, 0=other than two parents). In terms of parental educational attainment, the highest level of parental educational attainment was coded as: 1=grade school, 2=some high school, 3=high school degree, 4=some college, 5=college degree, to 6=graduate degree. A measure of parental control, which encompassed how often parents: 1) required their children to do chores, 2) limited the time watching television, and 3) limited the time going out with friends. These three items were combined into a single composite measure, with the resulting responses ranging from 3 to 12 (with the higher score indicating greater parental control). Given that employment during the adolescent years is relatively common, and has been associated with substance use, respondents were asked how many hours, each week, they were employed. Responses to this item ranged from: 1) 5 hours or less, 2) 6 to 10 hours, 3) 11 to 15 hours, 4) 16 to 20 hours, 5) 21 to 25 hours, 6) 26 to 30 hours, 7) 31 to 35 hours, to 8) 36 hours or more. In regard to educational aspirations, respondents were asked how likely it was that they would go on to a four-year college degree (responses ranged from 1=definitely won't to 4=definitely will). Given that substance use may be related to being socially active, respondents were asked how often they went out in the evenings, each week. Responses to this item ranged from: 1=less than once each week, 2=once each week, 3=twice each week, 4=3 times each week, 5=4 or 5 times each week, to 6=6 or 7 times each week. Finally, respondents were asked how difficult it would be for them to obtain either marijuana or alcohol. Responses to these items ranged from "probably impossible" to "very easy," across a five-point scale, with a higher score indicating a greater ease of obtaining the substances.

Results

Table 1 presents the mean levels of alcohol, vaping, and marijuana use among urban adolescents. The means are presented by sex, in order to assess the differences which may exist in the substance use patterns of females and males. In terms of alcohol use, slightly more males (32.9%) reported having drunk alcohol over the past 30 days, as compared to females (28.6%). In regard to higher rates of alcohol consumption, 4.3% of males reported having 10 or more alcoholic drinks over the past month, while only 1.9% of females reported likewise.

Table 1. Levels of Substance Use among Urban Adolescents, by Sex

Alcohol		
	Females	Males
Used in past 30 days	28.6%	32.9%
Rate of Usage		
Never	71.4%	67.1%**
1-2 times	19.1	19.1
3-5 times	4.5	5.9
6-9 times	3.0	3.6
10-19 times	0.9	3.0
20-39 times	0.2	1.1
40+ times	0.8	0.2
Vaping		
	Females	Males
Used in past 30 days	20.8	28.0%
Rate of Usage		
Never	79.2%	72.0%***
1-2 days	6.6	5.3
3-5 days	1.9	4.2
6-9 days	1.9	3.4
10-19 days	1.7	2.5
20+ days	8.7	12.5
Marijuana		
	Females	Males
Used in past 30 days	21.0%	24.0%*
Rate of Usage		
Never	79.0%	76.0%
1-2 times	8.1	9.3
3-5 times	3.8	2.3
6-9 times	2.5	3.2
10-19 times	3.2	3.4
20-39 times	1.9	1.1
40+ times	1.5	4.7
N	528	471

Note: Significance levels refer to mean differences by sex;

*** $p < .01$, ** $p < .05$, * $p < .10$; Sample is limited to urban high school seniors, aged 17-19

A similar pattern is shown in regard to vaping, where males are significantly more likely to vape, as compared to females. Among males, 28.0% reported having vaped over the past 30

days, while only 20.8% of females reported doing the same. As with alcohol, higher usage rates are shown to be more prominent among males, with 15.0% vaping 10 or more days over the past month, as compared to only 10.4% of females. Marijuana usage rates follow a similar pattern, with higher usage rates reported by males, as compared to females (24.0% versus 21.0%, respectively). Across all three substances, it is quite clear that adolescent males report significantly higher rates of usage.

Table 2 presents the mean levels of peer characteristics among urban adolescents. In regard to peer disapproval of alcohol consumption, there are no significant differences between females and males, with both reporting a moderate amount of disapproval from their close friends about drinking. Cigarette use, however, was more strongly disapproved of by the peers of females, as compared to males. A similar difference in disapproval by peers is shown in regard to marijuana usage, where the peers of females were significantly more likely to disapprove of such use, as compared to the peers of males. The possible effects of these gender differences in peer disapproval of substance use will be addressed later in this study.

