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## Peer Influences: The Impact of Online and Offline Friendship Networks on Adolescent Smoking and Alcohol Use

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### Abstract

**Purpose**—Online social networking sites (SNSs) have become a popular mode of communication between adolescents. However, little is known about the effects of social online activity on health behaviors. The authors examine the use of SNSs between friends and the degree to which SNS activities relate to face-to-face peer influences and adolescent risk behaviors.

**Methods**—Longitudinal egocentric friendship network data along with adolescent social media use and risk behaviors were collected from 1,563 tenth grade students across five Southern California high schools. Measures of online and offline peer influences were computed and assessed using fixed effects models.

**Results**—The frequency of adolescent SNS use and the number of their closest friends on the same SNS were not significantly associated with risk behaviors. However, exposure to friends' online pictures of partying or drinking was significantly associated with both smoking ( $\beta=.07$ ,  $p<.001$ ) and alcohol use ( $\beta=.08$ ,  $p<.05$ ). While adolescents with drinking friends had higher risk levels for drinking, adolescents without drinking friends were more likely to be affected by increasing exposure to risky online pictures ( $\beta=-.10$ ,  $p<.10$ ). Myspace and Facebook had demographically distinct user characteristics and had differential effects on risk behaviors.

**Conclusions**—Exposure to risky online content had a direct impact on adolescents' risk behaviors and significantly interacted with risk behaviors of their friends. These results provide evidence that friends' online behaviors should be considered a viable source of peer influence and

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that increased efforts should focus on educating adolescents on the negative effects of risky online displays.

### **Keywords**

social network analysis; adolescent; friends; social media; peer influence; alcohol drinking; smoking; adolescent drinking

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### **Introduction**

Smoking and alcohol use among adolescents are still prominent risk behaviors in the U.S. [1]. Despite falling rates in adolescent smoking over the past decade, 15.8% report smoking cigarettes in the past month and almost half (46.3%) have ever tried smoking [2]. Over 80% of adult smokers begin smoking during adolescence [1]. Alcohol use has declined steadily over the last two decades, but still remains the drug most widely used by today's adolescents [3]. The national Monitoring the Future (MTF) study indicates that 70% of students have consumed alcohol and half (51%) have been drunk at least once in their life by end of high school [3].

### **Adolescent friendships and Risk Behaviors**

Peer influences play a significant role during adolescence, a time when new identities, friendships, and peer group affiliations are solidified and parental influences gradually diminish [4,5]. Peers have a profound effect on each other and may encourage experimentation of risky behaviors when there is normative pressure to do so [6]. There is also substantial evidence that adolescents' use of tobacco and alcohol are highly associated with their friends' use [7-10].

### **Adolescents and Social Media Use**

Recent increases in social media outlets have transformed traditional communication and information exchange mechanisms, as well as the dimensions of social influence. Online social networking sites (SNSs) such as Facebook, Twitter and Myspace have gained immense popularity among adolescents within the last few years and have redefined their network boundaries and spheres of influence. In the U.S., 95% of youth between 12-17 years old access the Internet on a daily basis and of these, 80% use SNSs [11]. Almost five times as many adolescents use SNSs (29%) instead of email (6%) for daily communication [12].

With increased accessibility through mobile devices, SNSs provide a mechanism for adolescents to connect with friends instantaneously [13]. Studies indicate that adolescents benefit from the socialization opportunities such as staying in touch, sharing pictures, exchanging ideas [13,14]. SNSs have also been used to foster community engagement, creative expression, and diversity [15].

Recent attention, however, has been directed toward uncovering the risks associated with SNS use including adolescents' creation and display of inappropriate content such as sexual references and substance use [16-19]. Exposure to risky content posted by friends can

cultivate unfavorable norms that are then rapidly spread through the online networks and contribute to the adoption of risky beliefs and behaviors [20]. Other risks include higher exposures to sexual solicitations, bullying [21], tobacco advertisements [22], and psychosocial consequences such as depression, anxiety, and loneliness [23,24], which may pave the way toward higher likelihoods of substance abuse, unsafe sex, or other self-destructive behaviors [15].

