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SUBSTANCE USE AND RISK-TAKING AMONG ADOLESCENTS: REVIEW

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Abstract

Among adolescents, substance abuse often occurs in conjunction with risk-taking behaviors. This review explores the nature and etiology of concomitant risk-taking behaviors, addressing behavioral, genetic, temperamental, and family factors that accompany adolescent substance use. A literature review was conducted to determine the breadth of factors that contribute to adolescent substance abuse and correlated risk-taking behaviors, and to identify relevant evidence-based treatments. The literature review revealed that among adolescents, substance abuse occurs as part of a cluster of problems and risk-taking behaviors. Predisposing factors include temperament, genetics, neurobehavioral disinhibition, social competencies, parenting, abuse/neglect, and peer behaviors. Various interventions, including individual therapies, parent training, and family therapies comprise the empirically-supported treatments for these co-occurring behaviors. The literature indicates that adolescents are being seen for substance-related problems which should be evaluated for engagement in other risk-taking behaviors, and school, peer, and social functioning. In addition, the data support that family, versus individual, interventions should be the norm for substance-abusing adolescents.

Keywords: *Adolescents, substance abuse, risk-taking, intervention, therapies.*

Introduction

Adolescent developmental tasks include challenges of identity, autonomy, sexuality, academic functioning, and peer relationships (Cicchetti & Rogosch, 2002; Erikson, 1968). For many, this period includes normative experimentation with perceived facets of adult life, such as experimentation with substances (Jessor, 1987; Shedler & Block, 1990).

Aim of this review

This review explored the nature and etiology of adolescent risk-taking behaviors, specifically addressing factors that accompany substance use and interventions that have gained empirical support. This review contains three parts. The first section provides an overview of the convergence of substance use and risk-taking behaviors, including information on substance use disorders, risk-taking behaviors, high-risk sexual activity, and externalizing behaviors. The second component focuses on the etiology of substance use and risk-taking behaviors, containing information regarding "problem behavior syndrome", temperament, genetics, neurobehavioral disinhibition, avoidant coping, competency in mainstream culture, genetics, parenting, abuse/neglect, and peer influences.

Convergence of substance use and risk-taking behavior in adolescents

Substance use disorders

Most adolescents who experiment with substances do not progress to adult substance dependence (Clark, 2004; Shedler & Block, 1990). Rather, substance-related problems naturally remit for most adolescents (Chassin et al., 2004; Colby et al., 2004). Several factors appear to increase the risk of adult dependence, including beginning regular or binge drinking at a younger age (Chassin et al., 2002; Clark, 2004), drinking larger amounts per occasion (Wells et al., 2004), and progressively escalating one's alcohol use (Chassin et al., 2004; Chassin et al., 2002). Others have argued that adolescent

characteristics, rather than drinking patterns, best predict later alcohol problems (Wells et al., 2004). In particular, comorbid psychopathology may increase adolescents' risk of developing alcohol dependence (Clark et al., 1998).

Risk-taking behavior

Sexual activity: Like substance use, sexual experimentation during adolescence is normative and arguably, adaptive (Cooper et al., 2003). While not inherently dangerous, some sexual behaviors (namely, "high-risk sexual behaviors") increase an adolescent's risk of unplanned pregnancy, contraction of sexually transmitted diseases, and sexual violence. In high school samples, alcohol (Poulin & Graham, 2001; Stueve & O'Donnell, 2005), tobacco, and marijuana use (Poulin & Graham, 2001) have been correlated with sexual activity. Moreover, for many adolescents, adverse sexual consequences occur while drinking, including unplanned sexual intercourse, multiple partners, and inconsistent condom use (Bonomo et al., 2001; Poulin & Graham, 2001).