Table 2. Mean Levels of Peer Characteristics among Urban Adolescents, by Sex

	Females		Males	
	Mean	SD	Mean	SD
Peer Disapproval of:				
Alcohol (1-3)	2.30	0.80	2.30	0.84
Cigarettes (1-3)	2.70**	0.54	2.66	0.61
Marijuana (1-3)	2.20***	0.82	2.04	0.80
# of Friends who use:				
Cigarettes	1.50**	0.69	1.62	0.75
None	58.7%	50.5%		
A few	34.3	39.9		
Some	5.1	7.4		
Most	1.7	1.3		
All	0.2	0.8		
Marijuana	2.32	1.11	2.33	1.11
None	26.5%	26.3%		
A few	35.6	35.5		
Some	20.8	20.0		
Most	13.4	15.3		
All	3.6	3.0		
Get together w/Friends	4.03**	1.12	4.20	1.15
Never	1.7%	1.9%		
Few times/year	5.7	5.5		
1-2/month	23.3	15.5		
Once a week	36.7	38.9		
Almost daily	22.2	23.8		
Daily	10.4	14.4		
N	528		471	

Note: Significance levels denote difference between means: *** $p < .01$, ** $p < .05$, * $p < .10$;
Sample is limited to urban high school seniors, aged 17-19

Peers also represent behavioral role models for adolescents, and such modeling is particularly relevant in terms of substance use. As shown, smoking (cigarettes) is significantly higher among the peers of males. Interestingly, there are no significant differences in marijuana use between the peers of females and males. It is worth noting that only approximately one-fourth of the respondents reported that “none” of their friends used marijuana. While only a small percentage reported that all of their friends did so, this does suggest that marijuana use is quite common within the peer groups of urban adolescents. The

potential influence of peers as behavioral role models is magnified by the extent of contact they have with one another. As shown, the overwhelming majority of respondents report getting together with their friends on a fairly regular basis, as is typical among adolescents.

Table 3 presents the mean levels of peer, parental, and individual characteristics among urban adolescents. Approximately two-thirds of respondents reported having two parents in the home, which is consistent with national patterns. Parental educational attainment was moderate, with the average parent having some college, but not a four-year degree, on average. Parental control was also shown to be moderate, with females and males, alike, reporting approximately the same extent of parental control. Respondents also reported spending an average of 10 hours, per week, working in a paid job.

Table 3. Mean Levels of Peer, Individual, and Parental Characteristics among Urban Adolescents, by Sex

	Females		Males	
	Mean	SD	Mean	SD
Two Parents (0-1)	0.62	0.48	0.66	0.47
Parental Education (1-6)	4.16	1.31	4.18	1.31
Parental Control (3-12)	7.43	1.79	7.31	1.83
# Hours/week Working (1-7)	3.28	2.38	3.28	2.43
College Aspirations (1-4)	3.48***	0.84	3.09	1.02
# Evenings Out (1-7)	2.90**	1.34	3.11	1.41
Easy to get Marijuana (1-5)	4.26**	1.05	4.10	1.21
Easy to get Alcohol (1-5)	4.37*	1.09	4.23	1.22
N	528		471	

Note: Significance levels denote difference between means: *** $p < .01$, ** $p < .05$, * $p < .10$; Sample is limited to urban high school seniors, aged 17-19

Females and males did differ significantly in terms of their respective college degree aspirations, with females having higher educational attainment goals than their male counterparts. Males did report spending more evening out, which may very well be equated with educational attainment goals. In regard to their reported ease of obtaining marijuana, females appear to perceive that it is easier to obtain, as compared to males (4.26 versus 4.10, respectively). The same distinction was shown in terms of the ease of obtaining alcohol, where females reported a greater ease of getting it, as compared to males. These differences are intriguing, particularly in light of the differences in the actual usage patterns between female and male urban adolescents. In order to better disentangle such potential influences, multivariate analyses will now be presented.

