# Adolescent Technology Use and Substance Use
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## Abstract

The primary goal of this study was to examine whether technology use moderates the relationship between parental alcoholism and substance use during adolescence. The sample included 328 14-16 year-old adolescent boys and girls. Consistent with the literature, adolescents who had an alcoholic parent reported relatively higher levels of alcohol consumption. More frequent text messaging was related to higher levels of alcohol consumption and more frequent e-mailing was related to higher levels of alcohol consumption and earlier cigarette smoking. These effects tended to be more pronounced in adolescents with an alcoholic parent. For boys, frequent television viewing also appeared to be a risk factor for early smoking, especially for those with an alcoholic parent. These results suggest that heavy use of technology during adolescence may be related to an increased risk of substance use.

## Sample

- 328 adolescent boys and girls (58% girls)

- 41% Caucasian; 22% African-American; 24% Hispanic; 5% Asian

- Age range = 14-16 years old; Mean age = 14.99 (SD=.70)

- Participants were in 9th or 10th grade and attending a public high school in Delaware, Maryland, or Pennsylvania

- The majority of the adolescents lived with their biological parents; 86% lived with their biological mother and 52% lived with their biological father

## Measures

### Parental Alcoholism

The *Children of Alcoholics Screening Test-6* (CAST; Jones, 1981) was used to assess parental alcohol use. A representative item from this measure is "Have you ever thought that one of your parents had a drinking problem?" For each of the six CAST items, the adolescent was asked to state whether their answer was in reference to their biological mother, biological father, step mother, step father, adoptive mother, or adoptive father. The response codes for the items were 0 = *no* and 1 = *yes*. The items were summed to create a scale score for each parental figure. An adolescent who had a biological father or biological mother with a CAST score of 2 or greater was classified as having a biological alcoholic parent. Previous research (Clair & Genest, 1992; Dinning & Berk, 1989) has supported the validity and reliability of the CAST-6.

### Adolescent Technology Use

The adolescents were asked to report how much time they spent watching television, text messaging, e-mailing/IMing, talking on the phone, playing video games or computer games, and surfing the web "on an average/typical day." The response scale ranged from 1 = *none* to 6 = *4 or more hours a day*.

## Measures

### Adolescent Substance Use

*Alcohol Consumption*. All of the adolescents were asked how much (on the average day) they usually drank beer, wine, and liquor in the last six months. The response scale ranged from 0 = *none* to 8 = *more than 8 drinks per day*. These three variables were summed to create a total consumption score. This score was linearly transformed to adjust for skewness.

*Cigarette Smoking*. The adolescents also were asked to report whether they had ever smoked cigarettes, and if so, how old they were when they smoked their first cigarette. This variable was coded so that 1 = *under 10*, 2 = *10-11*, 3 = *12-13*, 4 = *14-15*, and 5 = *never/ not yet*.

## Procedures

In the spring of 2006, adolescents who provided assent, and whose parents also provided consent, were administered a self-report survey in school by trained research personnel. The survey took approximately 40 minutes to complete. Upon completion of the survey, the adolescents were given a movie pass for their participation.

## Results

A series of factorial ANOVA models was conducted. The factors were parental alcoholism, gender, and the technology use variables (which were dichotomized). Separate models were run for each measure of technology use, yielding five models each for alcohol consumption and cigarette smoking.

### Television Viewing

The alcohol consumption model was not significant.

In contrast, the cigarette smoking model was significant ($F_{(7,286)}$ = 2.56, $p<.05$). Television viewing was not directly related to smoking. However, a significant two-way interaction was found between television viewing and gender ($F_{(1,286)}$ = 8.30, $p<.01$), indicating that smoking onset was earliest for boys who frequently watched television. A significant three-way interaction between parental alcoholism, gender, and television viewing was found ($F_{(1,286)}$ = 6.06, $p<.05$), suggesting that this effect was especially pronounced in boys with an alcoholic parent (see Figure 1).

### Text Messaging

The alcohol consumption model was significant ($F_{(7,266)}$ = 2.67, $p<.05$). A significant main effect was found for parental alcoholism ($F_{(1,266)}$ = 5.27, $p<.05$), indicating that adolescents with an alcoholic parent consumed more alcohol than those without an alcoholic parent. A significant main effect also was found for text messaging ($F_{(1,266)}$ = 14.14, $p<.001$), suggesting that adolescents who more frequently used text messaging consumed more alcohol, compared to those who less frequently used text messaging. Finally, a significant two-way interaction between parental alcoholism and text messaging was observed ($F_{(1,266)}$ = 4.25, $p<.05$), indicating that adolescents who had an alcoholic parent and reported frequent text messaging had the highest alcohol consumption levels (see Figure 2).

The cigarette smoking model was not significant.

### E-mailing and IMing

The alcohol consumption model was significant ($F_{(7,265)}$ = 2.49, $p<.05$). A significant main effect for parental alcoholism again was found, suggesting that adolescents who had an alcoholic parent consumed more alcohol than those who did not. A significant main effect also was found for e-mailing/IMing ($F_{(1,265)}$ = 7.47, $p<.01$), indicating that adolescents who used e-mail/IM frequently consumed more alcohol than those who used e-mail/IM less frequently.

The cigarette smoking model also was significant ($F_{(7,284)}$ = 2.32, $p<.05$). Similar to the previous model, a significant main effect for e-mailing/IMing was found ($F_{(1,284)}$ = 4.04, $p<.05$). A significant interaction between parental alcoholism and e-mailing/IMing also emerged ($F_{(1,284)}$ = 6.89, $p<.01$), suggesting that adolescents with an alcoholic parent who used e-mail/IM more frequently began smoking at a relatively younger age (see Figure 3).

*The alcohol consumption and smoking models were not significant for playing video games, listening to an IPOD/MP3 player, or surfing the web.
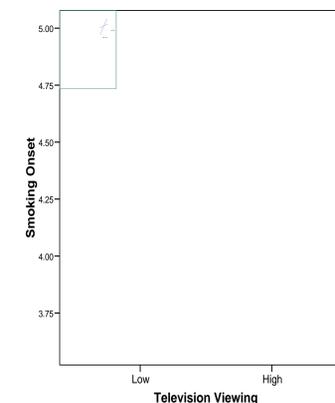


## Conclusions

Consistent with the literature, adolescents who had an alcoholic parent reported higher levels of alcohol consumption than adolescents without an alcoholic parent. Importantly, results from this study indicated that frequent text messaging and e-mailing also were associated with higher levels of alcohol consumption. In addition, frequent e-mailing was related to earlier cigarette smoking. Moreover, these effects tended to be more pronounced in adolescents with an alcoholic parent. Frequent television viewing also was linked to early smoking for boys; again, especially for those with an alcoholic parent. These results suggest that heavy use of technology during adolescence may be related to an increased risk of substance use, especially for adolescents with an alcoholic parent.