



Early predictors of maturing out of marijuana use among young men



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HIGHLIGHTS

- No predictors of adolescent marijuana use differentiated those who persisted.
- Race did not moderate associations between predictors and persistent use.
- Black and white early monthly marijuana users are equally likely to continue.

ARTICLE INFO

Article history:

Received 17 June 2016

Received in revised form 12 September 2016

Accepted 21 September 2016

Available online 10 October 2016

Keywords:

Marijuana
Mature
Risk factors
Race
Cessation

ABSTRACT

Objective: Although several studies have delineated risk factors for adolescent regular marijuana use, few studies have identified those factors that differentiate who will and will not eventually stop using marijuana during young adulthood. This study examined the extent to which adolescent risk factors, including individual attitudes, temperament, and behaviors and peer, family, and neighborhood factors, could prospectively identify which adolescence-onset monthly marijuana users (AMMU) would stop using marijuana in young adulthood and whether race moderated these associations.

Method: Data came from 503 young men who were followed annually from the first grade through mean age 20 and then re-interviewed at mean ages 26 and 29. Young men who used marijuana at least monthly at least one year between ages 14 and 17 ($N = 140$) were compared to their peers who had not tried marijuana by age 17 ($N = 244$). The former group was divided into those who used at least weekly in adulthood ($N = 54$) and those who did not use at all in adulthood ($N = 66$) and these groups were compared to each other.

Results: Logistic regression analyses indicated that all except one of the adolescent risk factors significantly differentiated AMMU from nonusers. None of the predictors differentiated those who matured out from those who used weekly in young adulthood.

Conclusions: Future research on marijuana cessation should incorporate subjective life experiences, such as reasons for using and negative consequences from use, to help identify adolescents who are at risk for problematic use in adulthood.

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1. Introduction

Marijuana is the most widely used illicit drug in the U.S., with 22.2 million past month users aged 12 and older (8.4% of the population; Center for Behavioral Health Statistics and Quality, 2015). Adolescence-onset persistent use has been linked to mental health problems, such as psychosis and cognitive impairment (Meier et al., 2012; Volkow, Baler, Compton, & Weiss, 2014), respiratory problems (Moore, Augustson, Moser, & Budney, 2005; Tashkin, 2013), and lower educational and occupational achievement (Ellickson, Martino, & Collins, 2004; Fergusson & Bowden,

2008; Green & Ensminger, 2006). Nonetheless, results have been inconsistent across studies (e.g., Bechtold, Simpson, White, Loeber, & Pardini, 2015; White, Bechtold, Loeber, & Pardini, 2015) and some studies have noted positive benefits of use among adults (see Caulkins, Hawken, Kilmer, & Kleiman, 2012).

Whereas earlier age of onset has been identified as a critical predictor of later substance use-related problems (e.g., Chou & Pickering, 1992; Grant & Dawson, 1997), Labouvie and White (2002) argued that it is necessary to differentiate adolescence-onset use that terminates in young adulthood from adolescence-onset use that is followed by a persistent pattern of relatively frequent use into adulthood. They found that the former pattern was linked to social risk factors (e.g., friends' use), which they argued are often encountered by normally socialized adolescents. The latter pattern was linked to social and individual risk factors, such as

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behavioral disinhibition (see also Pedersen & Skrandal, 1998). Thus, adolescent risk factors may differ depending on specific patterns of later use.

Although several studies have delineated risk factors associated with the development of adolescent marijuana use (e.g., Brook, Zhang, & Brook, 2011; Farhat, Simons-Morton, & Luk, 2011; Griffith-Lendering, Huijbregts, Mooijaart, Vollebergh, & Swaab, 2011; Martel et al., 2009; Rogosch, Oshri, & Cicchetti, 2010), few studies have identified factors that distinguish which youth will eventually stop using marijuana during the transition to adulthood. It is critical to differentiate adolescence-limited from continuing users because some negative effects of regular marijuana use (e.g., cognitive impairment) can rebound following periods of sustained abstinence (see Pardini et al., 2015), and cumulative exposure may be more critical to the development of long-term problems than age of onset (Labouvie & White, 2002; Meier et al., 2012). Thus, if we can identify early risk factors that increase the probability of continued use, we may be in a better position to intervene before problems develop. The current study examines whether adolescent risk factors, including individual attitudes, temperament, and behaviors and peer, family, and neighborhood factors, can prospectively identify which adolescence-onset monthly marijuana users (AMMU) will and will not stop using marijuana in young adulthood.

1.1. Previous studies

One reason for the absence of studies examining early predictors of maturing out of marijuana use is that several longitudinal studies have not followed youth long enough to identify a group that has matured out (e.g., Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; Lynne-Landsman, Bradshaw, & Jalongo, 2010; Windle & Wiesner, 2004) or have not had early data on adolescent predictors (e.g., Schulenberg et al., 2005). Juon, Fothergill, Green, Doherty, and Ensminger (2011) is one of a few studies to examine early predictors of marijuana trajectories into adulthood (age 32). They found no differences between adolescence-limited and persistent marijuana users on any childhood predictors, including family background, first grade aggressive and shy behavior, academic achievement, family involvement, and parental drug rules. A serious limitation of their study was that marijuana use was dichotomized as any use, which does not differentiate low- from high-level use. Also, there were several gaps between assessments, limiting the ability to verify continuous use.

