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Research paper

Common and differential factors associated with abstinence and poly drug use among Australian adolescents

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ABSTRACT

Background: Social norms relating to youth substance use are changing. In Australia, alcohol use among adolescents has fallen dramatically and tobacco and cannabis use have also reduced, albeit more moderately. The aim of the present study was to identify (i) factors associated with compliance with recommendations for zero intake of alcohol, tobacco, and cannabis and (ii) factors associated with poly drug use (intake of all three substances).
Methods: As part of the *Young Minds Matter Study*, a self-report survey was administered to 1661 Australian adolescents aged 15–17 years. The survey included items relating to: substance use; psychological, social, and protective factors; and demographic characteristics. Probit regression analyses were conducted to generate a model of factors associated with abstinence from all three substances and a model of factors associated with the use of all three substances.
Results: While there were substantial differences between the two models indicating that different factors may influence the initiation of substance use versus poly drug use, there were also several common factors that operated in opposite directions. These were child age, degree of parental supervision and monitoring, the experience of externalising problems, and a diagnosis of major depression.
Conclusion: The results highlight the potential utility of targeting high-risk youth by identifying (i) parents' supervision and monitoring behaviours and (ii) children's externalising problems and symptoms of depression. Directly addressing these factors in substance-use interventions may delay or prevent initiation while also reducing the likelihood of adolescents engaging in poly drug use.

Introduction

Substance use among adolescents is of great concern globally given the associated substantial physical and mental health problems in the teenage years and beyond (D'Amico et al., 2016; Hall, 2015; National Health and Medical Research Council (NHMRC), 2009). As a result, various government programs and public education campaigns have been introduced in an attempt to discourage substance use during the teenage years (Stockings et al., 2016). The context of the present study is Australia, where the three substances most commonly used by adolescents are alcohol, tobacco, and cannabis (Australian Institute of Health and Welfare (AIHW), 2014). Alcohol and tobacco have been the subject of mass media campaigns targeting both youth and the general population, while cannabis has received less attention. The focus of this study is the identification of factors influencing adolescents' use or non-use of these substances in the context of changing social norms relating to youth drug use.

Substance use prevalence

Increasing numbers of Australian adolescents report abstaining from alcohol, tobacco, and cannabis. Recent results from the 2016 National Drug Strategy Household Survey (AIHW, 2017) show an especially dramatic decline in alcohol consumption over time. The proportion of those aged 12–17 years classified as alcohol abstainers increased from 57% in 2007 to 82% in 2016. Similarly, 98% of 12–17 year olds reported in 2016 that they have never

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smoked cigarettes compared to 95% in 2007. The pattern for recent (within last 12 months) use of cannabis is somewhat different. The 2007 figure for 14–19 year olds was 13%, which increased to 16% in 2010 and then decreased to 12% in 2016.

The highly favourable trend for alcohol may be at least partly due to the much higher prevalence baseline providing more scope for movement, especially compared to tobacco use, but the reduction is nonetheless remarkable and represents a different pattern relative to alcohol use among older Australians, many of whom are continuing to drink at much the same levels over time (AIHW, 2017). Overall, however, alcohol consumption in Australia is on a downward trajectory (Chan et al., 2016), and more recent cohorts appear to be driving the trend (Livingston et al., 2016).

In terms of cannabis, there are concerns that prevalence rates may increase due to upward pressure being exerted by external forces. Medical marijuana is being legalised in some parts of Australia and several international jurisdictions are moving towards the legalization of recreational marijuana (Hall & Morley 2015; Subritzky, Pettigrew, & Lenton, 2016). These developments are likely to result in changing community attitudes to cannabis, which could potentially result in reduced perceptions of harm and increased experimentation (D'Amico et al., 2016). In addition, modified cannabis supply conditions may make the product more readily available for adolescents (Coffey & Patton, 2016).