### **Social Media Contexts**

The prevalence of adolescent engagement in SNSs suggests that their online networks reflect their offline ones in that most online connections extend from existing face-to-face relationships [25]. Evidence also suggests that these sites are distinct in demographic distribution. In an ethnographic survey of both Myspace and Facebook users, boyd [26] described how race and class influenced adolescents' choice of SNS. Myspace was described as a place for creative expression, a portal for discovering new musical artists and tastes. Users were also more likely to be younger, Hispanic, and have lower socioeconomic status [27,28]. In contrast, the clean, predictable, and functional format of Facebook appealed to older adolescents who viewed Facebook as a marker of status and aspired to connect with friends in college. Migrating from Myspace to Facebook was a "growing up" process as "adult" relationships through Facebook superseded the need for more introspective features on Myspace [29].

### **Social Media Use and Health among Adolescents**

Little is known about the effects of social media use on adolescent health behaviors. One study of 400 adolescent Myspace profiles found that 56% of them contained alcohol references and among these 49% talked explicitly about alcohol use [30]. Studies of homeless youth indicate that online friendships were associated with both risky behaviors such as increased exchanges of sex for drugs or money and protective behaviors such as HIV/STI testing—depending on the type of relationships that were fostered and topics discussed through these networks [31,32]. Further understanding about the nature of online 'friendships' is necessary to mitigate these harmful effects on adolescents.

Online communication portals like Facebook and Myspace have the ability to simultaneously transmit new attitudes and behaviors to countless people beyond geographic boundaries [33]. Content displayed by peers can be a powerful source of influence through peer modeling which are likely to promote biased normative perceptions, especially for adolescents who have many friends on SNSs and for those who frequently visit these sites. The goal of this study is to investigate peer offline and online friendships to determine how online activities with friends might broker the peer influence processes by either encouraging or hindering the influence of peer risk behaviors on adolescent smoking and alcohol use. The questions examined are: (RQ1) whether there are positive associations between adolescent SNS activity and risk behaviors, and (RQ2) whether higher levels of online activity might amplify the effects of friends' risk behaviors on adolescent risk behaviors.

## METHODS

Data were drawn from the Social Network Study, a longitudinal study of high school adolescents designed to answer methodological and theoretical questions about data collection practices and effects of different peer relationships on risk outcomes [34]. The sample consisted of 10<sup>th</sup> grade students at five comprehensive high schools in the El Monte Union High School District<sup>1</sup>. At the time this study, El Monte was the ninth largest city of Los Angeles County with a population of approximately 113,500 and an ethnic distribution of 69.0% Hispanic, 24.9% Asian, 4.9% White, and .4% Black/African American [35].

### Study Design and Data Collection

The first two waves of the Social Network Study were collected in October 2010 and April 2011. Paper and pencil surveys were administered during class on a regular school day. Of the total 2,290 enrolled 10<sup>th</sup> graders, 2,016 returned valid parental consent forms (88.0%) with 1,823 agreeing to participate in the study. Some 28 of these students did not provide student assent, reducing the eligible pool to 1,795. A total of 1,719 students completed surveys at the first wave (T1) of data collection, 1,620 students completed the survey at the second wave (T2) and 1,563 students completed the surveys at both time points. All study protocols were approved by the Institutional Review Board of the University of Southern California.

### Measures

**Tobacco and Alcohol Use**—Smoking and alcohol use from T2 were used as the outcome indicators for this study. Smoking was coded into a 5-point smoking status score (1=not susceptible, 2=susceptible, 3=ever smoker, 4=past month smoker, 5=daily smoker). The items were based on responses to five questions<sup>2</sup>. Responses indicating *definitely not* to the first question “At any time in the next year do you think you will smoke a cigarette?” were coded as *not susceptible*; all others were coded as *susceptible*. For the two questions “how old were you when you first smoked a whole cigarette?” and “have you ever tried cigarette smoking, even one or two puffs?”, responses other than *not having ever smoked*, were coded as *ever smokers*. For the last two questions “during the past 30 days, on how many days did you smoke” and “have you ever smoked cigarettes daily,” responses other than *zero days* or *never smoked* were coded as *past month* and *daily smokers*, respectively. Due to a skewed distribution of 71.2% never-smokers at T2, the smoking variable was also dichotomized into “never-smokers” and “ever-smokers,” which included everyone who reported smoking at least once or more. The 5-point smoking status and ever-smoke indicators were both tested and compared.

Alcohol use was similarly coded into a 5-point alcohol use status score (1=*non-susceptible*; 2=*susceptible*; 3=*ever drinker*; 4=*past month drinker*; 5=*past month binge drinker*) and a dichotomized ever-drink indicator. The items included: “12-month drinking intention”, “age at first drink of alcohol except for religion purposes,” “number of days having at least one

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<sup>1</sup>These five high schools comprised the entire school district. None of these schools are considered charter or magnet schools.