Externalizing behaviors

Adolescent substance use significantly overlaps with externalizing disorders. In a sample of adolescents with Attention-Deficit/ Hyperactivity Disorder (ADHD), three times as many adolescents had comorbid Substance Use Disorders (SUDs) as adolescents without ADHD (Kuperman et al., 2001). In addition, ten times as many adolescents with Conduct Disorder (CD) displayed comorbid SUDs compared with adolescents without CD (Kuperman et al., 2001). The pattern for oppositional defiant disorder (ODD) was different, however; adolescents with ODD were less likely to have comorbid SUDs than those without ODD (5.7% versus 8.9%, respectively; Kuperman et al., 2001). Frequently, the onset of the externalizing disorders precedes SUDs (Chassin et al., 2002; Kuperman et al., 2001).

Etiology of substance use and risk-taking behaviors

- ***Problem behavior syndrome***

This concomitance of substance abuse with RTBs led to the postulation of a problem behavior syndrome. With a sample of high school drinkers, Jessor (1987) found that problematic drinking was linked to other deviant behaviors and inversely related to "conventional" behaviors. From this, Jessor reasoned that adolescent problem drinking was embedded in a syndrome, reflecting a proclivity to engage in problem behavior. Jessor found that this syndrome accounted for 55% of the variance in male and 31% of female problem drinking. In a later study, he found that this syndrome predicted problem drinking seven to nine years later (Jessor, 1987).

- ***Personality predisposition***

Temperament: Several temperamental features may predispose an adolescent to participate in RTBs. The temperamental characteristic of impulsivity interferes with an adolescent's ability to make wise decisions around RTBs, due to the inability or reluctance to enter into a cost/benefit analysis around the behavior, to resist the temptation of engagement, or to foresee any potential negative consequences (Cooper et al., 2003). In contrast, some adolescents have temperamental features that favor thrill and risk, such as high levels of sensation seeking. Temperamental characteristics of anger and negative affect are also thought to put adolescents at risk for RTBs.

- ***Neurobehavioral disinhibition***

Tarter and colleagues (2003) have collapsed several risk features into a factor they have titled "neurobehavioral disinhibition" (ND). Comprised of indicators of executive cognitive functioning, emotional regulation, and behavioral control, they posit that this factor reflects the integrity of the prefrontal cortex. Moreover, when contrasted with externalizing disorders, Tarter and colleagues (2003) found ND to be a significantly stronger predictor of later involvement in SUDs (ORs ¼ 4.74 vs. 6.83, respectively).

- ***Competency in mainstream culture***

Excelling in academics and high IQs may protect adolescents from engaging in RTBs (Whitmore et al., 2000; Wills et al., 2004). Adolescents who engage in lower levels of

RTBs tend to be smart (Masten, 2001; Masten & Coatsworth, 1998), academically connected (Jessor et al., 1998a), and achievement - oriented (Werner & Smith, 2001). Academic connection is particularly protective for the most disadvantaged (Jessor et al., 1998b) and low-achieving youth (Bryant et al., 2003).

Environmental Predisposition

- ***Parenting:*** In addition to genetics, parenting contributes to the generational transmission of SUDs (Nilsson et al., 2005). Stressors in parents' lives disrupt healthy parenting (Hetherington & Kelly, 2002; Patterson, 2002). Adolescents living in families replete with stress and conflict, but without discipline and nurturance, may be more likely to use sub- stances (Chassin et al., 2002). In addition, parents who use substances have adolescents who use more substances (Li et al., 2002) and engage in other RTBs (Bonomo et al., 2001).

- ***Physical abuse, sexual abuse, and neglect:*** Adolescents with histories of violence and neglect are at higher risk for SUDs, RTBs, and comorbid internalizing disorders (Clark et al., 2003; Kilpatrick et al., 2003). Some have posited that victimized adolescents may use substances to cope with the anxiety, depression, and post-traumatic stress symptoms that emerge from abuse (Simpson & Miller, 2002). Consistently, sexual abuse histories have been linked with SUDs in women (Simpson & Miller, 2002).