Table 4. OLS Regression Models for Alcohol Use among Urban Adolescents, by Sex

	Females		Males	
	Model 1	Model 2	Model 1	Model 2
Peer Disapproval of:				
Alcohol	-.220*** (-.186)	-.189*** (-.160)	-.256*** (-.196)	-.268*** (-.206)
Cigarettes	.033 (.019)	.026 (.015)	.082 (.046)	.084 (.047)
Marijuana	.001 (.001)	.022 (.019)	-.127* (-.092)	-.094 (-.068)
#Friends use Cigarettes	.183*** (.134)	.177*** (.129)	.142** (.097)	.120* (.082)
#Friends use Marijuana	.090** (.105)	.067 (.079)	.156*** (.157)	.103* (.104)
Get together w/Friends	.191*** (.226)	.129*** (.153)	.120*** (.125)	.096** (.100)
Two Parents		.090 (.046)		.034 (.015)
Parental Education		.050 (.068)		-.022 (-.026)
Parental Control		-.046** (-.086)		.015 (.024)
#Hours/week Working		-.001 (-.003)		.058*** (.128)
College Aspirations		-.144*** (-.127)		-.047 (-.044)
#Evenings Out		.099*** (.139)		.003 (.004)
Easy to get Marijuana		.010 (.011)		.087 (.096)
Easy to get Alcohol		.091* (.105)		.072 (.079)
F	14.279	8.895	14.703	8.397
R-square	.141	.195	.160	.205
N	528		471	

Note: Standardized coefficients shown in parentheses; *** p<.01, ** p<.05, * p<.10; Sample is limited to urban high school seniors, aged 17-19

Table 4 presents the multivariate regression models for alcohol use among urban adolescents. Separate models are provided for females and males, with Model 1 containing only the peer characteristics (disapproval and modeling), and Model 2 containing all included independent variables. Among females, peer disapproval of alcohol use yields a strong negative association with respondents' reported alcohol consumption ($b = -.220$ in Model 1, and $b = -.189$ in Model 2). Having friends who smoke cigarettes, however, is shown to be positively associated with females' alcohol consumption in both models ($b = .183$ and $.177$, respectively). Peer use of marijuana is also positively associated with females' alcohol use in Model 1 ($b = .090$), but this association is insignificant with the full model. Peer influence is also evident in terms of getting together with them, which is positively associated with female alcohol consumption ($b = .191$ and $.129$, in Models 1 and 2, respectively).

Among males, peer characteristics yield a pattern of associations which is similar to those shown among females, such that peer disapproval of alcohol is negatively associated with actual consumption, yet cigarette and marijuana use, along with greater peer interaction, are associated with higher levels of alcohol consumption. Interestingly, while parental control is shown to be negatively associated with females' alcohol use ($b = -.046$), parental control does not significantly influence male alcohol use. Likewise, paid employment is positively associated with males' alcohol use ($b = .058$), but employment does not seem to affect females' use of alcohol. Among females, college aspirations significantly detract from alcohol use ($b = -.144$), yet college aspirations do not significantly influence the drinking behaviors of males. Finally, females' drinking behaviors are positively associated with spending more evenings out, yet the same effect is not shown to be significant among males. Clearly, there is a substantial set of distinctions between the factors associated with urban female and males adolescents' alcohol consumption, yet it also appears that peer influences are, for the most part, similar for both.

Table 5. OLS Regression Models for Vaping Use among Urban Adolescents, by Sex

	Females		Males	
	Model 1	Model 2	Model 1	Model 2
Peer Disapproval of:				
Alcohol	-.083 (-.044)	-.055 (-.029)	-.361*** (-.172)	-.368*** (-.175)
Cigarettes	.036 (.013)	.043 (.015)	.243 (.085)	.238 (.083)
Marijuana	-.155 (-.084)	-.108 (-.058)	-.346*** (-.156)	-.311*** (-.140)
#Friends use Cigarettes	.491*** (.223)	.479*** (.217)	.300*** (.127)	.258** (.109)
#Friends use Marijuana	.047 (.034)	.017 (.012)	.128 (.080)	.070 (.044)
Get together w/Friends	.286*** (.210)	.179*** (.131)	.253*** (.164)	.150** (.097)
Two Parents		.123 (.039)		-.032 (-.008)
Parental Education		.065 (.056)		.027 (.020)
Parental Control		-.032 (-.037)		.017 (.018)
#Hours/week Working		.059** (.092)		.076** (.105)
College Aspirations		-.225*** (-.123)		-.181** (-.105)
#Evenings Out		.155*** (.136)		.169*** (.135)
Easy to get Marijuana		-.007 (-.005)		.114 (.078)
Easy to get Alcohol		.157** (.113)		-.003 (-.002)
F	11.167	7.267	14.811	8.691
R-square	.114	.165	.161	.211
N	528		471	