<sup>2</sup>Items adapted from the Youth Risk Behavioral Survey (YRBS) and the National Health Interview Survey (NHIS).

drink of alcohol during the past 30 days,” and “number of days having five or more drinks of alcohol in a row during the past 30 days.”

**Social Media Use**—As an indicator for students’ SNS use, students were asked to indicate how frequently they visited the SNSs Facebook and Myspace in the past month (1=*never*, 2=*rarely [about once a month or less]*, 3=*occasionally [about once a week or less]*, 4=*frequently [about once every 2-3 days]*, and 5=*very frequently [about once a day or more]*).

**Egocentric Friend Characteristics**—To construct egocentric (personal) networks for each individual, students (ego) were asked to “name seven best friends regardless of where they live or go to school” and provide basic information about each of them (alters). Friends’ risk behaviors were assessed by asking students to respond whether their friends “ever smoked a cigarette” and “drink alcohol at least once a month” (1=*yes*, 2=*no*).<sup>3</sup> Friend smoking and drinking indicators were then dichotomized (0=*no friends smoke/drink*; 1=*one or more friends smoke/drink*). If students indicated using Facebook and Myspace, they were then asked whether their alters were also their friends through these SNSs (1=*yes*, 2=*no*). Friends’ online behaviors were assessed by asking whether alters ever “posted pictures of themselves partying or drinking alcohol online” and “talk about partying online.” Indicators for SNS friendships and friends’ online risk behaviors were created using the total number of alters for these items.

## Data Analysis

Descriptive analyses of students’ demographic characteristics for both T1 and T2 were conducted based on students who provided complete data for their smoking and alcohol use behaviors at both time points (n=1315). Fisher’s exact and Wilcoxon rank-sum tests were performed to determine whether these students were different from those who were excluded from analysis.<sup>4</sup> Myspace and Facebook users were compared to determine whether these two groups should be considered jointly as “SNS users” or as users of each distinct SNS. Intraclass correlations (ICC) for smoking and alcohol use outcomes indicated that within-school similarities on these variables were not statistically significant.

Multiple imputation using chained equations [36] was performed to estimate remaining missing values (.4 to 4% across 11 variables) in the dataset. Linear regression models with school-level fixed effects were fitted to test the effects of online activity with friends on smoking and alcohol use outcomes at T2 (RQ1) while controlling for these covariates at T1<sup>6</sup>. Interaction terms were then added to the model to test for any moderation effects between alters’ risk behaviors and the ego’s risk behaviors. The above analyses were

<sup>3</sup>Lifetime smoking and past-month alcohol use were selected because these indicators were more comparable in their prevalence rates. Furthermore, use of a past-month smoking indicator would not provide sufficient power for analyses conducted in this study.

<sup>4</sup>Those who were excluded from the sample (n=248) were more likely to be frequent users of Facebook (p<.001), students from school 2 (p<.001), Hispanic (p=.02), and more likely to have lower SES (p=.025).

<sup>5</sup>Of the remaining sample, 11 variables still had between .4% to 4% of values missing at T1 and between .2% and 8% missing at T2.

<sup>6</sup>School 4 was selected as the reference school based on descriptive analyses comparing the outcome indicators of all 5 schools across both data time points. School 4 had consistently lowest scores in all risk categories.

repeated with “ever-smoke” and “ever-drink” outcomes using logistic regression models. All analyses were conducted in STATA 12.0 [36].

## RESULTS

Self-reported demographic characteristics across the two waves of data are presented in Table 1. Students who responded to the survey were evenly distributed across gender and on average 15 years old. About two-thirds were Hispanic/Latino and about one-fourth were Asian, closely reflecting the ethnic distribution of El Monte City. Half of the student sample reported speaking English and another language equally at home and one-third of students reported speaking more English than another language. Socioeconomic status was represented by the ratio of rooms to number of people in the home. Students reported on average 3.3 rooms and 4.9 people living at home, indicating slight overcrowding [37]. The majority of students (86%) reported being in good health. At T2, 29.8% were at least ever-smokers (even one or two puffs) and 56.7% had at least one drink of alcohol (other than for religious purposes). Roughly one-third of students reported having at least one friend who smoked and/or consumed alcohol.

