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Risk Estimates for Starting Tobacco, Alcohol, and Other Drug Use in The United States: Male-Female Differences and the Possibility that ‘Limiting Time With Friends’ is Protective*

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Abstract

Background—A specific facet of parental monitoring is known as ‘limiting time with friends’ (LTF). Here, we aim to learn whether LTF-associated differences in adolescent risk of starting to use tobacco, alcohol, and other drugs now might be as large as observed male-female risk differences.

Methods—Data are from the US National Surveys on Drug Use and Health, with annual large scale nationally representative samples of community-dwelling civilian age 12 years and older, conducted 2002–2009. Focus is on 12–17 year old participants, assessed via computerized self-interviews. Risk differences are estimated for all 12–17 year olds, males and females separately, and in relation to the LTF facet of parenting.

Results—Contingency table analyses disclose a female excess risk of initiating use of tobacco, alcohol, cocaine, opioids, and EMIRD, with male-female risk differences ranging from 0.1% (cocaine) to 1.6% (alcohol). LTF-associated risk differences were of similar magnitude for young people whose parents ‘always’ limit time with friends versus those with parents who are more relaxed about the LTF facet of parenting [e.g., RD = 0.4% (cocaine); 1.5% (alcohol)].

Conclusions—Not just for tobacco, but also for other drugs, there now is female excess risk of extra-medical drug use. Drug-by-drug, observed LTF-associated risk differences are about the same size as the female excess risk. This evidence provides a rationale to sustain focus on the LTF

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facet of parenting if the goal is to enhance prevention of precocious drug involvement and to delay its onset until later in the adolescent or adult years.

Keywords

incidence; risk; drug use; tobacco; alcohol; underage drinking; cannabis; cocaine; tobacco; opioids; parental monitoring; male-female differences; limiting time with friends

1. INTRODUCTION

In an attempt to extend a line of United States (US) epidemiology and prevention research on male-female differences in risk of starting to use tobacco, alcohol, cannabis, and other internationally regulated drugs (IRD), we took a step backward toward one of the suspected causal determinants of pre-adult drug use -- namely, lapses in parental monitoring and supervision (PM). We reasoned that a previously observed male excess risk of precocious drug use in the US was traced back to greater opportunity to try these drugs (e.g., see Van Etten and Anthony, 1999, 2001; Van Etten et al., 1999), and that the early male excess risk in the chance to try drugs might be traced back to a male-female difference in a specific facet of PM --- namely, a facet we call 'limiting time with friends' (LTF).

In our original within-team theorizing, we had thought that male-female differences in LTF might not exist in childhood and early adolescence, but would emerge by age 16–17, as parents relax the LTF facet for their male offspring but retain LTF control for their female offspring – e.g., due to parental concern about the especially disruptive effects of teen pregnancy on the life course trajectories of young women. Of course, it is possible that LTF has nothing to do with precocious drug involvement. Moreover, there no longer may be a clearcut male excess in risk of pre-adult drug use (Becker and Hu, 2008; Degenhardt et al., 2008; Keyes et al., 2008).

As such, the main aim in this brief communication is to provide some initial estimates of LTF-associated risk differences, looking across drug compounds in an array that encompasses not only tobacco and alcohol, but also cannabis and other selected internationally regulated drugs. At the same time, for reference, we offer epidemiological estimates of a more general utility in research on community-dwelling 12–17 year olds in the US, including sex-specific estimates of the risk of starting to use tobacco, alcohol, and other drugs for the first time each year, based on survey data gathered in 2002–2009. That is, unlike school survey data, these estimates pertain to adolescents who have quit or stopped attending school, as well as those found in school survey samples. In order to keep this report brief enough to meet short communication guidelines, we have not provided an overview of the background literature on parental monitoring and drug use, which has been covered in detail within prior research articles.

2. MATERIALS AND METHODS

Data are from the National Surveys on Drug Use and Health (NSDUH) 2002–2009. Conducted annually, the NSDUH field operations use multistage area sampling and recruitment to yield large scale nationally representative samples of community-dwelling

(non-institutionalized) U.S. citizens, age 12 and older. In this project we focus on the 60,000+ 12–17 year olds who participated between 2002 and 2009. Participation levels are typically above 70%, with confidential computer-assisted and audio-enhanced self-interviews used to gather a wide range of self-report data on health-related issues. Standardized survey items may be found online (<http://oas.samhsa.gov/NSDUH/methods.cfm>, last accessed April 12, 2013), and in government reports that summarize year-to-year male-female variations in some of the risk estimates reported here (e.g., for tobacco cigarette smoking) and that describe (a) some potential limitations in the risk estimates, as well as (b) comparisons with Monitoring the Future school survey estimates (e.g., <http://www.samhsa.gov/data/NSDUH/2k11Results/NSDUHresults2011.htm>, last accessed 15 April 2013).