Note: Standardized coefficients shown in parentheses; *** p<.01, ** p<.05, * p<.10;
Sample is limited to urban high school seniors, aged 17-19

Table 5 presents the multivariate regression models for vaping among urban adolescents. Among females, none of the peer disapproval measures are shown to be significant. However, having friends who smoke cigarettes is, as anticipated, positively associated with vaping, among females ($b = .491$ and $.479$, in Models 1 and 2, respectively). Given that the nature of vaping and cigarette use is largely the same, this form of peer influence is understandable. Further, higher levels of peer interaction (getting together with friends) is also positively associated with females' vaping usage. In comparison, when males' friends disapprove of alcohol and marijuana, these factors are negatively associated with males' vaping usage ($b = -.368$ and $-.311$, respectively, in Model 2). Similar to the pattern shown among females, having friends who smoke cigarettes is positively associated with vaping, among males, as is having a higher level of peer interaction. These effects raise questions concerning gender distinctions in regards to peer disapproval, as such disapproval seems to result in a more salient impact upon males. Beyond the peer disapproval differences, the full models for females and males reveal several similar patterns. For both sexes, paid employment and spending more evenings out are positively associated with vaping, while the desire to attain a college degree is negatively associated with vaping. These models certainly suggest that there are multiple layers of contextual factors which influence the likelihood of substance use among urban adolescents.

Table 6. OLS Regression Models for Marijuana Use among Urban Adolescents, by Sex

	Females		Males	
	Model 1	Model 2	Model 1	Model 2
Peer Disapproval of:				
Alcohol	.060 (.037)	.061 (.038)	.015 (.008)	.005 (.003)
Cigarettes	-.011 (-.005)	-.026 (-.011)	.247*** (.097)	.262** (.103)
Marijuana	-.450*** (-.284)	-.390*** (-.246)	-.555*** (-.281)	-.530*** (-.268)
#Friends use Cigarettes	.226*** (.120)	.216*** (.115)	.121 (.058)	.083 (.040)
#Friends use Marijuana	.247*** (.211)	.246*** (.210)	.226*** (.160)	.223*** (.157)
Get together w/Friends	.139*** (.119)	.036 (.031)	.233*** (.171)	.197*** (.144)
Two Parents		-.072 (-.027)		-.112 (-.034)
Parental Education		-.002 (-.002)		-.026 (-.022)
Parental Control		-.001 (-.002)		.034 (.040)
#Hours/week Working		.009 (.016)		.070*** (.108)
College Aspirations		-.100 (-.064)		-.120* (-.078)
#Evenings Out		.171*** (.176)		.045 (.041)
Easy to get Marijuana		.104 (.085)		.047 (.036)
Easy to get Alcohol		-.057 (-.048)		-.002 (-.001)
F	22.751	11.788	19.197	9.627
R-square	.208	.243	.199	.228
N	528		471	

Note: Standardized coefficients shown in parentheses; *** p<.01, ** p<.05, * p<.10; Sample is limited to urban high school seniors, aged 17-19

Table 6 presents the multivariate regression models of marijuana use among urban adolescents. Among females, peer disapproval of marijuana is shown to be negatively associated with marijuana use ($b = -.450$ and $-.390$ in Models 1 and 2, respectively), demonstrating that peer disapproval can be quite substantial in the determination of substance use. However, having friends who smoke cigarettes and, more precisely, use marijuana are shown to yield positive associations with marijuana use among urban females ($b = .216$ and $.246$ in Model 2, respectively).

The linkage between the effects of peer usage of cigarettes and marijuana is logical, given that both usually involving smoking. These patterns, though, are not the same within the models of males' marijuana usage. Among males, peer disapproval of cigarettes is shown to be positively associated with marijuana use ($b = .247$ and $.262$, in Models 1 and 2, respectively). These effects are not only unique to adolescent males, but they seem counter-intuitive. Among contemporary adolescents, it is possible that the perception of tobacco, with its inherent risk of addiction and cancer, may lead young males to view marijuana as a more acceptable alternative. This possibility will be discussed, shortly. As expected, peer disapproval of marijuana is negatively associated with males' own marijuana use ($b = -.530$ in Model 2). Unlike their female counterparts, males are not significantly influenced by having friends who smoke cigarettes, yet are affected by having friends who use marijuana ($b = .197$ in Model 2). These combinations of peer factors associated with cigarettes, as they affect females' and males' usage of marijuana, are rather fascinating, and perhaps underscore the intricate nature of multiple forms of substance use among urban adolescents. Furthermore, peer interactions (getting together with friends) seems to have a greater bearing upon males' marijuana use, as compared to females. Overall, these results point to a complicated context in which urban adolescents use various substances. The implications of these findings will now be discussed.