In terms of social media activity (Table 2), almost half of all students reported visiting Facebook and Myspace regularly (40% and 48%, respectively). At T2, students' Facebook use increased while Myspace use decreased (75% and 13%, respectively). At T1, Myspace appeared to be the most popular venue for online friendships (on average 2.7 of 5.5 nominated alters were Myspace friends), compared to Facebook (1.8 alters). On average, 34% of students had at least one friend who talked about partying online and 20% reported that their friends posted party/drinking pictures online.

The comparison between Facebook and Myspace user types revealed striking differences (Table 3). Facebook only users had higher grades (64% vs. 26% As and Bs), spoke more English at home (40% vs. 29%), and were more likely to have higher socioeconomic status (.89 vs. .59 rooms/people), but were less likely to be Hispanic (23% vs. 87%), less likely to have ever smoked (8% vs. 41%) or drink alcohol (35% vs. 69%). Given these differences, Facebook and Myspace were assessed as separate predictors in the following analyses.

Table 4 displays the main effects and interaction effect models for both smoking and alcohol use outcomes. The effects of SNS activity (RQ1) were mixed. Adolescents with a greater number of friends on either Facebook or MySpace did not report significantly higher risk behaviors. However, adolescents with a greater number of friends who posted pictures of themselves partying or drinking alcohol online were significantly more likely to report that they smoke ( $\beta=.11$ ,  $p<.001$ ) and use alcohol ( $\beta=.06$ ,  $p<.05$ ). While Facebook use did not exhibit significant effects on either risk behavior, higher levels of Myspace use was associated with alcohol use ( $\beta=.06$ ,  $p<.05$ ).

As can be expected, students' risk behaviors at T1 were the strongest indicators of their behaviors at T2. Similarly, friend and parent influences were significant for both adolescent smoking ( $\beta=.07$ ,  $p<.001$ ;  $\beta=.06$ ,  $p<.01$  respectively) and drinking (both  $\beta=.08$ ,  $p<.001$ ).

The number of friends nominated was negatively associated with smoking ( $\beta = -.08, p < .001$ ) but not alcohol use.

One marginally significant negative interaction effect was found between “having friends who post risky pictures of themselves online” and “friends’ smoking behaviors” ( $\beta = -.10, p < .10$ ). The interaction effect suggests that the degree of association between friends’ risky online behaviors and adolescents’ risky behaviors was moderated by whether or not the adolescent’s close friend(s) drink alcohol. While adolescents with drinking friends were at an elevated risk for drinking, exposure to risky online pictures appeared to pose a higher risk for adolescents whose close friend(s) do not drink alcohol.

The logistic smoking models were not significantly different from the described linear regression outcomes. In the logistic alcohol use models, online activities (posting pictures, Myspace use), and the academic achievement became insignificant, suggesting that there may be differential online effects that apply to adolescents at varying levels of alcohol use.

## Discussion

To our knowledge, this is the first study to apply social network analysis methods to examine the influences of adolescent SNS activities on their smoking and alcohol use. Social network analysis contributes to the understanding of peer influence processes by accounting for the individual’s social contexts and the perceived norms within those contexts. This study of egocentric networks used the characteristics of adolescents’ nominated friends and their shared online activities to help elucidate potential online influence mechanisms.

Consistent with earlier research, friend and adolescent risk behaviors were strongly associated [4,9]. We further demonstrate that exposure to friends’ risky displays online significantly contributed to adolescent smoking and drinking, while the frequency of SNS use and the number of online friendships alone did not. Myspace use was also associated with higher levels of drinking. These results suggest that friends’ online risky displays may be a viable source of peer influence.

Only alcohol use was significantly associated with Myspace use. The significant interaction effect between friends’ alcohol use and exposure to risky online portrayals of partying and drinking suggests that this risk is magnified in the absence of face-to-face drinking friends. Significance of these alcohol-related findings could be due to higher prevalence of alcohol consumption requiring less power to demonstrate statistical significance, or due to the social nature of drinking compared to smoking (16% vs. 6% of this sample reported drinking alcohol with a friend). Drinking behaviors may also be more easily modeled and learned than smoking, and thus more readily transmitted through non-face-to-face contexts. Since Internet access is almost ubiquitous among adolescents, online influences can occur at any time of day, in any setting, in the company of others or in isolation. This underscores the importance for more research on the mechanisms of peer influence through SNSs.