In a study that overcame several of the limitations of previous research, Epstein et al. (2015) examined trajectories of marijuana use from ages 14 to 30. They compared a group that used marijuana in adolescence but reduced their use after age 18 and stopped using by age 30 to a group that used similarly in adolescence but escalated their use in young adulthood and continued through age 30; predictors were measured at ages 10–14. The only variable that significantly differentiated the two groups was behavioral disinhibition. The two groups did not differ significantly in past-month marijuana, alcohol, or tobacco use, family and peer marijuana use, family environment, antisocial peers, neighborhood disorganization, marijuana availability, anxiety, and depression.

Whereas few adolescent predictors of maturation have been identified, several studies have shown that role changes in young adulthood (e.g., marriage, parenthood, career) are key predictors of cessation from marijuana use (e.g., Chen & Kandel, 1998; Labouvie, 1996). Nevertheless, it is critical to identify distal predictors that can foretell which adolescent marijuana users will mature out and which will continue in adulthood. Identifying such factors would help in the identification of targets for early prevention and intervention (Hayatbakhsh, Najman, Bor, O'Callaghan, & Williams, 2009).

1.2. Conceptual model

Two types of developmental cascade models have been applied to elucidate the processes through which distal risk and protective factors

influence proximal drivers of substance use transitions (Dodge et al., 2009; Lynne-Landsman et al., 2010; Martel et al., 2009; Masten, Desjardins, McCormick, Kuo, & Long, 2010; Rogosch et al., 2010). The first, antisocial pathways models, posit that a combination of adverse environmental factors (e.g., dysfunctional parenting) and genetically-driven temperamental features (e.g., hyperactivity/impulsivity) place youth at risk for developing antisocial behaviors and beliefs (Fergusson, Horwood, & Ridder, 2007; Martel et al., 2009; Molina & Pelham, 2003) and affiliations with delinquent peers (Marshall, Molina, & Pelham, 2003), which subsequently foster and reinforce persistent use. Similarly, harsh and abusive parenting and poor parental monitoring have been consistently associated with substance use problems in adolescence and adulthood (Cheng & Lo, 2011; Dodge et al., 2009; Fergusson, Boden, & Horwood, 2008; Rogosch et al., 2010) and this effect is partially mediated by the development of early conduct problems and affiliation with deviant peers (Chassin, Pillow, Curran, Molina, & Barrera, 1993; Dodge et al., 2009; Rogosch et al., 2010).

In contrast to risk-based approaches, prosocial involvement/bonding models emphasize factors that can protect youth from becoming intensely involved in substances over time and potentially promote later desistance (e.g., Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996; Oetting & Donnermeyer, 1998). These models posit that positive involvement and bonding with socializing agents (e.g., community, school, family) reinforce prosocial beliefs that deter deviant behavior and affiliations with antisocial peers (Catalano et al., 1996; Haller, Handley, Chassin, & Bountress, 2010; Oetting & Donnermeyer, 1998). Consistent with this conceptualization, adolescents who are more involved in school (Cheng & Lo, 2011, Crosnoe, Erickson, & Dornbusch, 2002) and religious activities (Flory et al., 2004) tend to be protected from developing heavy and persistent substance use. Similar findings have been reported for positive parenting (Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004; Henry, Oetting, & Slater, 2009).

1.3. Current study

This study extends prior research on adolescent predictors of maturing out of marijuana use. We focus specifically on adolescent predictors rather than young adult role changes to identify targets for early prevention and intervention. We use a sample of AMMU and compare those who matured out to those who used at least weekly in young adulthood. We selected individual and environmental risk and protective factors identified in empirical tests of the antisocial pathways and prosocial involvement/bonding models described above, including attitudes toward marijuana and delinquency, impulsivity, depression, religiosity, school achievement, truancy, theft, violence, alcohol, tobacco and other drug use, drug dealing, peer marijuana use, caretaker monitoring, childhood maltreatment, family on welfare, and problematic neighborhood. Based on research cited in the conceptual model above, we hypothesize that all of these risk and protective factors will differentiate adolescent monthly marijuana users from nonusers. Conversely, we hypothesize that only lower impulsivity in adolescence will be related to maturing out of marijuana use (Epstein et al., 2015; Labouvie & White, 2002).

We also examine race as a moderator. Research on racial differences in prevalence of marijuana use has been mixed and generally indicates that differences depend on developmental stage and cohort (White, Loeber, & Chung, 2016). Furthermore, previous research has identified differences among black and white youth in predictors of drug use (e.g., religiosity is stronger for black than white adolescents; Wallace, Brown, Bachman, & Laveist, 2003) and in levels and exposure to risk factors (e.g., white youth are more susceptible to peer pressure than black youth; Wallace & Muroff, 2002; see also Catalano et al., 1993). Therefore, it is necessary to examine race differences in processes and predictors of maturation. Based on this research, we expect that there will be racial differences in predictors (e.g., peer use and religiosity) of nonuse versus monthly use in adolescence. Because no study that we are aware

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