CONCLUSIONS AND DISCUSSION

Researchers, practitioners, and parents have long been concerned about adolescent substance use, and given the wide variety of potentially deleterious consequences of such usage, those concerns are well founded. Over recent years, the overall rates of adolescent substance use have declined, yet the findings of this study suggest that the consumption of alcohol, e-cigarettes, and marijuana remain relatively common. Like so many behaviors during the adolescent years, substance use typically occurs within a group context. Teens frequently gather at parties, raves, or to merely hang out with friends, and during such gatherings, it is not uncommon for alcohol, e-cigarettes, and marijuana to quickly become present. The traditional view of peers and substance use has been decidedly framed around the notion of peers as harmful agents – modeling, encouraging, and providing substances to other adolescents. As noted previously, this view, while typical of how many parents regard the friends of their adolescent daughters and sons, fails to recognize that peer influence can be positive and negative, in regard to its impact upon the likelihood of adolescents using various substances. The findings of this study provide strong confirmation of this broader perspective of peer associations during the adolescent years, as demonstrating the distinct manners in which peer characteristics influence females and males.

As shown in the multivariate analyses, the influence of peers upon adolescent substance use is not limited to encouraging such usage. Having friends who used substances was significantly associated with higher levels of substance use, yet peer disapproval was shown to

be equally substantial in affecting reported rates of substance use. For both females and males, peer disapproval of drinking was strongly associated with lower levels of alcohol consumption, demonstrating the presence of both positive and negative peer effects. The significant association shown between substance use and time spent with friends leaves little question about the social nature of substance use during the adolescent years. These years, after all, are a time of maturation and increasing independence, a time of identity formation, and a time of experimentation of many forms. Drinking, smoking, sex, delinquency – these are all behaviors which bring worries in the minds of parents, but are often viewed by adolescents as desirable, and particularly so within a peer context. To their credit, the impact of peer disapproval of substance use, as shown in this study, presents a different view of teens, not as a collective of young people determined to get into trouble, but a group of developing individuals who can both actually prompt one another to avoid trouble. This dualist potential of peer influence is in keeping with the ecodevelopmental perspective; simply, adolescents formulate attitudes and select behaviors based upon the influence of multiple levels of their surrounding environments. Their peers are not created from identical molds, and can affect one another in a multitude of manners.

Across the three substances studied herein, it is also worth noting that peer disapproval was more substantial in reducing males' substance use rates. This is quite intriguing, as researchers have previously demonstrated the intricate nature of female peer influence. In this study, the disapproval of males' peers was shown to be significantly associated with lower levels of drinking, vaping, and marijuana usage. These effects were not limited to the same substance category, but instead seem to suggest that when males' peers disapprove of one substance, it has a deterring impact upon their usage of other substances, as well. Although the overall substance use rates are similar for females and males, it seems apparent that there remains a gendered difference in how peers affect such patterns of use. At the very least, these findings call into question the stereotyped belief that adolescent males engage in substance use largely as a means of demonstrating their masculinity. Peer proximity (getting together with friends) is shown to be a salient predictor of substance use, yet the impact of peer disapproval suggests that adolescent males' use of various substances is being affected in manners which are perhaps more nuanced and discrete than previously thought.

The results shown in this study support the contention of ecodevelopmental theory, as the influence of peers among urban youth is quite substantial. There remains a need, however, for further investigation, as the cross-sectional data used in this study cannot provide a comprehensive examination of how these and other contextual factors within adolescents' environments are serving to influence their perspectives and eventual behavioral choices concerning substance use. While many have viewed peers influence as being fraught with a variety of rather harmful outcomes, these findings demonstrate that adolescents' peers can also provide a salient element of deterrence. A variety of potentially harmful behaviors within the teen years are tempting – substance use, sex, delinquency – yet it is clear that adolescents influence one another in positive manners, as well. These results support ecodevelopmental theory, and also underscore the differences among female and male adolescents. Future research should attempt to focus upon the more discrete processes operating with peer relationships during the adolescent years.

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