In accordance with earlier studies [26,28], Myspace and Facebook users were markedly different and differentially associated with risk outcomes. The significant associations

between Myspace and risk behavior could have been attributed to influences from its eclectic user-base, or that at-risk adolescents are naturally drawn to SNSs that can be tailored to suit their preferences. Perhaps due the expectation that Facebook was related to “growing up” and a college audience [29], students may perceive risky online behaviors as less favorable. In either case, our findings suggest that exposures to risky online displays are likely to contribute to biased normative perceptions of risk behaviors.

The number of nominated friends was protective against risk behaviors. This might appear to contradict previous studies that show an association between popularity and risk [6]. However, “close friendships” in this study were measured by the number of ego’s outgoing nominations, which is substantively different from measures of popularity, typically represented by the number of nominations received by ego [38].

## Limitations

There are several limitations specific to this study. First, findings are based on adolescents’ reports of their friends’ risk and online behaviors. While these reports may be prone to biases, studies have shown that one’s perceptions often provide more reliable indicators for health outcomes than the reality [8,10,39]. Secondly, as our study focused on online friendships between existing close friends, other aspects of their online relationships were not captured. Similarly, the measures used to assess online risk exposures (displays of partying) were general and could have been transmitted through any social networking channel or interpreted differently by each student. Future studies in this area would benefit from improved measures to assess online friendships and specific aspects of risky online displays and exposures. While the overall effects of online influences were small, they are likely to increase over time as SNSs become even more closely integrated with adolescents’ day-to-day interactions. Since our data were from 10<sup>th</sup> graders of one school district, results may not be generalizable to the larger adolescent population or to adolescents who were not surveyed or lost to follow-up. Lastly, as a secondary data analysis study, interviews with adolescents or parental figures were not possible. Such interviews in future studies would provide a powerful context for informing the reliability of reported behaviors and mechanisms by which SNSs influence behavior.

## Implications

Further research might examine how friendships may differ across online and offline contexts and monitor specific types of activities and interactions between friends. Mediators such as perceived norms, attitudes, self-efficacy, or friendship closeness should also be examined to inform a more robust model of online social influence mechanisms.

Future health education interventions might consider incorporating modules to teach adolescents about the harmful effects of posting risky behaviors online [20] and how these displays can negatively affect their own friends. Strategies may involve fostering norms that discourage or de-glamorize the posting of risky pictures since others are likely to perceive them at face value whether or not they reflect one’s true behavior. Online impressions [40] may bias perceived norms about risk behaviors by minimizing the appearance of negative consequences and simultaneously spreading these risky beliefs. Teachers, physicians, or



peers may effectively relay messages to adolescents about the harmful effects of risky online content or encourage students to leverage their close online friendships to create ‘healthy’ online content to bolster favorable norms through SNSs.

The change in SNS use trends over the course of this study serves as a reminder that technology advances occur rapidly, and that interventions must be adapted accordingly to retain their appeal to adolescents. When utilizing SNSs for health promotion, public health professionals should invest time in understanding the culture, norms, use patterns, and user base of these sites to ensure that strategies and messages resonate with the intended audience. While there are tremendous advantages to using social media for health promotion, further studies are necessary to advance the theory of online influence mechanisms in order to inform the design of effective social media interventions.

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## Abbreviations

<b>SNS</b>	Social Networking Site
<b>T1</b>	Time 1
<b>T2</b>	Time 2

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### Implications and Contribution

This study provides further evidence that adolescents who are exposed to friends' risky online displays are more likely to smoke and use alcohol. The effects are magnified for adolescents without face-to-face drinking friends. Continued research to examine online peer influence mechanisms are needed to effectively educate adolescents about these risks.

**Table 1**

## Self Reported Sample Characteristics (n=1,315)

	T1 %	T2 %
Age (mean)	15.1	15.4
Gender		
Female	50.4	50.6
Ethnicity		
Hispanic/Latino	65.2	63.5
Asian/Asian-American	26.5	27.1
White	5.4	5.7
African-American/Black	1.6	2.6
Native American	1.3	1.1
Language spoken at home		
Only English	13.3	13.6
Mostly English	19.5	20.3
English and another language equally	50.0	49.4
Mostly another language	14.3	14.0
Only another language	2.6	2.2
Socioeconomic status, rooms/people in household	.71	.72
Academic Achievement		
Mostly A's	11.5	10.9
Mostly A's and B's	24.2	27.6
Mostly B's	6.5	5.0
Mostly B's and C's	28.3	27.8
Mostly C's	6.6	7.3
Mostly C's and D's	15.0	11.8
Mostly D's	1.2	1.7
Mostly D's and F's	5.5	5.9
Mostly F's	1.2	2.0
Health Status		
Excellent	17.7	20.6
Very good	30.1	29.0
Good	38.5	36.6
Fair	11.9	11.1
Poor	1.9	2.7
Friends nominated (mean)	5.48	5.24
At least one friend had smoked a cigarette	39.8	36.9
At least one friend had alcohol once/month	37.7	34.8
Parent smoke		
None	70.4	71.3
One	23.4	21.5
Two	6.3	7.2