Certain characteristics are associated with adolescents' use of alcohol, tobacco, and cannabis. In particular, male gender (Coffey & Patton, 2016; Goncy & Mrug, 2013), mood disorders (Mangerud, Bjerkeset, Holmen, Lydersen, & Indredavik, 2014), and specific genetic profiles (Palmer et al., 2015) have been identified as common attributes of users of these three substances. Youth with these characteristics may be thus more likely to use multiple substances, placing them at substantially higher risk of negative consequences. For example, those who use cannabis and tobacco tend to have more psychosocial problems and higher levels of cannabis dependence relative to those who only use cannabis (Peters, Budney, & Carroll, 2012), and poly drug use is associated with higher levels of usage of each of the substances (Kelly et al., 2015).

Intervention implications

Across various substances, earlier initiation has been found to translate into heavier subsequent use and worse outcomes, resulting in calls for interventions to occur earlier in adolescence (Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; Stapinski, Montgomery, & Araya, 2016). In addition, it has been proposed that interventions should focus on preventing the use of multiple rather than individual substances (Cohn et al., 2015; Hale, Fitzgerald-Yau, & Viner, 2014), which is consistent with the gateway hypothesis that the use of one substance can predispose young people to the use of other harmful substances (Kandel, Yamaguchi, & Chen, 1992). A recent systematic review concluded that identifying and focusing on adolescents who are more likely to use multiple substances can be more effective than universal programs targeting the wider population of adolescents (Onrust, Otten, Lammers, & Smit, 2016).

Interventions designed to address adolescents' poly drug use in Australia need to accommodate the current drug use environment described above that features (i) strong declines in youth drinking (but continuing high rates of risky drinking in the 18–24 year group (AIHW, 2017)), (ii) very low smoking prevalence, and (iii) rapidly changing social norms relating to cannabis. This is a challenging task that is complicated by limited understanding of the common predictors associated with poly drug use and how these may be modified to reduce harm.

To inform future intervention efforts in this area, the aim of the present study was to identify (i) attributes associated with adolescents' compliance with recommendations for zero intake of alcohol, tobacco, and cannabis and (ii) attributes associated with poly drug use. Comparing the outcomes for abstainers and poly drug users can provide insight into whether single intervention programs would be suitable for preventing both any substance use and the use of multiple substances, or whether separate interventions are needed for these two groups of adolescents.

Methods

Sample and recruitment

The present study reports on selected data from a national Australian survey examining mental health and wellbeing in children and adolescents (the *Young Minds Matter* survey: Hafekost et al., 2016). The larger study comprised data relating to a sample of 6310 children aged 4–17 years from randomly selected households across Australia. This included an oversampling of 16–17 year olds in recognition of their heightened risk of psychological problems (see Telethon Kids Institute (2015) for a detailed explanation of the recruitment process). Interviews were conducted with the parent or carer, and if the selected child was aged 11–17 years, they were invited to complete a self-report questionnaire in private using a tablet computer.

The household response rate was 55%, and 89% of eligible adolescents in these households completed the self-report. Participation was voluntary and written consent was sought from both children and their parents. The children's survey data were weighted by sex, age, family size, and household income to represent the resident population of 11–17 year olds in Australia provided by the ABS (2014), with additional adjustments made to account for any patterns in non-response and an oversampling of 16–17 year olds. Ethics clearance for the study was obtained from a University Human Research Ethics Committee.

The present study focused on data obtained from respondents aged 15–17 years (n = 1661). The selection of this age range was based on research indicating that 15 years of age represents a particularly important period for commencing substance use (Matuszka, Bácskai, Czobor, & Gerevich, 2016) and 18 years being the legal age to purchase alcohol and tobacco products in Australia. The sample profile is shown in Table 1.

Table 1
Sample profile.

	Raw (n = 1661)	Weighted (n = 857,920)
Gender (%)		
Male	50.9	50.6
Female	49.1	49.4
Age (%)		
15	18.6	32.6
16	43.2	33.5
17	38.2	33.8
Mean (SD)	16.20 (0.73)	16.91 (0.82)
Socio-economic status quintiles (%)		
1 (lowest)	15.6	15.8
2	18.4	18.3
3	18.3	19.2
4	23.4	23.4
5 (highest)	24.5	23.3
Country of birth (%)		
Australia	85.2	85.7
Overseas	14.8	14.3
Never used alcohol, tobacco, or cannabis (%)	39.7	44.3
Ever used all 3 substances (%)	16.6	14.8