The newly implemented SAMHSA Restricted-use Data Analysis System (R-DAS) has been used for this project because it provides correct weights for aggregate analyses of the pooled 2002–2009 NSDUH survey data (but not for the years 2002–2011), as well as Taylor series linearization variance estimates (NSUDH RDAS URL last accessed 17 April 2013: (<http://www.icpsr.umich.edu/icpsrweb/content/SAMHDA/rdas.html>)).

Risk differences (RD) have been formed with a numerator of all drug-specific initiates in a year and a denominator of those ‘at risk’ for starting use of that drug (i.e., exclusion of youths who had started in a prior year). R-DAS provides design effect information from which effective unweighted sample distributions can be derived for each contrast (e.g., contrasts with the most restricted ‘at risk’ subgroup sizes were for 31,700 males vs. 32,995 females; 32,348 LTF-strict vs. 33,324 LTF-relaxed). The online R-DAS data system does not offer use of the generalized linear model or other regression approaches, but these more advanced modeling approaches are not required to estimate sex-specific or LTF-associated risk differences (RD) and their 95% confidence intervals (CI).

3. RESULTS

As shown in Table 1, based on aggregate estimates from the NSUDH 2002–2009 data, an estimated 6.7% of 12–17 year olds in the US who were ‘at risk’ (i.e., never before had smoked tobacco cigarettes) started smoking tobacco cigarettes for the first time each year (95% CI = 6.5%, 6.9%); an estimated 15.9% became underage drinkers (95% CI = 15.7%, 16.2%); an estimated 8.2% initiated extra-medical use of an IRD compound such as cannabis, cocaine, or prescription opioids (95% CI = 8.0%, 8.4%). For cannabis, the incidence estimate is 6.0% (95% CI = 5.8%, 6.2%). Corresponding incidence estimates for cocaine and opioids are 1.0% (95% CI = 1.0%, 1.1%) and 3.7% (95% CI = 3.6%, 3.8%), respectively. Table 1 also discloses the previously mentioned female excess risk in starting to use, ranging from a negligible 0.1% estimated risk difference for cocaine ($p = 0.12$) to the 2.1% RD estimate for alcohol (with respect to all non-cocaine contrasts, $p < 0.05$).

Risk estimates for drug use initiation with ‘strict’ LTF when parents ‘always’ limit time with friends are lower than for young people with more relaxed LTF values (tobacco: 5.8% vs. 7.4%; alcohol: 13.5% vs. 17.9%; cannabis: 5.0% vs. 6.7%; cocaine: 0.8% vs. 1.2%; opioids: 3.1% vs. 4.2%; and EMIRD: 6.9% vs. 9.1%). Overall, the more relaxed LTF condition is

associated an excess risk in the anticipated direction, with risk differences ranging from 0.4 for cocaine to 4.4 for alcohol (all $p < 0.001$). Drug by drug, the size of each LTF-associated RD is greater than the size of the RD for the corresponding male-female contrast.

4. DISCUSSION

This short communication conveys estimates for the risk of starting to use tobacco, alcohol, and the other internationally regulated drugs in the 12–17 year old US population under study, with clear evidence of a female excess in a reversal of a previously well-documented male excess for most drugs. More to the point of this project's specific aims, the estimates demonstrate that the size of each LTF-associated risk difference is not appreciably different from the size of corresponding male-female risk differences that generally are considered to be of public health importance. Moreover, all LTF-associated risk differences were departures from the null in the direction we had expected ($p < 0.001$), with apparent protection in association with the 'always' LTF condition.

Notwithstanding limitations that face all cross-sectional self-report surveys of young people, and some minor year-to-year variations in NSDUH approach, this research draws strength from its recent nationally representative samples, almost 100% standardized assessment protocols, and separate modules on the topics under study, including a constant wording and module placement of the LTF parenting assessment. Whereas the female excess risk for starting to smoke tobacco cigarettes is widely appreciated, we hope that these estimates might provide 'useful instruction' about female excess risk for the other drugs studied here, and that the new LTF findings will help address skepticism about whether the LTF facet of parental monitoring is pertinent to risk of starting to use tobacco, alcohol, and other drugs during the teen years. If this skepticism can be overcome, and once support has been secured to continue this line of investigation, we hope to probe more deeply into this interesting topic.

There is another important detail and an unanticipated circumstance for discussion and consideration in future research. Namely, we posit that parents generally are more relaxed in their 'limit time with friends' monitoring and supervision of male offspring as compared to female offspring, but at the same time, these greater LTF constraints on young women apparently have not been sufficient to dampen their risk of starting drug use relative to male risk. With greater LTF constraints on young women, one might expect either no male-female difference in these risks or a male excess in risk of teen drug use, as have been observed in almost all 20th century epidemiological studies of male-female differences for drugs other than tobacco.