		T1 %	T2 %
Parent drink			
	None	51.6	55.7
	One	34.8	31.6
	Two	13.5	12.7
Smoking			
	Non-susceptible	61.8	63.6
	Susceptible	9.1	7.6
	Ever smoked	20.5	20.6
	Past 30 day smoke	6.4	5.8
	Daily smoke	2.4	2.4
Alcohol			
	Non-susceptible	37.0	38.2
	Susceptible	4.9	5.1
	Ever drink	30.9	32.1
	Past 30 day drink	12.5	10.7
	Binge drink	14.8	13.9

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**Table 2**

## Social Network Site Activity (N=1,315)

	T1	T2
Facebook use in the past month (%) <sup>1</sup>		
Never	41.0	21.1
Rarely (about once a month or less)	7.9	4.0
Occasionally (about once a week or less)	6.1	10.8
Frequently (about once every 2-3 days)	13.8	18.2
Very frequently (about once a day or more)	31.1	45.9
Myspace use in the past month (%)		
Never	30.6	59.9
Rarely (about once a month or less)	21.2	27.8
Occasionally (about once a week or less)	15.6	7.8
Frequently (about once every 2-3 days)	15.7	2.6
Very frequently (about once a day or more)	17.0	1.8
Average number of friends on Facebook (sd)	1.96 (2.42)	3.47 (2.28)
Average number of friends on Myspace (sd)	2.70 (2.59)	2.01 (1.92)
At least one friend talks about partying online (%)	34.4	31.0
At least one friend posts party/drinking pictures online (%)	20.4	18.6

<sup>1</sup> Facebook and Myspace use are not mutually exclusive.

**Table 3**

Comparisons of Mutually Exclusive Social Media Use Groups at T1

	Neither N=165	Facebook only N=223	Myspace only N=356	Both N=513	( $\chi^2$ ) p-value
Female (%)	37	48	51	56	<.001
Hispanic (%)	73	23	87	66	<.001
Speak mostly English at home (%)	32	40	29	33	.021
Socioeconomic status (mean)	.69	.89	.59	.72	F < .001
Academic achievement (% As and Bs)	35	64	26	35	<.001
Ever smoked (%)	19	8	41	32	<.001
Ever drank alcohol (%)	43	35	69	65	<.001

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**Table 4**

Associations between Online SNS Activity and Risk Behaviors (n=1,315)

	Smoking at T2		Alcohol Use at T2	
	Main effects model (β)	Interaction model (β)	Main effects model (β)	Interaction model (β)
Number of Facebook friends	.04	.04	.04	.03
Number of Myspace friends	.02	.01	-.04	-.01
Number of friends posted pictures partying or drinking	.11***	.09	.06*	.15**
Number of friends talk about partying online	-.02	-.04	.02	-.01
Facebook frequency	<.01	<.01	-.01	<.01
MySpace frequency	-.01	-.01	.06*	.06
Smoking/drinking at T1	.64***	.64***	.53***	.53***
At least one smoking/drinking friend	.07***	.05	.08***	.09**
Parent smoking/drinking	.06**	.06**	.08***	.08***
Age	-.05*	-.04*	-.02	-.02
Female	-.04*	-.04*	.01	.01
Hispanic	<.01	<.01	.02	.02
Socioeconomic status, rooms/people	.02	.02	.03	.03
Academic achievement	-.09***	-.09***	-.06**	-.06**
Health status	.01	.01	<.01	<.01
Number of friends nominated	-.08***	-.08***	-.03	-.03
School 1	.02	.02	.03	.03
School 2	.02	.02	.01	.02
School 3	.02	.02	.02	.02
School 5	.02	.02	.01	.01
Friend smoke/drink * Friends on Facebook		-.01		<.01
Friend smoke/drink * Friends on MySpace		.02		-.05
Friend smoke/drink * Friends post risky pictures online		.02		-.10*
Friend smoke/drink * Friends talk about partying online		.04		.06
Adjusted R <sup>2</sup>				

\* p<.05,

\*\* p<.01,

\*\*\* p<.001