Common interventions for substance abuse and risk-taking behaviors

Various forms of psychotherapy with adolescents have addressed substance abuse and RTBs. Evidence-based treatment approaches currently include individual therapies for adolescents, training for parents, and family therapies.

- ***Parent training.***

Noting the relationship between parenting and adolescent substance use, Patterson and colleagues have assessed parent training since the 1960s. Recently, studies have found that participation in parent training increased parental monitoring (Dishion et al., 2003), and decreased family conflict (Dishion & Andrews, 1995), adolescent substance use (Dishion et al., 2003), and adolescent behavior problems (Dishion & Andrews, 1995).

- ***Family interventions***

Several researchers have emphasized the importance of multi-level interventions for adolescents with SUDs and comorbid externalizing disorders (Clark, 2004; McClelland et al., 2004). Three types of family-based interventions have gained support in treating families with substance abusing adolescents (Liddle, 2004): Brief Strategic Family Therapy (BSFT; Szapocznik et al., 2003), Multidimensional Family Therapy (MDFT; Liddle et al., 2001; Liddle & Hogue, 2001), and Multisystemic Therapy (MST; Henggeler & Borduin, 1990; Henggeler et al., 1998).

Research is only beginning to explore factors that may mediate the effectiveness of family therapies. Many questions remain regarding how family-focused factors affect treatment outcome (Diamond & Josephson, 2005). However, as posited in the adult treatment literature (Hubble et al., 1999), factors common across these family treatments may be responsible for their efficacy, such as the emphasis on alliance, strength-based and non-confrontational approaches, and the fundamental belief that changing family interactions initiates a cascade of positive benefits across the systems in which a child is embedded. These factors common to family therapies may help shift the family functioning from one that supports and maintains discord, to one that unifies and supports healthier interactions.

Future directions

Adolescent substance use frequently co-occurs with several other risk-taking and exter- nalizing behaviors. However, while some of the interventions help decrease adolescent substance use, some of the family therapies appear better equipped to intervene

with facets of comorbid risk-taking behaviors. Specifically, evidence supports BSFT's ability to reduce comorbid conduct issues, MDFT's ability to decrease externalizing symptoms, and MST's efficacy in reducing delinquency. However, as delineated in this review, several of these behaviors co-occur; therefore, at this time, the literature is missing a rigorous evaluation of family therapies across a number of co-occurring behaviors, such as conduct disorders, externalizing symptoms, and delinquency. Moreover, interestingly, none of these trials evaluated the efficacy of these interventions with high-risk sexual behavior. As serious diseases from high-risk sexual behavior are both relatively easy to contract and straightforward to prevent, an important next step for the field of adolescent health is to determine the efficacy of family interventions to reduce concomitant high-risk sexual behavior.

Conclusion

Substance abuse rarely occurs in isolation. Hence, adolescents being seen for alcohol/drug problems should also be evaluated for other RTBs, including high risk sexual activity, delinquency, and conduct problems at home and school, and for a history of sexual or physical abuse. It is common for RTBs to co-occur, though patterns are variable and do not seem to support a single problem-behavior syndrome. With comorbidity well-established, research needs to move past demonstrations of concomitance, to address protective personal, family, and environmental attributes (e.g., Jessor et al., 2003; Masten et al., 2005; Oman et al., 2004).

The close relationships of adolescent substance abuse with family functioning suggest that family, rather than individual evaluation, should be the norm when seeing youth in trouble with substances. Broader evaluation of functioning across school, peer, social, and environmental domains is also warranted.

There is good news in the range of available evidence-based treatments. There are effective treatment approaches for the adolescent, for parents, and for the family together. Outcome data favor inclusion of the family in treatment when addressing adolescent SUDs and co-occurring RTBs. Parental monitoring, stating clear expectations, and open family communications favor better outcomes. Parents' own use of alcohol and other drugs is an important risk factor that should be considered in treatment.

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