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SUBSTANCE USE AND ACADEMIC OUTCOMES: SYNTHESIZING FINDINGS AND FUTURE DIRECTIONS

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These commentaries [1,2] as well as the Engberg & Morral [3] paper, raise important and thought-provoking questions concerning the role of adolescent substance use in academic outcomes. Godley [1] makes the point that, regardless of the nature of the relation between academic achievement and substance use, schools are an important potential intervention environment for adolescents who are at risk for substance use problems. Indeed, our own findings and those of Engberg & Morral [3] suggest that adolescent drug use is related to reductions in sustained engagement in academic pursuits, which implies that interventions outlined by Godley [1] could improve school engagement and attendance. Engberg & Morral's data are particularly compelling, as they demonstrate that reducing substance use through a treatment program increases school attendance among heavy drug-using adolescents. Taken together, the results of both empirical studies suggest that decreasing drug use will produce improvements in academic outcomes.

Results of both studies [3,4] underscore the importance of clarifying the mechanisms by which substance use influences academic outcomes. Research suggests at least two potential mechanisms. First, substance use itself may impair cognitive development which, in turn, reduces academic achievement and disrupts academic progression. Recent studies have shown that heavy adolescent substance use can lead to problems with working memory and attention due to changes in adolescent brain activity [5]. In turn, these memory and attention problems may lead to decreases in academic performance and engagement in school, and ultimately increase risk for school problems and dropout. However, these findings have been reported with heavy drinking and drug-using adolescents (similar to the clinical sample used by Engberg & Morral), and it is unclear whether such effects would emerge at lower levels of use. Moreover, the magnitude and permanence of these effects are unclear in terms of whether they extend to impair academic functioning. For example, studies [6,7] suggest that withdrawal is an important predictor of the neurocognitive deficits associated with adolescent drinking, but it is not clear whether prolonged periods of abstinence rectifies these deficits or whether they are permanent.

Alternatively, it could be that drug and alcohol use during adolescence leads to association with antisocial peer groups, which in turn diminishes school engagement and increases other behavioral and social problems. Indeed, as Godley and the current studies support, substance use is related to many school-related outcomes that have a strong behavioral and social component. That is, outcomes such as school grades, attendance, school completion and dropout are influenced not only by intellectual functioning, but also by motivation, organizational skills and social/behavioral skills. In other words, the effects of substance use on academic outcomes may have motivational, social and behavioral components in addition to any effects on cognition and cognitive development. Thus, negative academic outcomes may be due to both the direct effect of substance use on cognitive skills as well as the constellation of motivational, social and behavioral risk factors associated with substance use in adolescence.

Interestingly, the findings from the current studies suggest that the mechanism by which substance use influences academic performance may differ depending on the nature of the adolescent sample (clinical versus community) and the developmental outcome that is studied (high school attendance versus academic achievement and college completion). Specifically, the substance use of heavy drug-using adolescents may directly impair academic (cognitive) abilities which limits academic performance in adolescence. For most adolescents who use drugs at a lower level, however, adolescent drug use may serve as a maturational ‘snare’ that keeps some adolescents engaged in deviant peer groups as others move on to more normative groups, thus having a long-term direct effect on educational attainment. Other studies [8–10] have discussed similar processes, in which differential pathways to problematic outcomes are determined, in part, by the level of multiple risk behaviors.

If we believe that multiple mechanisms are operating, then it follows that preventive interventions aimed at improving academic engagement should broaden their focus beyond drug use in adolescence. We echo Godley’s [1] suggestion that community and family risk factors should also be targets of intervention. Our findings showed that drug use in adolescence partially mediated the effect of adolescent externalizing behaviors on college completion; adolescent externalizing also had direct effects on both adolescent reading achievement and on degree completion [3]. This implies that a powerful target of intervention would be externalizing behaviors, especially for adolescents who have not yet developed heavy or problematic levels of alcohol and/or drug use.

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