Even though 'limiting time with friends' is a theoretically plausible determinant of affiliation with drug-using peers and therefore a potentially important determinant of newly incident drug use, we think it might be true that the male-female difference in the LTF facet of parental monitoring is too small to provide differential protection for the young women under study. Or is the differential protection of the LTF facet only available at specific ages or in conjunction with other aspects of parental monitoring? Alternately, is the LTF facet of parental monitoring irrelevant in drug prevention programming, as skeptics might argue?

Before we dismiss the preventive importance of 'limiting time with friends,' it will be important to use deliberate experimentation. To illustrate, in ongoing prevention trials to evaluate the effect of parenting interventions on teen risk of initiating drug use, a micro-trial approach can be used to enhance the LTF facet of parenting. One potential enhancement might involve daily afternoon SMS texting to parents via mobile phones in order to remind them about limiting time with friends. Potentially assignable at random within the general context of an ongoing parenting intervention trial, this micro-trial evaluation of an LTF-specific intervention should lead toward a greater understanding of potential mechanisms through which adept parenting can serve drug prevention programming goals.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Estimated risk of starting to use tobacco, alcohol, and other drugs in a one year interval, for 12–17 year olds, overall, for females versus males, and in relation to the 'Limit Time with Friends' facet of parental monitoring. Data from the National Survey on Drug Use and Health (NSDUH), United States, R-DAS 2002–2009.

Drug:		Estimated Risk of Starting To Use in One Year (%) (S.E.) [*]	Estimated Risk Difference (RD), Female minus Male (%)	Estimated Risk (%) for 12–17 year olds whose parents do not 'always' limit time with friends (S.E.) [*]	Estimated Risk (%) for 12–17 year olds whose parents 'always' limit time with friends (S.E.) [*]	Est. RD, Relaxed minus Strict (%) [*]
Tobacco	All	6.7 (0.10)	1.0	7.4 (0.13)	5.8 (0.11)	1.6
	M	6.2 (0.13)		6.9 (0.18)	5.3 (0.15)	1.6
	F	7.2 (0.14)		8.0 (0.19)	6.3 (0.16)	1.7
Alcohol	All	15.9 (0.14)	2.1	17.9 (0.21)	13.5 (0.19)	4.4
	M	14.9 (0.20)		16.8 (0.28)	12.3 (0.27)	4.5
	F	17.0 (0.21)		19.0 (0.30)	14.7 (0.29)	4.3
Cannabis	All	6.0 (0.08)	0.4	6.7 (0.12)	5.0 (0.12)	1.7
	M	5.8 (0.12)		6.5 (0.17)	4.8 (0.17)	1.7
	F	6.2 (0.12)		7.0 (0.16)	5.2 (0.17)	1.8
Cocaine	All	1.0 (0.03)	0.1	1.2 (0.05)	0.8 (0.04)	0.4
	M	1.0 (0.04)		1.1 (0.06)	0.8 (0.06)	0.3
	F	1.1 (0.05)		1.3 (0.07)	0.8 (0.06)	0.5
Rx Opioids ^{**}	All	3.7 (0.06)	0.8	4.2 (0.08)	3.1 (0.09)	1.1
	M	3.3 (0.08)		3.8 (0.11)	2.7 (0.12)	1.1
	F	4.1 (0.09)		4.7 (0.13)	3.4 (0.13)	1.3
EMIRD ^{***}	All	8.2 (0.10)	0.7	9.1 (0.14)	6.9 (0.15)	2.2
	M	7.8 (0.14)		8.7 (0.19)	6.6 (0.21)	2.1
	F	8.5 (0.15)		9.5 (0.21)	7.2 (0.20)	2.3

^{*} Standard Error (S.E.), based on Taylor series linearization variance estimation for complex survey sample. Denotes LTF risk differences that depart from the null ($p < 0.001$ for relaxed minus strict contrast).

^{**} Extra-medical use (e.g., 'to get high' or otherwise not as intended by prescriber) of prescription (Rx) opioid pain relievers.

^{***} EMIRD: Extra-medical use of cannabis, cocaine, opioids, and other internationally regulated drugs covered in the NSDUH survey (e.g., amphetamines, sedatives, hypnotics, hallucinogens, stimulant-hallucinogens).

^{****} In order to make this table's estimates internally consistent, the male-female risk differences and the LTF-associated risk differences have been produced with the same dataset. Appendix Table 1 provides male-female risk differences based on all males and females, even if they did not respond to the LTF parenting items (to be made available as DAD online supplementary table I).